

REPUBLIC OF UGANDA



MINISTRY OF HEALTH

**National Technical Guidelines for
Integrated Disease Surveillance
and Response**

Third Edition

September 2021

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FOREWORD

In 2001, Uganda adapted the Integrated Disease Surveillance and Response (IDSR) developed by World Health Organization (WHO) for member states in African region. The Ministry of Health has been implementing the IDSR strategy since then with success across the country. This strategy provides the opportunity for rational use of resources and maximises investments in health surveillance systems. The 3rd edition IDSR guidelines incorporates lessons learnt from previous epidemics, new frameworks like the Global Health Security Agenda (GHSA), One Health, Disaster Risk Management (DRM), the WHO regional strategy for health security and emergencies, and the rising non-communicable diseases, and aims to strengthen implementation of IHR (2005) core surveillance and response capacities. These guidelines have been adapted to reflect national priorities, policies and public health structures; and shall be used in conjunction with other similar guidelines/strategies or initiatives.

Overall, the 3rd edition technical guidelines will incorporate the following:

- Strengthening Indicator Based Surveillance
- Strengthening Event Based Surveillance
- Improving community-based disease surveillance
- Improving Cross Border Surveillance and response
- Scaling up e-IDSR implementation
- Improving reporting and information sharing platforms
- Improved data sharing across sectors
- Tailoring IDSR to Emergency or Disaster contexts

The 3rd edition guidelines are intended for use as:

- A general reference for surveillance activities across all levels
- A set of definitions for thresholds that trigger some action for response
- A stand-alone reference for level-specific guidelines on surveillance and response
- A resource for developing training, supervision and evaluation of surveillance activities
- A guide for improving early detection and preparedness for outbreak response.

These guidelines will be used by; health workers at all levels of public and private settings, IHR National Focal Points, health authorities at Points of Entry (PoE), Hospital managers, clinicians, infection prevention and control officers, national and regional reference laboratories, veterinary and wildlife officers, environmental health officers, district health teams, health training institutions, communication officers, community leaders, other health partners including Non-Governmental Organizations (NGOs), other line ministries, departments and agencies.

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ACKNOWLEDGMENTS

These technical guidelines on IDSR were adapted by a technical team of Ministry of Health with support from WHO, US CDC, Africa CDC, Baylor Uganda, IDI, SACIDS, TDDAP, AFENET, MakSPH and PATH Uganda based on the generic document prepared by WHO-AFRO. We would like to acknowledge the following persons that participated in the adaptation of the 3rd edition IDSR technical guidelines.

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LIST OF ABBREVIATIONS

AAR	After Action Review
ACHS	Assistant Commissioner of Health Services
AEFI	Adverse Events Following Immunization
AFENET	Africa Field Epidemiology Network
AFP	Acute Flaccid Paralysis
AFRO	WHO Regional Office for Africa
AR	Attack Rate
ART	Antiretroviral therapy
AWD	Acute Watery Diarrhoea
CBS	Community Based Surveillance
CDC	Centres for Disease Control and Prevention
CEBS	Community Event Based Surveillance
CFR	Case Fatality Rate
CHS	Commissioner of Health Services
CIBS	Community Indicator Based Surveillance
CIF	Case Investigation Form
CMR	Crude Mortality Rate
CONOPS	Concept of Operations
DCE	Diseases, Conditions and Events
DGHS	Director General of Health Services
DHE	District Health Educator
DHI	Division of Health Information
DHIS2	District Health Information System version 2
DHO	District Health Officer
DHT	District Health Team
DQA	Data Quality Assessment
DRC	Democratic Republic of Congo
DRM	Disaster Risk Management
DSFP	District Surveillance Focal Person
DTF	District Task Force
EBS	Event Based Surveillance
eELMIS	Electronic Emergency Logistics Management Information System
eIDSR	Electronic Integrated Disease Surveillance and Response
ELISA	Enzyme-linked immunosorbent assay
EMR	Emergency Management and Response
eMTCT	Elimination of Mother-to-Child Transmission
EPC	Epidemic Prevention and Control
EPI	Expanded Program on Immunization
EPR	Epidemic Preparedness and Response
EVD	Ebola Virus Disease
EWAR	Early Warning Alert and Response
GHSA	Global Health Security Agenda
GIS	Geographical Information Systems

HA	Health Assistants
HC	Health Centre
HCW	Healthcare Worker
HISP-U	Health Information Systems Program-Uganda
HIV/AIDS	Human Immunodeficiency Virus and /Acquired Immune Deficiency Syndrome
HMIS	Health Management Information System
HSD	Health Sub-District Surveillance Officer
IAP	Incident Action Plan
IAR	Intra Action Review
IBS	Indicator Based Surveillance
IDI	Infectious Diseases Institute
IDSR	Integrated Disease Surveillance and Response
IEC	Information, Education and Communication
IES&PHE	Department of Integrated Epidemiology, Surveillance and Public Health Emergencies
IFA	Immuno-fluorescence Assay
IgM	Immunoglobulin M
IHR	International Health Regulations
IMS	Incident Management System
IOM	International Organization for Migration
IPC	Infection Prevention and Control
IPD	Inpatients department
IRA	Initial Risk Assessment
IRC	International Rescue Committee
JEE	Joint External Evaluation
KOFIH	Korean Foundation for International Healthcare
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MakSPH	Makerere University School of Public Health
MDA	Ministries, Departments and Agencies
MDR	Multi Drug Resistance
MRNCH	Maternal, Reproductive, Neonatal, and Child Health
NECOC	National Emergency Coordination and Operation Centre
NGO	Non-Government Organization
NMCD	National Malaria Control Division
NNT	Neonatal Tetanus
NTF	National Task Force
OPD	Outpatients department
OPM	Office of the Prime Minister
PFP	Private for Profit
PHC	Primary Health Care
PHE	Public Health Events
PHEIC	Public Health Emergency of International Concern
PHEMC	Public Health Emergency Management Committee
PHEOC	Public Health Emergency Operations Centre
PNFP	Private Not for Profit
PoE	Points of Entry

PPE	Personal Protective Equipment
QGIS	Quantum Geographical Information Systems
RA	Resident Advisor
Rif	Rifampicin
RRA	Rapid Risk Assessment
RRT	Rapid Response Team
RTA	Road Traffic Accident
RT-PCR	Reverse Transcriptase Polymerase Chain Reaction
RVF	Rift Valley Fever
SACIDS	Southern Africa Center for Infectious Disease Surveillance
SARS	Severe Acute Respiratory Syndrome
SCD	Standard Case Definition
SIMEX	Simulation Exercise
SPAR	State Party Annual Reporting
STI	Sexually Transmitted Infections
STOP	Stop Transmission of Polio
TB	Tuberculosis
TDDAP	Tackling Deadly Diseases in Africa Project
TG	Technical Guidelines
TM	Training Module
TOR	Terms of Reference
TWG	Technical Working Group
U5MR	Under-5 Mortality Rate
UNEPI	Uganda National Expanded Program on Immunization
UNICEF	United Nations Children's Emergency Fund
UNIPH	Uganda National Institute of Public Health
VHF	Viral Haemorrhagic Fever
VHT	Village Health Team
VPD	Vaccine Preventable Disease
WHA	World Health Assembly
WHO	World Health Organization
XDR	Extensively drug-resistant

GLOSSARY (DEFINITION OF KEY TERMS)

Acute	Any disease/ event having a rapid (sudden) onset and following a short course.
Alert	An indirect early warning sign of a potential public health event occurring in a community under surveillance. Alerts must be investigated further and verified as to whether they represent a true event or not
Chronic	Any health condition that develops slowly or of long duration and tends to result in some functional limitation and need for ongoing medical care.
Cluster	An aggregation of cases or health related condition in a given area over a particular period regardless of whether the number of cases is more than expected in relation to time or place or both.
Disease	An illness or medical condition, irrespective of origin or source, which presents or could present significant harm to animals, humans and plants.
Disaster	the serious disruption of the functioning of a community or a society, causing widespread human, material, economic or environmental losses exceeding the ability of the affected community or society to cope using its own resources.
Elimination	Reduction to zero (or a very low defined target rate) of new cases in a defined geographical area
Endemic	A disease or condition regularly found among particular people or in a certain area.
Epidemic	Refers to an increase in the number of cases of a disease or an event above what is normally expected in that population in a given area over a particular period of time.
Epidemiological link	When a patient has or had exposure to a probable or confirmed case.
Epidemiology	The study of the distribution and determinants of health-related states and the application of this information to controlling public health problems.
Eradication	The purposeful reduction of specific disease prevalence to the point of continued absence of transmission in the world.
Aetiology	Refers to the cause, set of causes, or origin of a disease or condition.
Event	Under the IHR (2005) (Article 1), an event is defined as ‘a manifestation of disease, or an occurrence that creates a potential for disease’ (with particular reference to public health events of international concern, or PHEIC). An emergency incident or occurrence. An event may be insignificant or could be a significant occurrence, planned or unplanned (e.g., extreme weather event or mass gathering), that may impact the safety and security of communities NB: ‘Event’ and ‘incident’ are often used interchangeably .
Health Management Information System	A monthly reporting system for diseases, conditions, and risks that is reported to the MINISTRY OF HEALTH from every healthcare facility electronically or on paper
Human-animal-environment interface	A continuum of contacts and interactions among people, animals, their products, and their environment(s); in some cases, facilitating transmission of zoonotic pathogens or shared health threats.

Incident	An occurrence or event, natural or human-caused that requires an emergency response to protect life, property, or the environment. An incident may be geographically confined (e.g. within a clearly delineated site or sites) or dispersed (e.g. a widespread power outage or an epidemic). Incidents may start suddenly (e.g. a chemical plant explosion) or gradually (e.g. a drought). They may be of very short duration (e.g. a call for emergency medical assistance), or continue for months or even years. war-related disasters, public health and medical emergencies, and other emergencies.
Incident Management System (IMS)	This is a standardized approach to emergency management encompassing personnel, facilities, equipment, procedures, and communications operating within a common organizational structure The IMS Standardized processes allow all who respond to the same incident to formulate a unified plan to manage the incident
International Health Regulations (2005)	International legal instrument that is binding in 196 countries. The regulations aim to help the international community prevent and respond to acute public health risks that have the potential to cross borders and threaten people worldwide.
Multi-sectoral	Participation of more than one sector working together on a joint program or response to an event (e.g., a joint investigation by public health and law enforcement).
One Health	An approach to address a shared health threat at the human-animal-environment interface based on collaboration, communication, and coordination across all relevant sectors and disciplines, with the ultimate goal of achieving optimal health outcomes for both people and animals. A One Health approach applies to the local, regional, national, and global levels.
Outbreak	The occurrence of more cases than expected in a defined geographic area or time.
Pandemic	An epidemic occurring worldwide, or over a very wide area, crossing international borders and usually affecting a large number of people.
Point of Entry	Any passage, via land, air or sea, for international entry or exit of travellers, baggage, cargo, containers, conveyances, goods and postal parcels as well as agencies and areas providing services to them on entry or exit.
Reporting site	A site which reports about surveillance and outbreak data to the district level. A reporting site includes all health facilities (public, private and quasi-governmental, faith based), standalone laboratories, PoE. A reporting site also contains event reports from community surveillance and response
Zoonotic disease or zoonosis	An infectious disease that can be shared between animals and people

INTRODUCTION SECTION

INTRODUCTION SECTION

A.0 Introduction

This section introduces public health surveillance, the concepts of Integrated Disease Surveillance and Response (IDSR) strategy, Early Warning Alert and Response (EWAR) system using indicator-based and event-based surveillance mechanisms, guidance on how IDSR works, the objectives of IDSR, and how IDSR can facilitate the implementation the International Health Regulation (IHR) core capacities. Furthermore, this section introduces other aspects such as; the *One Health approach*; the linkage between Disaster Risk Management (DRM) and IDSR; the core surveillance functions; how sub-national levels (for example districts) can use these guidelines to strengthen surveillance and response; the roles and responsibilities of the various actors at different levels¹.

Note: These guidelines are meant to help build and strengthen surveillance systems for priority diseases, conditions and events, whether they are known or unknown, whether they are disease events or other IHR hazards. These guidelines are NOT limited to only known diseases

A.1 Public Health Surveillance

Public Health Surveillance is the ongoing systematic identification, collection, collation, analysis, and interpretation of disease occurrence and public health event data to take timely and robust action. It includes the timely dissemination of the resulting information to those who need to know for effective and appropriate action². Surveillance is also essential for planning, implementation, monitoring and evaluation of public health practice. Uganda has decided to achieve its public health surveillance objectives through the implementation of IDSR strategy.

A.1.1 Approaches to public health surveillance

- a) **Passive surveillance:** a system by which a health institution receives routine reports submitted from health facilities and the community. This is the most common, and it includes the surveillance of diseases and other public health events through the Health Management Information System (HMIS)
- b) **Active surveillance:** It involves actively looking for the cases in the community or health facilities through;
 - Records review by health workers at health facility level
 - Screening for specific health conditions e.g., at points of entry, health facilities etc.

- Regular communication and keeping in touch with key reporting sources. This may take various forms such as telephone calls to health care workers at a facility or laboratory or physically moving to the site.
 - Finding additional cases and contacts during outbreaks.
 - Finding diseases targeted for elimination and eradication e.g., Polio (through Acute Flaccid Paralysis (AFP) surveillance), Guinea Worm etc.
- c) **Integrated Disease Surveillance:** This approach aims at collecting health data for multiple diseases using standardized tools, and supports Early Warning Alert and Response (EWAR) systems. To ensure robust early warning and prompt response, the IDSR data collection and analysis system relies on two main channels of information or signal generation, namely: Indicator-Based Surveillance (IBS) and Event-Based Surveillance (EBS). Figure 1 shows the interaction of EBS and IBS systems for EWAR and IDSR

A.1.2 Event -based surveillance and Indicator-based Surveillance as back-bone to the IDSR Strategy

The Event-based Surveillance (EBS) and Indicator-Based Surveillance (IBS) are components of Early Warning and Response (EWAR) and epidemic intelligence incorporated in the IDSR strategy. Both EBS and IBS are complimentary with each having a different role to play and purpose. EBS is most likely to pick up signals to detect small outbreaks or clusters early, while IBS is better in monitoring disease trends overtime and useful for signalling the start of regular seasonal outbreaks of endemic diseases using alert and epidemic thresholds. EBS is also better at picking up alerts indicating outbreaks in areas where access to healthcare is limited. In the context of IDSR strategy, the flow of EBS information follows the same reporting lines as IBS (**Figure 2**).

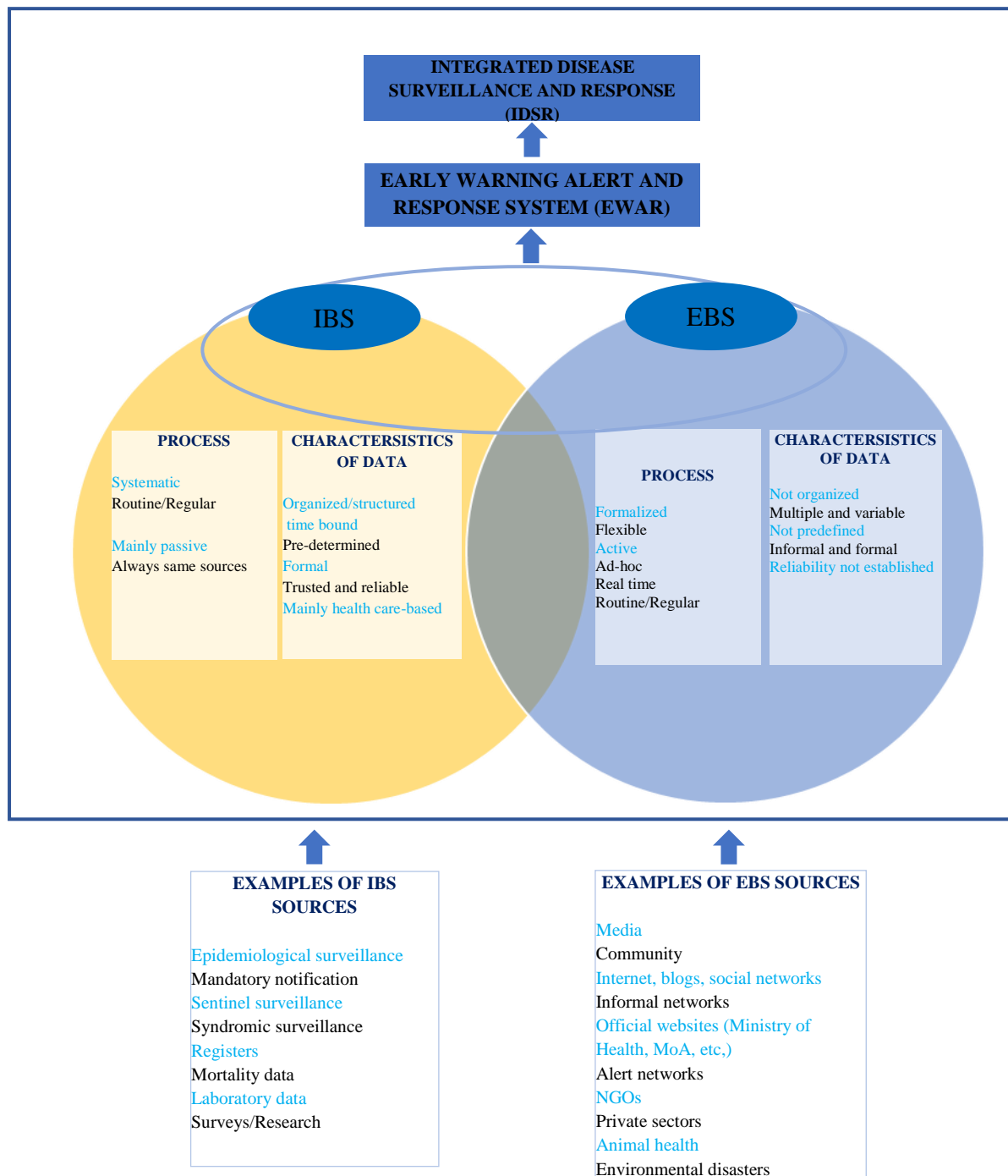
Indicator-based surveillance (IBS)

Indicator-based surveillance is the regular, systematic, identification, collection, monitoring, analysis and interpretation of structured data, such as indicators produced by a number of well-identified, mostly health-based formal sources. Methods of indicator-based surveillance include; facility-based surveillance, case-based surveillance, sentinel surveillance, syndromic surveillance, laboratory-based surveillance, disease-specific surveillance and community-based surveillance (refer to section 1).

Event- based surveillance (EBS)³

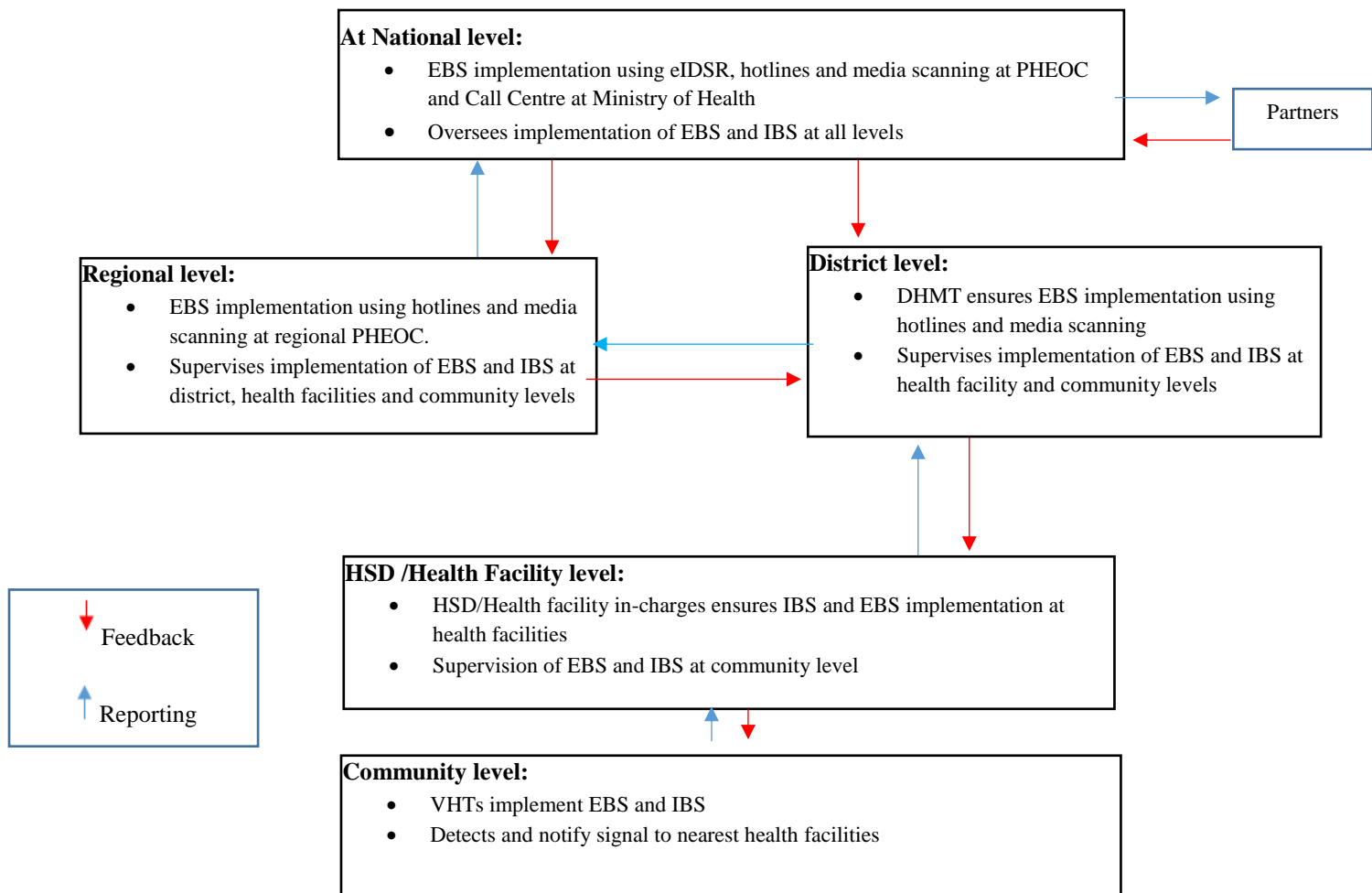
Event-based surveillance is rapid capture of information about events that are of potential risk to public health. Information is initially captured as a rumour or signal with potential of becoming an alert after verification. All alerts may not necessarily become real events, as such they all need to be triaged and verified before a response is initiated (refer to section 1).

Figure 1: Indicator- and event-based surveillance for Early Warning Alert and Response (EWAR) for IDSR Strategy



Intersection of IBS and EBS: All events detected in the EBS system that are investigated and meet the standard case definition should be captured in the IBS system and reported to the next level of health care system.

Figure 2: Levels of Applications and Reporting of EBS and IBS in the context of IDSR



A.3 Integrated Disease Surveillance and Response Strategy

In 2001, Uganda adopted IDSR strategy as the approach for improving public health surveillance and response for priority diseases, conditions and events at community, health facility, district and national levels. IDSR promotes rational and efficient use of resources by integrating and streamlining common surveillance activities and functions. The IDSR strategy makes surveillance and laboratory data more usable for public health managers and decision-makers at different levels. As part of improvement of the health care system, IDSR strategy also assists to better monitor and track planned targets and ensure that they are achieved in a timely manner.

Surveillance activities for different diseases involve similar functions (detection, sample collection, reporting, analysis and interpretation, feedback, action) and often use the same structures, processes and personnel. As such, the principles of surveillance are the same whether applied to a single disease, condition or event or multiple diseases. What may differ is whether the target is elimination or eradication, which may require time-limited intensive efforts aimed at proving the absence of disease.

A.3.1 What takes place in an integrated system?

- All surveillance activities are coordinated and streamlined. Rather than using scarce resources to maintain multiple surveillance systems with separate vertical activities, resources are combined to collect, manage and analyse information at a single focal point at each level.
- Several activities are combined into one integrated activity, and take advantage of similar surveillance functions, skills, resources and target populations. For example, surveillance activities for Acute Flaccid Paralysis (AFP) often address surveillance for neonatal tetanus, measles and other Vaccine Preventable Diseases (VPDs) or any unusual events. Thus, health workers who routinely visit health facilities to search for AFP cases also review district and health facility records for information about other priority diseases in the area. VHTs interact with their community members on a regular basis and ask about a range of diseases, conditions and events; communities know that they can bring anything unusual to their attention.
- The district level is the hub and focus for integrating surveillance functions. The district health system has structures and resources to implement this function.
- Surveillance focal points at the district, regional and national levels collaborate with District and National Task Forces at each level to plan relevant public health response actions and actively seek opportunities for combining resources.
- The focus is on the creation of an overall public health surveillance system with sufficient capacity for detecting, reporting, confirming and responding to diseases, conditions and events. IDSR ensures that the information flow is bi-directional (horizontal and vertical),

so that each level is informed of potential outbreaks and response interventions in a timely manner. Information should be shared with neighbouring communities and districts.

Integration refers to efficient use of human resource and harmonizing different methods, software, data collection forms, standards and case definitions in order to prevent inconsistent information and maximize efforts among all disease prevention and control programs and stakeholders. Where possible, the country uses a common reporting form, a single data entry system for multiple diseases, and common communication channels. Training and supervision are integrated, a common feedback bulletin is used, and other resources such as computers and vehicles are shared. IDSR involves full time coordination of surveillance activities and joint action (planning, implementation, monitoring and evaluation) whenever it is possible and useful.

Coordination refers to working or acting together effectively for the rational and efficient use of available but limited resources. Coordination involves information sharing, joint planning, monitoring and evaluation in order to provide accurate, consistent and relevant data and information to policy-makers and stakeholders at district, regional, and national levels.

To facilitate coordination and collaboration, multi-sectoral, multidisciplinary co-ordination national and district task forces are constituted. (Refer to Section 5)

A.3.2 Objectives of Integrated Disease Surveillance and Response

The objectives of IDSR are to:

- To strengthen national capacity for early detection, complete recording, timely reporting, use of electronic tools, regular analysis and prompt feedback of IDSR priority diseases, events and conditions at all levels.
- To strengthen national and subnational laboratory capacity to confirm IDSR priority diseases, events and conditions.
- To strengthen capacity for public health emergency preparedness and response at all levels.
- To strengthen the supervision, monitoring and evaluation system for IDSR
- To integrate multiple surveillance systems so that tools, personnel and resources are used more efficiently.
- Emphasize community participation in detection, reporting and response to public health events including case-based and event-based surveillance and response and risk communication in line with International Health Regulations (IHR)

A.4 IDSR and IHR (2005)

International Health Regulations (2005) is a binding and legal instrument which urges all State Parties to develop minimum core public health capacities.

A.4.1 IHR (2005) purpose and goal

The purpose of the IHR 2005⁴ is to prevent, protect against, control and provide public health response to the international spread of disease in ways that are relevant and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade. The IHR (2005) guidelines include the measures at points of entry (airports, ports and ground crossing) and containment of public health events at source⁵.

The scope of IHR was expanded from three diseases (cholera, plague and yellow fever) to all Public Health Emergencies of International Concern (PHEIC). These include events caused by infectious diseases, chemical agents, radioactive materials, natural disasters and contaminated food.

The goal of IDSR is to strengthen the overall national system for the surveillance of diseases particularly at the district level. It aims to ensure a continuous and timely provision and use of information for public health decision making. Therefore, IDSR provides an opportunity for implementation of IHR 2005 through the following ways;

- Infrastructure for surveillance, investigation, confirmation, reporting and response
- Skilled human resources
- Defined implementation process (sensitization, assessment, plan of action, implementation, monitoring and evaluation)
- Generic guides for assessment; Plan of action development; technical guidelines; training materials; tools and Standard Operating Procedures that incorporate IHR 2005 components.

Uganda is implementing IHR (2005) in the context of IDSR. IHR (2005) provides an excellent opportunity, and acts as a potent driver for IDSR implementation. Therefore, IDSR not a separate surveillance system but a sensitive, reliable and flexible system that meets international standards.

IDSR and IHR (2005) share common functions of detection, notification, reporting, verification and confirmation, and timely response as described in figure 3 below;

Figure 3: Implementing IHR through IDSR



A.4.2 Monitoring and evaluating implementation of IHR (2005)

Following the Ebola outbreak experience in West Africa (2014-2016), several IHR (2005) review committees and various expert panels recommended that, in addition to annual monitoring of IHR (2005), there is a need for additional tools to be used to monitor and evaluate IHR (2005) implementation⁶. Consequently, since 2016, WHO, member states and partners have adopted the combined approach of the IHR (2005) monitoring and evaluation process. The four components of the IHR (2005) Monitoring and Evaluation Framework include:

1. State Party Self- Assessment Annual Reporting (SPAR)
2. Joint external evaluation⁷ (JEE)
3. After Action Review (AAR)
4. Simulation Exercises (SIMEX)

The four components highlight a more functional approach to assessing IHR (2005) capacities⁸ and foster transparency and mutual accountability, as illustrated in **Figure 4**.

Figure 4: IHR monitoring and evaluation framework



A.5 One Health and IDSR

One Health is an approach to address a shared health threat at the human-animal-environment interface based on collaboration, communication, and coordination across all relevant sectors and disciplines, with the ultimate goal of achieving optimal health outcomes for both humans and animals. A One Health approach applies to the local, regional, national, and global levels. Humans and animals (domestic and wildlife) share the same eco-system and the risk for spill-over of diseases are increasing with modern trends in globalization, growing population pressures, climate change, economic development, mass urbanization, and increasing demand for animal-sourced foods⁹.

The One Health approach applies toward improving indicator and event-based surveillance. Animal and human health workers as well as other relevant partners should be engaged at various levels to be sources of information sources for IDSR to further facilitate information sharing and joint rapid response activities.

The principle of One Health approach also considers the role of changing environments with regard to infectious and chronic disease risks affecting humans and animals. By utilizing data, expertise and management approaches in the environment, environmental health practitioners can assist in enhancing the understanding of the root causes of diseases, and better account for complexity of environmental factors. A strong functional IDSR thus requires improved communication, coordination and collaboration from all sectors for the implementation of an effective One Health framework.

A.6 IDSR and Disaster Risk Management (DRM)

Disaster is defined as the serious disruption of the functioning of a community or society, causing widespread human, material, economic or environmental losses exceeding the ability of the affected community or society to cope using its own resources. In Uganda, the Office of the Prime Minister is mandated to coordinate all disaster management and response guided by the Disaster Risk Management strategy. The ultimate objective of DRM is reducing risk by lowering vulnerability or improving the capacity to mitigate impact of a hazard. DRM is also in line with National Multi Hazard Preparedness and Response Plan¹⁰.

IDSR is an important tool in the DRM, as it provides early warning information, which is crucial for risk assessment and ultimately, risk reduction. IDSR assists in identification of hazards, assessment, risk communication and monitoring of disaster risks.

A.7 Implementing Cross Border activities in the context of IDSR

The free movement of people and goods across the borders increases the risk for cross-border spread of diseases. A disaster on one side of the border can easily affect the health of a large number of people on both sides of the borders. It is therefore important that cross border communities engage in coordinated and synchronized implementation of interventions so as to control public health threats.

Uganda follows the East African Community frameworks that were developed to strengthen priority cross-border activities for disease control. These include East African Integrated Disease Surveillance Network, Inter Governmental Authority on Development (IGAD) etc. There are current efforts to strengthen the collaboration with non-EAC member states like the Democratic Republic of Congo (DRC).

A.8 Electronic IDSR (eIDSR) as a platform to enhance real time surveillance

eIDSR is the application of electronic tools to the principles of IDSR to facilitate prevention, prediction, detection, reporting and response. The application of e-tools in the health sector has the potential to provide real-time validated data for public health surveillance, investigation and prompt outbreak response. eIDSR provides new opportunities for acceleration of the achievement of the IHR (2005) core capacities. eIDSR is based on;

- Standardized interoperable and interconnected information systems administered within the national context.
- Rapid collection, analysis, reporting and use of disease/events data in real-time for appropriate public health action.

A.9 Core functions of IDSR

All levels of the health system are involved in conducting surveillance activities for detecting and responding to priority diseases, conditions and events (even though the different levels do not perform identical functions). These activities include the following core functions:

Step 1 - Identify and record cases, conditions and events: Use of standard case definitions for health service delivery points (human, animal and environment), simplified case definitions for community level, to identify priority diseases, conditions, and alerts that can signal emerging public health events (refer to section 1).

Step 2 – Report suspected cases or conditions or events to the next level for action: If this is an epidemic prone disease or a potential Public Health Emergency of International Concern (PHEIC), or a disease targeted for elimination or eradication, report immediately to the next level (refer to section 2).

Step 3 – Analyse (person, place and time) data and interpret findings: Surveillance data should be compiled, analysed for trends, compared with data from previous periods and interpreted for public health actions at all levels (refer to section 3).

Step 4 - Investigate and confirm suspected cases, outbreaks or events: Take action to ensure that the cases, outbreaks or events are investigated and confirmed by laboratory (refer to section 4).

Step 5 – Prepare: ensure the availability of public health emergency preparedness and response plans, as well as a mechanism for coordination of response measures. Take steps in advance of occurrence of outbreaks or public health events, to prepare teams that may respond quickly and set aside essential supplies and equipment which will be available for immediate action (refer to section 5).

Step 6 Respond: On confirmation of the outbreak, coordinate and mobilize resources (human, financial etc.) to implement the appropriate public health response (refer to section 6).

Step 7 – Risk communication: Risk communication is the real-time exchange of information, advice and opinions between experts, community leaders, or officials and the people who are at risk. It encourages communicating with all levels and across sectors including communities that provide data, report outbreaks, cases and events (refer to section 7).

Step 8 – Monitor, evaluate, supervise and provide feedback to improve the surveillance system: Assess the effectiveness of the surveillance and response systems, in terms of timeliness, quality of information, preparedness, and overall performance. Provide feedback to reinforce health workers’ efforts to participate in the surveillance system. Take action to correct problems and make improvements (refer to section 8).

A.10 The different levels where surveillance activities are performed

The levels are defined as follows:

Community: Represented by basic community-level services such as VHTs, village leaders (religious, political, traditional), school teachers, extension workers, veterinarians, chemical and drug sellers, and traditional healers¹¹.

Health facility: For surveillance purposes, all institutions (public and private health services providers) with outpatient and/or in-patient facilities are defined as a “health facility.”

Health Sub-district (HSD): is the basic level for delivery of the Uganda National Minimum Health Care Package. It is mandated with planning, organization, budgeting, supervision and management of health services at this and lower-level health centres. It carries an oversight function of health care services within the HSD with a referral facility at the level of a general hospital or HC IV. For surveillance purposes the HSD receives and reviews reports from lower-level health facilities in its catchment area and submits aggregated reports to the district.

District: The District Health Services have the responsibility of planning and directing implementation, supervision and monitoring of integrated service delivery in the context of One Health approach.

Regional Level: It consists of regional referral hospitals (RRH), which provide referral services, support supervision and response to public health threats to the districts within their respective regions.

National level: The national health system consists of the Ministry of Health and other national level institutions including; national referral hospitals, national reference laboratories and national medical stores. It is where policies, guidelines, and standard operating procedures are developed and resources allocated. In relation to surveillance, this level reports on priority diseases and uses the IHR decision instrument in Section 2 to report public health events of international concern to WHO.

In an integrated system, some laboratory services are available at each level described above. A description of laboratory functions by level is in Section 1.0. These guidelines focus on improving surveillance for all service delivery points (public and private).

A.11 How districts can use the IDSR matrix to strengthen surveillance and response

The IDSR matrix of core functions and skills describes the roles of the different levels of the health system in surveillance. The matrix describes a complete system in which all the skills and activities are in place. Each level supports activities at other levels and reinforces the opportunity for successful decision-making at corresponding levels and functions.

Practical uses of the IDSR matrix include:

- Ensuring that all necessary functions and capacities have been identified
- Establishing accountability to provide a basis for assigning functions to appropriate levels and determining what capacities should be present
- Organizing activities and training for human resource development
- Managing, monitoring and evaluating programs
- Strengthening district laboratory capacity, including laboratory information system

- Planning for resources (human, material/supplies and financial).

The IDSR matrix also illustrates several key assumptions that need to occur for the core functions of the surveillance system. If one or more of the elements at each level is not present or is being performed poorly, the risk of failure increases for achieving surveillance and control objectives. A complete system minimizes any delay in taking public health actions.

The IDSR core functions are interdependent and should always be linked. The IDSR matrix in Annex A, defines the surveillance functions and how they are achieved at each level of the health system including the role of WHO in relation to IDSR core functions¹².

Annexes to Introduction SECTION

- Annex A:** IDSR matrix: Core functions and activities by health system levels
- Annex B:** Potential public health emergencies of international concern (PHEIC) that require reporting to WHO under the International Health Regulations (2005).
- Annex D:** Roles and responsibilities of various actors in IDSR.
- Annex C:** Guide for establishing surveillance and response systems at PoE

Annex A: IDSR matrix: Core functions and activities by health system levels

IDSR matrix: Core functions and activities by health system level								
Health System Levels	Identify	Report	Analyse and interpret	Investigate and confirm	Prepare	Respond	Communicate risk	Monitor, Evaluate, Supervise and provide feedback
Community	<p>Use alert triggers to identify priority diseases, events, conditions or other hazards in the community.</p> <p>Support community in case finding and promote use of alert triggers</p>	Report essential information on alert triggers to health facility (HF) and appropriate authorities	<p>Involve local leaders in observing, describing, and interpreting disease patterns, events, and trends in community.</p> <p>Map community catchment area.</p>	<p>Support investigation activities.</p> <p>Follow up on rumours or unusual events reported by community leaders or members.</p> <p>Act as liaisons for feedback to community on follow up actions</p>	<p>Participate in identifying public health risks</p> <p>Participate in training on identifying potential diseases, conditions events, and simulation exercises</p>	<p>Encourage community participation</p> <p>Ensure community seeks care immediately in case of emergency and signs of disease</p> <p>Participate in prevention and response-based activities</p> <p>Follow and model best practices in basic infection prevention and control (IPC) measures</p> <p>Participate in social research and conduct community health education for behavioural and communication change</p>	<p>Identify opinion leaders and influencers in the community to ensure ownership of communication process</p> <p>Build relationship with nearby health facility for communication and coordination</p> <p>Incorporate cross-sectoral communication with animal and environmental sectors to establish a One-Health approach at the community level.</p>	<p>Give feedback to community members about reported cases, events, and prevention activities</p> <p>Verify if public health interventions took place as planned</p> <p>Participate in after-action reviews</p>

<p style="text-align: center;">Health Care Facilities</p>	<p>Use standard case definitions to detect, laboratory confirm and record priority diseases or conditions</p> <p>Collect, and package specimens for laboratory confirmation.</p> <p>Verify alerts from community</p> <p>Ensure appropriate storage of surveillance materials</p>	<p>Report case-based information for priority diseases</p> <p>Report weekly summary data to next level</p>	<p>Prepare and periodically update graphs, tables, and charts to describe time, person and place for reported diseases, events and conditions</p> <p>From the analysis, report immediately any disease, event or condition that:</p> <ul style="list-style-type: none"> ○ Exceeds an action threshold ○ Occurs in locations where it was previously absent ○ Presents unusual trends or patterns 	<p>Take part in investigation of reported outbreaks</p> <p>Collect, package, store and transport specimens for laboratory confirmation during investigation</p>	<p>Participate in district task force</p> <p>Participate in response training and simulation exercises</p> <p>Monitor and maintain emergency response supplies</p>	<p>Participate in the response activities including case management and contact tracing according to standard guidelines</p> <p>Take relevant additional control measures</p> <p>Participate as part of rapid response team</p>	<p>Ensure the communication system has a link to the community leadership structure</p> <p>Communicate with community members about outcome of prevention and response activities and maintain close contact with community</p> <p>Conduct regular meetings with VHTs about surveillance and response activities integrated with other health programs</p>	<p>Assess community participation</p> <p>Conduct a self-assessment on the surveillance and response activities</p> <p>Monitor and evaluate prevention activities and modify them as needed</p> <p>Provide weekly summary data at community level meetings</p> <p>Provide feedback on outcome of investigations to VHTs</p>
<p style="text-align: center;">Districts</p>	<p>Support Health Facilities to verify signals from community</p> <p>Collect surveillance data from health facilities and the community and review the quality</p> <p>Ensure reliable supply of data collection and reporting tools are available at health facilities</p> <p>Ensure health facilities have materials for</p>	<p style="text-align: center;">national level</p>	<p>Aggregate data from health facilities</p> <p>Use and refine denominators for rates</p> <p>Analyse data by time, place and person</p> <p>Assist health facilities to update graphs, tables, and charts to describe reported diseases, conditions and events weekly</p> <p>Integrate epidemiological and laboratory data for better analysis</p>	<p>Arrange and lead investigation of verified cases or outbreaks</p> <p>Maintain an updated line list of suspected cases</p> <p>Assist health facilities in safe collection, packaging, storage and transport of laboratory specimens for confirmatory testing</p> <p>Receive laboratory results from the national reference laboratories and give to health facilities</p> <p>Report finding of initial investigation to national level</p>	<p>Establish and ensure functionality of the DTF</p> <p>Participate in risk mapping and community assessment</p> <p>Organize, establish and ensure functionality of district rapid response teams</p> <p>Participate in and support response training of health workers and VHTs</p>	<p>Together with the national level select and implement appropriate public health response</p> <p>Plan timely community information and education activities</p> <p>Document response activities</p> <p>In case of outbreaks send daily district Sitreps</p>	<p>Establish risk communication systems and structures</p> <p>Ensure engagement of risk communication partners and stakeholders</p> <p>Develop an up-to-date risk communication plan and test during an actual emergency or simulation exercise</p> <p>Develop and build on relevant district stakeholder and organizational networks to improve information flow</p>	<p>Conduct regular supervisory visits of health facilities</p> <p>Provide feedback to the health facilities and community on surveillance activities and priority events</p> <p>Provide regular and periodic feedback to health facilities and communities on routine control and prevention activities and outbreaks</p> <p>Monitor and evaluate program timeliness and completeness of reporting from health facilities to the district</p>

	laboratory sample collection and transportation		Compare data and make conclusions about trends and thresholds				Ensure risk communication is part of the emergency response systems Alert and inform communities about outbreaks or events	Monitor and evaluate timeliness of response to outbreaks Gather information from affected communities on needs and impact of response Conduct district level surveillance review meetings to include key stakeholders Conduct operational research to improve system performance
Regional	<p>Ensure reliable supply of case definition posters, data collection and reporting tools are available at health facilities</p> <p>Ensure laboratory specimen collection and transport material is available</p>	<p>Ensure that Districts know and use standard case definitions for reporting and verifying priority diseases conditions and events</p> <p>Provide instructions and supervision for surveillance and reporting priority diseases conditions and events for healthcare facilities and communities.</p> <p>Receive regular surveillance data from the DSFP and review the quality</p> <p>Report data on time to the MoH</p>	<p>Ensure accuracy of denominators for the region</p> <p>Aggregate data from DSFP reports</p> <p>Analyse data by time, place and person</p> <p>Weekly update graphs, tables, and charts to describe reported diseases, conditions and events</p> <p>Calculate rates and thresholds and compare current data with previous periods to make conclusions</p>	<p>Arrange and support investigation of reported diseases conditions and events</p> <p>Compile District level line lists of suspected cases</p> <p>Report the confirmed outbreak to National level</p> <p>Ensure specimen collection kits for investigation activities are available</p>	<p>Conduct training and simulation exercises for staff</p> <p>Periodically conduct risk assessment for risk factors and potential diseases, conditions and events</p> <p>Ensure functionality of regional public health emergency operations centre (Regional EOC)</p> <p>Organize and support Rapid Response Team</p>	<p>Select and implement appropriate public health response</p> <p>Conduct training for emergency activities</p> <p>Plan timely community information and education activities</p> <p>Disseminate health education and behaviour change messages</p>	<p>Establish risk communication systems and structure</p> <p>Ensure accessible and relevant information, education and communication materials tailored to the needs of the population</p> <p>Ensure the use of evaluation to inform risk communication planning</p> <p>Alert nearby areas and regions and districts about the outbreak including cross border areas</p>	<p>Monitor and evaluate program targets and indicators for measuring quality of the surveillance system for Districts and health care facilities</p> <p>Give feedback to districts on surveillance and data quality findings</p> <p>Give regular, periodic feedback about routine control and prevention activities and outbreaks to districts</p> <p>Provide regular assessment of staffing needs for IDSR implementation and inform the next level areas</p> <p>Conduct regular supervisory visits.</p>

								Monitor and evaluate timeliness of response to outbreaks and events
National	<p>Define and update national policy and guidelines and ensure compliance</p> <p>Set policies and procedures for the reference laboratory networks including quality assurance systems</p> <p>Use reference laboratories for confirming and specialized testing if necessary</p> <p>Collect and transport specimens for additional analysis to external reference laboratories as necessary</p>	<p>Train, inform and support lower levels on surveillance and response</p> <p>Aggregate district reports of immediately reportable diseases and events</p> <p>Report other priority diseases, conditions and events on time to relevant programs and stakeholders</p> <p>Include all relevant laboratories in the reporting network</p> <p>Use IHR Decision Instrument (Annex 2A) to determine risks for priority diseases, conditions and events</p> <p>Inform WHO in line with IHR (2005)</p>	<p>Set policies and procedures for analysing and interpreting data</p> <p>Define denominators and ensure accuracy</p> <p>Analyse and interpret data from a national perspective for action</p> <p>Calculate national rates and compare current data with previous periods</p> <p>Describe risk factors for priority diseases, conditions and events</p> <p>Regularly convene a meeting of the surveillance pillar that feeds into the NTF and relevant TWGs at the MINISTRY OF HEALTH to review the analysed and interpreted data before wider dissemination</p> <p>Carry out special analyses to forecast magnitude and trends of priority events</p>	<p>Ensure guidelines and standard operating procedures for outbreak investigations are available at all levels</p> <p>Deploy National Rapid Response team for outbreak investigation and response</p> <p>Coordinate and collaborate with international authorities as needed during investigations</p> <p>Coordinate with district health teams as needed during outbreak investigation and response. Alert and support laboratory participation Provide logistic support for the field investigations</p> <p>Share information with regional and international networks about confirmed outbreak</p> <p>Process specimens from investigation and send timely results</p>	<p>Set policies, procedures, and training for each level</p> <p>Undertake risk mapping Prepare and distribute emergency preparedness and response plans</p> <p>Develop National risk communication plan including messages for community education</p> <p>Organize and support National Public Health Emergency Rapid Response Teams (RRTs)</p> <p>Develop and organize simulation exercises (including cross border)</p> <p>Develop and manage contingency plans</p> <p>Establish and ensure functionality of national public health emergency operations centre (PHEOC)</p> <p>Monitor operational readiness using readiness checklists as reference tools</p>	<p>Set policies and procedures for responding to outbreaks of priority diseases, conditions and events</p> <p>Develop and support response activities that promote the psychological wellbeing of patients, HCWs, affected families and communities</p> <p>Coordinate response with district health teams</p> <p>Support epidemic response and preparedness activities including deployment of RRTs Adapt and follow guidelines for all response pillars</p>	<p>Establish risk communication systems and structure</p> <p>Ensure engagement of risk communication partners and stakeholders</p> <p>Develop an up-to-date risk communication plan and test during an actual emergency or simulation exercise</p> <p>Develop policies, SOPs and guidelines covering clearance and release of information during a public health emergency</p> <p>Regularly update information sources accessible to the media and the public for information dissemination</p> <p>Ensure accessible and relevant information, education and communication materials tailored to the needs of the population</p> <p>Release information in a transparent and timely manner</p>	<p>Monitor IDSR and laboratory core indicators regularly</p> <p>Give districts regular feedback about routine and prevention control activities</p> <p>Share epidemiological data and reports including outbreak response information with neighbouring countries</p> <p>Develop and periodically distribute national bulletin for epidemiology and public health</p> <p>Conduct IDSR regular review meetings</p> <p>Conduct regular supervisory visits</p> <p>Ensure involvement of partners in surveillance and response activities, After Action reviews (AAR) including lessons learned from outbreak investigation and response</p>

							<p>Ensure the use of evaluation to inform risk communication planning</p> <p>Ensure trained personnel for risk communication are available across all levels</p>	<p>Support annual monitoring of IHR core capacities</p> <p>Update and revise work plan and budget line for implementation of IDSR activities</p> <p>Document and provide timely feedback</p>
<p>WHO country office, WHO AFRO regional office</p>	<p>Develop and disseminate generic guidelines for surveillance</p> <p>Encourage documentation & sharing of IDSR best practices</p> <p>Provide technical support to national level for detection and confirmation of priority diseases, conditions and events</p> <p>Coordinate international reference laboratory network support including centres of excellence</p>	<p>Collect and compile reports of outbreaks and international notifiable diseases and events</p> <p>Produce annual regional profiles or situation reports by priority diseases, conditions and events</p>	<p>Provide guidance for better data analysis and development of bulletins/information products</p> <p>Develop and disseminate best practices for analysis of data for each priority diseases, conditions and events</p> <p>Provide technical support to national level to improve capacity for analysis</p>	<p>Disseminate updated guides and tools on specific diseases</p> <p>Provide support to countries to conduct assessments or investigations of priority diseases and events upon request</p> <p>Provide support for the coordination of laboratory participation during investigations</p> <p>Provide support for risk assessment using IHR decision instrument</p>	<p>Mobilize resources for training, logistics and supervision</p> <p>Set up network of experts for IDSR training and implementation</p> <p>Develop, update or revise guidelines for disaster or risk management</p> <p>Maintain and update a roster of experts for rapid response teams</p> <p>Develop, update/revise training for IDSR and IHR implementation</p> <p>Centre and support the Incident Management System.</p>	<p>Coordinate and support response activities (Strategic Health Operations Centre, technical experts, SOPs, guidelines, etc.)</p> <p>Mobilize resources and facilitate partnerships</p> <p>Support activation of the Incident Management Systems (IMS).</p>	<p>Disseminate risk communication guidelines, manuals, training modules and other forms of guidance related to risk communication</p> <p>Assist in coordination of partners and share information with partners and stakeholders</p>	<p>Provide feedback to aid collaboration with national and regional levels</p> <p>Post on the WHO website and disseminate relevant links to all individuals and partners</p> <p>Use reports from Regions/Provinces to assess IDSR systems and advocate for improvements</p> <p>Develop, update or revise guidelines and tools for IDSR/IHR monitoring and evaluation</p> <p>Develop and disseminate regional surveillance bulletin</p> <p>Promote, guide and support operational research</p> <p>Ensure functionality of the IDSR Task Force</p>

								Regularly monitor the key performance indicators for IDSR and IHR and performance standard according to revised ERF
Point of Entry	<p>Use case definitions or alert triggers to identify suspected passengers or events related to travel and transport</p> <p>Support community in case finding</p>	<p>Report immediately to the IHR National Focal Point and at the same time district/national level</p> <p>Report monthly summaries to the National Surveillance department/unit and at the same time share with the respective district and region</p>	<p>Prepare and periodically update database of cases/events detected</p>	<p>Participate in assessing potentially exposed/infected travellers in a holding centre</p> <p>Support investigation of suspected passengers and contacts.</p> <p>Follow up on rumours or unusual events reported by community leaders or members.</p>	<p>Participate in emergency preparedness and response committees within PoE</p> <p>Participate in preparation of PoE contingency plan</p> <p>Participate in training and simulation exercises</p> <p>Participate in cross border meeting</p>	<p>Assist in referring the ill passenger to the appropriate medical facility</p> <p>Liaise with the emergency and preparedness committee in response activities</p> <p>Assist in case and contact finding</p> <p>Follow and model best practices in basic infection prevention and control (IPC) measures</p>	<p>Build relationships, communicate and coordinate for information sharing with various stakeholders (IHR FP, Civil aviation/port authorities, ICAO,</p> <p>Build communication with ship and ship industry operators, regarding authorization and the Maritime Health Declaration, Build relationship with Surveillance officers across all levels and the IHRNFP</p>	<p>Monitor and evaluate prevention activities and modify them as needed</p> <p>Conduct periodic simulation exercises</p>

Annex B: Events of potential international health concern requiring reporting to WHO under the International Health Regulations (2005)

Surveillance on specific risks

The control or containment of known risks to public health is one of the most powerful ways to improve international public health security. The threat posed by known risks constitutes the vast majority of events with a potential to cause public health emergencies which fall within the scope of the International Health Regulations (2005). There are already existing control programs which address infectious diseases as well as food and environmental safety and contribute significantly to WHO global alert and response system.

The environmental hazards include but are not limited to:

- Chemical
- Food
- Ionizing radiation
- Non-ionizing radiation

Technical information on these risks can be obtained from various sources.

Areas of interest for the purpose of capacity building of integrated surveillance should include partnerships to address the following:

1. Environmental health emergencies like:
 - Natural events
 - Technological Incidents
 - Complex emergencies
 - Deliberate events
2. Chemical risks in food:
 - Acute and Chronic dietary exposure (environmental or intentional pollution)
3. Zoonoses:
 - Emerging zoonoses
 - Neglected zoonoses

Topics for surveillance on specific risks ⁸

1. **Infectious disease hazards**

Known, new and unknown infectious disease threats.

2. **Zoonotic disease events**

One Health approach is critical to link human health to animal health at the human-animal-environment interface. Detecting diseases that affect animals is important as they may pose a risk to human health and could save lives⁹.

3. **Food safety events**

Food and waterborne, diarrhoeal diseases are among the leading cause of illness and death in Uganda. The identification of the source of an outbreak and its containment are critical to the IHR.

4. **Chemical events**¹³

The detection and control of chemical, toxic and environmentally-induced events are critical for the implementation of the IHR (2005).

5. **Radiological and nuclear events**

Radiation injuries can result from various sources such as radiotherapy, nuclear medicines and occupational exposure.

6. **Natural and man-made disasters**

Annex C: Guide for Establishing Surveillance and Response systems at Points of Entry (PoE)

A. Purpose

IHR calls for strengthening of national capacity for surveillance and control, including sites such as points of entry (PoE) (i.e., ports, airports and ground crossings); prevention, alert and response to international public health emergencies; global partnerships and international collaboration. In addition to the IHR, it is essential that border health activities be sustainable and align with other surveillance activities under IDSR.

A system to detect, report, and appropriately respond to ill travellers is appropriate. The long-term strategy is to work towards full compliance with IHR at official POEs, while ensuring that the PoE have also contingency plans. All designated PoE must have routine capacities established at PoE for surveillance and response as well as for Effective Public Health Response at Points of Entry.

B. Key Partners:

Ministry of Health, Ministry of Internal affairs, Ministry of Works and Transport, Local Government, Uganda Civil Aviation Authority (CAA), Immigration, Uganda Revenue Authority, Ministry of information, communication technology and National guidance and partners.

C. Key Areas for Surveillance and Response at Points of Entry:

1. Routine measures should be in place at points of entry for the detection of ill travellers; reporting to health authorities; rapid public health assessment; and access to healthcare for severely ill travellers or those whose symptoms suggest a risk to public health, including safe transportation from the point of entry to a healthcare facility.
2. Detection of ill travellers should include, at a minimum, the following:
 - Reporting of ill travellers or deaths on board international aircraft, ships or ground crossings points who arrive at PoE stipulated by various guidelines.
 - Port Health officers and /or immigration officers who are present at selected points of entry should be trained to recognize ill travellers they encounter during their routine assessments as well as to conduct an initial assessment of whether the illness poses a potential public health risk.
3. Initiation of initial response to an ill traveller if detected at a point of entry should include, at a minimum, the following:
 - The ability to rapidly isolate the ill traveller from others to avoid potential spread of disease.
 - standby Health Teams should be available, either in person or remotely by telephone, to conduct a rapid assessment of ill travellers detected at points of entry to determine if a communicable disease of public health concern is suspected.
 - A healthcare facility located close to the point of entry should be designated to provide medical care as needed to severely ill travellers or those with a suspected

communicable disease of public health concern. The designated facility should have adequate infection prevention and control capacity to prevent spread of disease to staff or other patients and diagnostic capacity.

- Ambulance service or other safe transportation should be available to facilitate transport of ill travellers from the point of entry to the designated healthcare facility.
4. As needed, during a declared public health emergency affecting international travellers or with the potential for international spread of disease, there should also be capacity to implement at short notice, traveller screening or other border health measures as recommended by the WHO.

Role of Competent Authorities:

Competent authorities at designated Point of Entry shall:

- Report immediately to the next higher level all events and diseases with epidemic potential detected at Points of Entry, Notification should also be done at the same time to the National level, with copy of the report for the National IHR Focal Point., include yellow fever vaccination requirement for all travellers.
- If a traveller is a suspect case, immediately fill the passenger locator form/alert notification form. Ensure that the traveller/suspect case is kept separate from others including family members. Ensure that the suspected case is transferred to the nearest holding room
- Be responsible to ensure that if a suspected traveller is recognized and may not be symptomatic at the time of travel, to take appropriate details and transfer that information to the nearby health facility for close monitoring. The health facility will liaise with the community focal point for close follow-up
- Be responsible for monitoring baggage, cargo, containers, conveyances, goods, postal parcels and human remains departing and arriving from affected areas, so that they are maintained in such a condition that they are free of sources of infection or contamination, including vectors and reservoirs;
- Ensure, as far as practicable, that facilities used by travellers at Points of Entry are maintained in a sanitary condition and are kept free of sources of infection or contamination, including vectors and reservoirs;
- Be responsible for the supervision of any de-ratting, disinfection or decontamination of baggage, cargo, containers, conveyances, goods, postal parcels and human remains or sanitary measures for persons,
- Advise conveyance operators, as far in advance as possible, of their intent to apply control measures to a conveyance, and shall provide, where available, written information concerning the methods to be employed.
- Report suspected cases to the health facility as soon as possible to organize transport.
- Ensure that all competed forms are stored in a proper way. Create a database for events, if a computer is available. Keep a record for register for all events

During an emergency or outbreak response, cross-border coordination should include:

- Partners meeting as soon as the epidemic or event is recognized
- Assessing the need for, and request support from, the National Task Force when necessary
- Meeting regularly to assess the status of the outbreak or epidemic as indicated
- Regularly sharing surveillance data addressing case counts (including zero cases if applicable) and status of contact tracing (if indicated)
- Sharing information on travel history of cases and identified contacts to facilitate coordinated response on both sides of the border
- Regularly reviewing the epidemic response and taking action to improve epidemic control actions as indicated
- Document and communicate epidemic response actions

Annex D: Roles and Responsibilities of various actors in IDSR

Roles and Responsibilities of a VHT in community-based surveillance

- Use lay simplified case definitions to identify priority diseases, events, conditions or other hazards in the community.
- Conduct household visits on a regular basis.
- Meet with key informants on a regular basis.
- Attend local ceremonies and events and follow up on anything unusual
- Record priority diseases, conditions, or unusual health events in the reporting forms and tools (tally sheets) and report immediately within 24 hours
- Participate in verbal autopsies by performing interview questions prepared by the supervisor at the health facility
- Involve local leaders in describing disease events and trends in the community.
- Sensitize of the community to report and seek care for priority diseases, conditions, and unusual events.
- Support health workers during case or outbreak investigation and contact tracing.
- Mobilize local authorities and community members to support response activities.
- Participate in risk mapping of potential hazards and in training including simulation exercises.
- Participate in containment and response activities in coordination with the district level.
- Provide trusted health education in a crisis.
- Give feedback to community members about reported cases, events, and prevention activities.
- Participate in meetings organized by sub-district, district, and higher-level authorities

Roles and Responsibilities of health facility staff and Point of Entry

- Identify cases of priority diseases using the standard case definitions
- Record case-based information and report for immediately notifiable diseases, conditions and events to the next level
- Liaise with the district on how to conduct immediate laboratory investigation of suspected cases
- Case management/ referral
- Prepare for and participate in outbreak investigation, response and case management
- Report summary and case based (weekly report) data timely to the next level
- Conduct simple data analysis (graphs, table, charts) at point of collection
- Communicate diagnosis of priority diseases to district/ community
- Identify resources (human, financial, commodities, phone cards) and timeline for deployment.

- Disseminate reporting tools to community focal persons/VHTs such case-based reporting forms.

Roles and responsibilities of District Surveillance Focal Person

- Investigate and verify possible outbreaks, collect diagnostic samples, advise on prevention protocols.
- Prepare and analyse weekly surveillance reports and submit to higher authorities in a timely manner
- Ensure that health facilities are maintaining surveillance reports and registers.
- Maintain a list of all at the health facilities
- Establish and maintain data base of all trained and registered health care workers who can serve as surveillance focal persons at the health facilities as well as other CBS Focal Persons.
- Ensure there is an adequate supply of data collection and reporting tools available at the health facilities
- Ensure that the IDSR standard case definitions for all the priority diseases are understood and used by health care workers at the health facility.
- Monitor the performance indicators (such as timeliness and completeness) of the IDSR as stipulated in the IDSR guideline.
- Periodically update graphs, tables, charts, etc. and compare current data with previous in months and quarters or even weeks or years (important for seasonal events) and make recommendations for response.
- Provide in person feedback to Health facility/point of entry staff on a weekly or monthly basis regarding implementation of the IDSR.
- Closely follow up with the health facilities to ensure they report data on time.
- Conduct regular supportive supervision visit to health facilities and communities and build their capacity to analyse and interpret their data to guide decisions.
- Sign and date the inpatient and outpatient record books, registries or phone entry to document your visit and also write your recommendations for improvement.
- Support health facility to verify alerts from the community.
- Arrange and lead investigations of verified cases or outbreaks.
- Maintain an updated line list of suspected cases.
- Assist the health facility in safe collection, packaging, storage and transport of laboratory specimens for confirmatory testing
- Receive laboratory results from National/regional level and give to health facility.
- Conduct/coordinate on the job trainings for the surveillance sites with new staff
- Maintain a rumour logbook to record events for the health facilities.

- Ensure district-district coordination and collaboration on surveillance issues and provide notification of any outbreaks in the neighbouring district.
- Cross-border collaboration if needed under guidance of Ministry of Health.
- Participate in outbreak investigations and ensure there is an updated line list

Roles and Responsibilities of the District Health Management Team

- Update the district leadership (RDC, CAO, LC5 etc) on overall surveillance activities and plans.
- Document the value added of IDSR and advocate to health management team to support IDSR activities.
- Support the DSFP and DLFP at the district level to implement planned activities.
- Ensure surveillance activities are included in the District Health Planning of overall activities.
- Liaise with the District officials to mobilize funds (at district level) for surveillance activities.
- Ensure timely release of funds for surveillance activities.
- Monitor IDSR performance outputs of data analysis and monitoring tool.
- Participate in risk mapping of the district and also in development of plan of action based on the findings.
- During outbreaks, ensure functionality of the District Task Force and the rapid response teams (see section 5 for details).
- Report finding of initial investigation to the National level.
- Participate in risk mapping and community assessment.
- Design, train, and set up implementation of community health education programs.
- Participate in and support response training for Health Facility and community.
- Document response activities.
- In case of outbreaks send daily district Sitreps.

Roles and Responsibilities for Political Leaders at district level:

- Encourage communities to report clusters of illness/death to a nearby health facility
- Enact bylaws/ordinances to enhance principles of hygiene and sanitation
- Take an active role in sensitizing community members on how to promote, maintain and sustain good health
- Secure funds for active search activities
- Advocate for community-based planning, implementation and evaluation of health programs
- Take an active role in the District Task Force

- Ensure that District Task Force sub committees are established (e.g. Surveillance and lab, risk communication, Case Management, Logistics); at the same time ensuring that they are facilitated to perform the response activities.
- Mobilize and allocate resources from various sources to respond to disasters, including epidemics.
- Conduct advocacy for disease surveillance and response in different district forums

Roles and Responsibilities of Regional Referral Hospital

- The community health department in the Regional Referral Hospital will provide supportive supervision, coordination and capacity building of districts in its catchment area in disease surveillance and response to ensure surveillance indicators are achieved.
- Planning: Prepare a quarterly plan with clearly stated targets to be met and share it with the respective DHOs, UNEPI and WHO.
- Monitoring: Undertake a quarterly review of the surveillance and immunization performance within the districts of supervision
- Capacity building: Sensitize all health workers in early case detection and investigation for MoH priority diseases with special focus in hospitals and health center IVs for both public and private facilities
- Technical Support Supervision: Supervise immunization service delivery and IDSR at the district and lower levels and ensure that it conforms to the revitalization plan and address any specific problems hampering surveillance and immunization at the different levels.
- Outbreaks: Participate in outbreak investigations and response at the district level.
- Feedback: Provide quarterly regular feedback to the districts
- Participate in any other assignments related to IDSR and routine immunization such as review meetings, follow up of cases.
- Participate in operational research and ensure the districts have attained capacity to use the data in analyzing health service delivery

Roles and Responsibilities of Ministry of Health/National level

- Activate the National Task Force (NTF) and Public Health Emergency Operation Centre (PHEOC) for coordination of preparedness and response activities including Incident Management System, plans and procedures. Refer to section 5 for details.
- Collaborate with relevant sectors using One Health approach.
- Designate a spokesperson and outline communication plan including engagement of media for sharing information before, during and after a public health emergency.
- Set standards, policies and guidelines for IDSR and update the Epidemic Preparedness and Response plans based on simulations and After-Action reviews.
- Assess available capacity at national level and rectify accordingly while ensuring inclusion of surge capacity in the EPR plan.

- Identify domestic resources and mobilize and coordinate external support for implementation of IDSR.
- Conduct overall supervision, monitoring and evaluation of IDSR activities.
- Produce and disseminate epidemiological bulletins.
- Monitor implementation of inter country, regional and international agreements/protocols.
- Support investigation of suspected epidemics detected through surveillance
- National level data management and analytic support.
- Liaise with OPM, WHO, and other stakeholders for an integrated response to outbreaks and disasters.

Roles and Responsibilities of Health Development Partners

- Contribute to setting standards and developing guidelines
- Provide technical assistance (including surge capacity), expertise, and other material support in strengthen country's disease surveillance, and laboratory and health information systems
- Support Ministry of Health and Local Government in mobilizing resources for surveillance and response activities
- Support in monitoring and evaluation of IDSR
- Support capacity building – training, equipment etc.

SECTION 1:

**IDENTIFY AND RECORD CASES OF
PRIORITY DISEASES, CONDITIONS AND
EVENTS**

SECTION 1: IDENTIFY AND RECORD CASES OF PRIORITY DISEASES, CONDITIONS AND EVENTS

1.0 Identify and record cases of priority diseases, conditions and events

The IDSR strategy incorporates both Indicator-Based Surveillance (IBS) and Event-Based Surveillance (EBS) approaches to detect priority diseases, conditions and events (DCEs) early. This section describes how to detect priority DCEs using standard case definitions. The section also gives guidance on establishing EBS and using this approach for alerts detection, triaging and verification to detect public health events. In addition, this section gives a description of procedures which need to be followed when planning for improvements of surveillance and response activities and emphasizes the role of the laboratory in surveillance and response.

1.1 Priority diseases, conditions and events included in the IDSR

The priority diseases for IDSR are selected based on the following criteria:

- Notification requirement under IHR (2005): (for example, smallpox, poliomyelitis due to wild-type poliovirus, human influenza caused by a new subtype, SARS, COVID-19);
- Diseases with highly epidemic potential to cause serious public health impact due to their ability to spread rapidly internationally (for example, cholera, plague, yellow fever, viral haemorrhagic fever);
- Principal causes of morbidity and mortality due to communicable diseases and conditions in Uganda (for example, malaria, pneumonia, diarrheal diseases, tuberculosis, HIV/AIDS, maternal deaths and injuries)
- Priority non-communicable diseases or conditions (hypertension, diabetes mellitus, cancers, mental illnesses and malnutrition)
- Effective control and prevention interventions are available for addressing the public health problems they pose (for example onchocerciasis, trypanosomiasis);
- Diseases targeted for elimination or eradication by WHO for example, vaccine preventable diseases, leprosy, and guinea worm.

These IDSR priority diseases, conditions and events require special reporting requirements which are different from other routine reporting mechanisms for other diseases. Section 2 (Reporting priority diseases, conditions and events) will describe more on how to report priority diseases and conditions. Table 1 below shows the priority list of diseases and conditions under IDSR.

Table 1: Priority diseases, conditions and events for Integrated Disease Surveillance and Response

Epidemic prone diseases, conditions or events which require immediate reporting	Diseases targeted for eradication or elimination	Other major diseases, events or conditions of public health importance
<ol style="list-style-type: none"> 1. Acute haemorrhagic fever syndrome* 2. Acute Flaccid Paralysis 3. Anthrax 4. Bacterial Meningitis 5. Chikungunya 6. Cholera 7. COVID-19 8. Dengue fever 9. Diarrhoea with blood (<i>Shigella</i>) 10. Malaria 11. Measles 12. Plague 13. SARI** 14. Typhoid fever 15. Yellow fever 16. Zika virus disease 17. Maternal deaths 18. Perinatal deaths 19. Acute viral hepatitis 20. Human Rabies (Animal Bites) <p>Also: A cluster of deaths in the community (animal or human deaths)</p> <p>A cluster of unwell people or animals with similar symptoms</p> <p>*Ebola, Marburg, Rift Valley, Lassa, Crimean Congo, West Nile Fever, Dengue</p>	<ol style="list-style-type: none"> 1. Buruli ulcer 2. Bacterial Meningitis 3. Dracunculiasis (Guinea Worm Disease) 4. Leprosy 5. Lymphatic filariasis 6. Malaria 7. Measles 8. Neonatal tetanus 9. Poliomyelitis*** 10. Onchocerciasis <p>Trachoma</p> <p>*** Disease specified by IHR (2005) for immediate notification</p>	<ol style="list-style-type: none"> 1. Acute and chronic viral hepatitis 2. Adverse events following immunization (AEFI) 3. Brucellosis 4. Diabetes mellitus (new cases) 5. Diarrhoea with dehydration less than 5 years of age 6. Epilepsy 7. Human Rabies 8. HIV/AIDS (new cases) 9. Hypertension (new cases) 10. Injuries (Road traffic Accidents) 11. Leishmaniasis 12. Malaria 13. Malnutrition in children under 5 years of age 14. Maternal deaths 15. Non-neonatal tetanus 16. Perinatal deaths 17. Severe pneumonia in less than 5 years of age 18. STIs 19. Schistosomiasis 20. Soil transmitted helminths 21. Trachoma 22. Human African Trypanosomiasis 23. Tuberculosis
<p>A cluster of unwell people or animals with similar symptoms</p> <p>*Ebola, Marburg, Rift Valley, Lassa, Crimean Congo, West Nile Fever, Dengue</p>	<p style="text-align: center;">Diseases or events of international concern</p> <p>COVID-19 Acute Viral Haemorrhagic Fever Human influenza due to a new subtype*** SARS*** Zika virus disease Yellow fever</p> <p>Any public health event of international or national concern (infectious, zoonotic, food borne, chemical, radio nuclear, or due to unknown condition.</p> <p>***Disease specified by IHR (2005) for immediate notification</p>	

Note: It is important to remember that countries may select from this list according to national priorities and the epidemiologic situation. Disease-specific summary pages are available in Section 11.0 of this guide.

1.2 Detection of priority diseases, conditions and events

Health workers conduct surveillance activities at all levels of the health system (public and private) so they can detect public health problems of concern in their communities. Community members also play an important role in surveillance by facilitating early detection and action to priority DCEs. Community members should be oriented in surveillance so that they actively participate in detecting, reporting, responding to and monitoring events related to human, animal and environmental health in their community.

Various public health events and/or risks may also present at Points of Entry (PoE); and these health events can be recognized before, during or after travel, often when travellers have already left the PoE. Staff at such PoEs must be vigilant in ensuring that these events are identified, and reported on time to facilitate response.

Surveillance priorities may be communicable or non-communicable DCEs. These may include events associated with animal health which might have direct consequences to human health. An essential function of a public health surveillance system is to be vigilant in its capacity to detect not only known public health threats with established case definitions and formal reporting channels but also events or hazards that are not specifically included in the formal reporting system. These may be events such as clusters of disease patterns or rumours of unexplained deaths.

These diseases, conditions, and events may come to the attention of the health system in several ways.

For example:

- A person falls ill and seeks treatment from a health facility.
- High rate of hospital admission for the same diseases or symptoms.
- Community members report unusual events or occurrences at local levels such as a cluster of deaths or unusual disease pattern to the health facility, or perhaps a school might report unusual absenteeism due to similar signs and symptoms such as an influenza-like illness (ILI).
- Health workers conduct routine record reviews to find cases for a specific disease and observe that cases of another priority disease have not been reported. For example, an officer who normally reviews the clinic register for cases of Acute Flaccid Paralysis (AFP) also finds a case of cholera has recently been recorded in the clinic register.
- Health workers conduct routine record reviews of the laboratory register and observe recorded confirmed cases of priority diseases such as yellow fever or cholera.
- Radio, television, newspapers, or social media report a rumour of rare or unexplained events in the area with potential exposure for humans.

- Vital events records show an increase in maternal deaths.
- Unusual reports of illness among health care workers.
- Analysis of the routine reports from health facilities.
- An unusual death or number of deaths among animals (such as livestock, birds, rodent species, wild animals, fish) or an unusually high number of sick animals with the same signs.
- Environmental officers observed during assessment of water bodies, contamination which might be due to chemicals like lead or other chemicals related to mining or agricultural activities, which might be an early trigger for public health interventions.

1.3 Use of standard case definitions to detect priority diseases, conditions or events

A standard case definition is an agreed-upon set of criteria used to decide if a person has a particular suspected disease or condition. The definition specifies clinical criteria, laboratory diagnosis and specifications on time, place and person.

Why do we need case definitions?

- To help decide if a person has a suspected disease or condition or event, or to exclude other potential disease diagnoses.
- To ensure that every case is diagnosed in the same way, regardless of where or when it occurred, or who identified it.
- To initiate quick action for reporting and investigation if the laboratory diagnosis takes longer to confirm.
- To compare the number of cases of the diseases, conditions or events that occurred in one time or place with the number occurring in another time or place.
- To implement IHR

Using standard case definitions is also important in implementing the IHR (2005). At all levels, including community, health workers must be aware of case definitions of diseases, conditions or events that may afflict not only the local community but also have the potential for spread across geographic boundaries.

In describing Standard Case Definitions for health facility level, a **three-tiered classification system is normally used – suspected, probable, confirmed:** (*Refer to Annex1A*)

1. **Suspected case:** indicative clinical picture i.e., clinical presentation. In outbreaks a more sensitive suspected case definition should be used to capture as many cases as possible.
2. **Probable case:** clear clinical picture (meets the suspected case definition) and/or linked epidemiologically to a confirmed case but a laboratory sample cannot be taken because the case is lost or dead or a sample has been taken but not available for laboratory testing or was not viable for sufficient laboratory testing or returns inconclusive results.
3. **Confirmed case:** a suspected or probable case verified by laboratory diagnosis.

NOTE: *The classification might vary according to the epidemiology of the individual diseases.*

At the community level, case definitions are usually simplified, and are used to facilitate rapid detection of priority diseases, events and conditions or other hazards in the community. Case definitions at this level use key signs and symptoms to help the community to recognize when they should refer a person with these signs and symptoms for treatment and notify the health facility. Examples of how key signs and symptoms of community case definitions are described are in Annex 1B.

NOTE: *All cases (suspected, probable and confirmed) should always be recorded in the facility Outpatient (OPD) or Inpatient (IPD) register, and reported using the HMIS forms (disease specific case-based forms, HMIS 033a, HMIS 033b, HMIS 105, and HMIS 108).*

1.3.1 How to make case definitions available in health facilities and communities

- Distribute standard case definitions as well as registers for recording to health facilities.
- Health facility personnel at all levels including Point of Entries should know and have available standard case definitions.
- Prepare and distribute case definitions of priority diseases, conditions and some defined events to all health facilities e.g. in the form of a poster or as a small pocket-sized booklet.
- Ensure that health facility personnel know the process for reporting including reporting levels.
- Ensure also, the health facilities record rumours in the rumors/alerts logbook.
- Disseminate community case definitions, and emphasize on the use of key signs and symptoms:
 - Provide information to community health workers, traditional healers, , community leaders and community volunteers on how to recognize and report priority diseases, conditions or events to the health facility using posters, newsletters and announcements during meetings.
 - Also provide feedback methods and how timely information to the community will be done, as it will encourage community members to participate in surveillance and response activities.
 - The case definitions for community level should be simpler than those used in health facilities.

1.4 One Health approach in identification of events

One Health aims at applying a holistic approach in jointly detecting events and conducting risk assessment in responding to possible public health events occurring at the human-animal-environment interface. Detection of events under the One Health approach thus requires all levels from community, district, region and national to strengthen collaboration, coordination, and communication across sectors and jointly share responsibility of detecting events which might have impact on the health of humans, and their shared environment.

Events can also be identified through the one health approach. For example, detection of a rabid animal or reports of animal illness from veterinary personnel can initiate investigations of human

cases of disease, reports of human diseases can also be traced through exposure to chemical hazards within the environment.

Detection of events at PoE may also require a One Health approach.

1.5 Indicator-based Surveillance (IBS) and Event-Based Surveillance (EBS)

The IDSR strategy uses both Indicator-based Surveillance (IBS) and Event-Based Surveillance (EBS) approaches to detect DCEs. Both EBS and IBS should be strengthened at all levels of the health system. The IBS involves the use of standard case definitions to identify diseases, conditions and events, whilst EBS uses rumours or signals, alerts detection, triaging and verification to detect events. In contrast to case definitions that are narrow and disease-specific, EBS requires the detection and immediate reporting of rumours or signals, which are broad and indicate the possibility of a serious public health event. Verified rumours or signals become public health events. When a risk assessment for an event has been conducted it is then reported as an Alert. Both IBS and EBS should use existing resources and infrastructure set aside for routine IDSR strategy.

1.5.1 Indicator-based surveillance (IBS)

IBS is the regular, systematic, identification, collection, monitoring, analysis and interpretation of structured data, such as indicators produced by a number of well-identified, mostly health-based formal sources.

Methods of indicator-based surveillance include

Facility-based surveillance: All reporting units (e.g., health facilities) are required to report on a weekly, monthly, quarterly or annual basis to the next level based on the categories of the diseases, conditions and events. Additionally, they are also required to report immediately, any epidemic prone disease to the next level.

Case-based surveillance: involves the ongoing and rapid identification of identifiable cases for purpose of case follow-up. This method of surveillance is used for diseases that are targeted for elimination or eradication or during confirmed outbreaks. In these scenarios, every individual case identified is reported immediately to the next level using a case-based form.

Sentinel surveillance: This method of surveillance is done for specific conditions in a specific cohort such as in a geographical area or population subgroup to estimate trends in a larger population. A given number of health facilities or reporting sites are usually designated as sentinel sites for monitoring rate of occurrence of priority events such as pandemic or epidemic events and other Public Health Emergencies (PHEs). They act as early warning and reporting sites. Sentinel sites are usually designated because they are representative of an area or are in an area of likely risk for a disease or condition of concern. Examples of diseases/ conditions under sentinel

surveillance in Uganda include: Influenza, Malaria, Plague, Cancers, Rotavirus, Paediatric Bacterial Meningitis (PBM) and environmental sewage sampling for polio etc.

Syndromic surveillance: an active or passive system that uses Standard Case Definitions based entirely on clinical features without any laboratory diagnosis. Examples include; collecting the number of cases of Acute Flaccid Paralysis (AFP) as an alert for polio, acute watery diarrhoea among people aged two years and older as an alert for cholera, "febrile rash illness" as an alert for measles, acute haemorrhagic fever (AHF) as an alert for viral haemorrhagic diseases, severe acute respiratory infection (SARI) or influenza-like illness (ILI) as alerts for influenza. Because of the lack of specificity of this system, reports require more investigation from higher levels.

Laboratory-based surveillance: Laboratories can be the source of an initial alert for a specific outbreak or public health event that necessitates further epidemiological investigations. For example, the laboratory may be the first to detect the emergence of resistant strains in the community such as multi-drug resistant tuberculosis. Other examples of laboratory-based surveillance include virological surveillance and bacteriological surveillance. Uganda is part of the WHO Global Antimicrobial Resistance Surveillance System (GLASS), which is a surveillance system for clinical specimens and is focusing initially on priority human bacterial infections namely; *E. coli*, *K. pneumoniae*, *S. aureus*, *S. pneumoniae*, *Salmonella* spp., *Shigella* spp and *Neisseria gonorrhoea*. This type of laboratory surveillance provides information about antimicrobial resistance incidence, prevalence, and trends.

Disease-specific surveillance: This involves surveillance activities aimed at targeted health data for a specific disease. Examples include Tuberculosis, Malaria and HIV surveillance systems.

1.5.2 Event-Based Surveillance (EBS)

EBS uses rumours also known as signals, alerts detection, triaging and verification to detect events. It requires the detection and immediate reporting of rumours, which are broad and indicate the possibility of a serious public health event. Event-based surveillance (EBS) system should be established at the different levels of the health system alongside with the indicator-based surveillance (IBS).

Figure 5: Functions of EBS at all levels of the health system

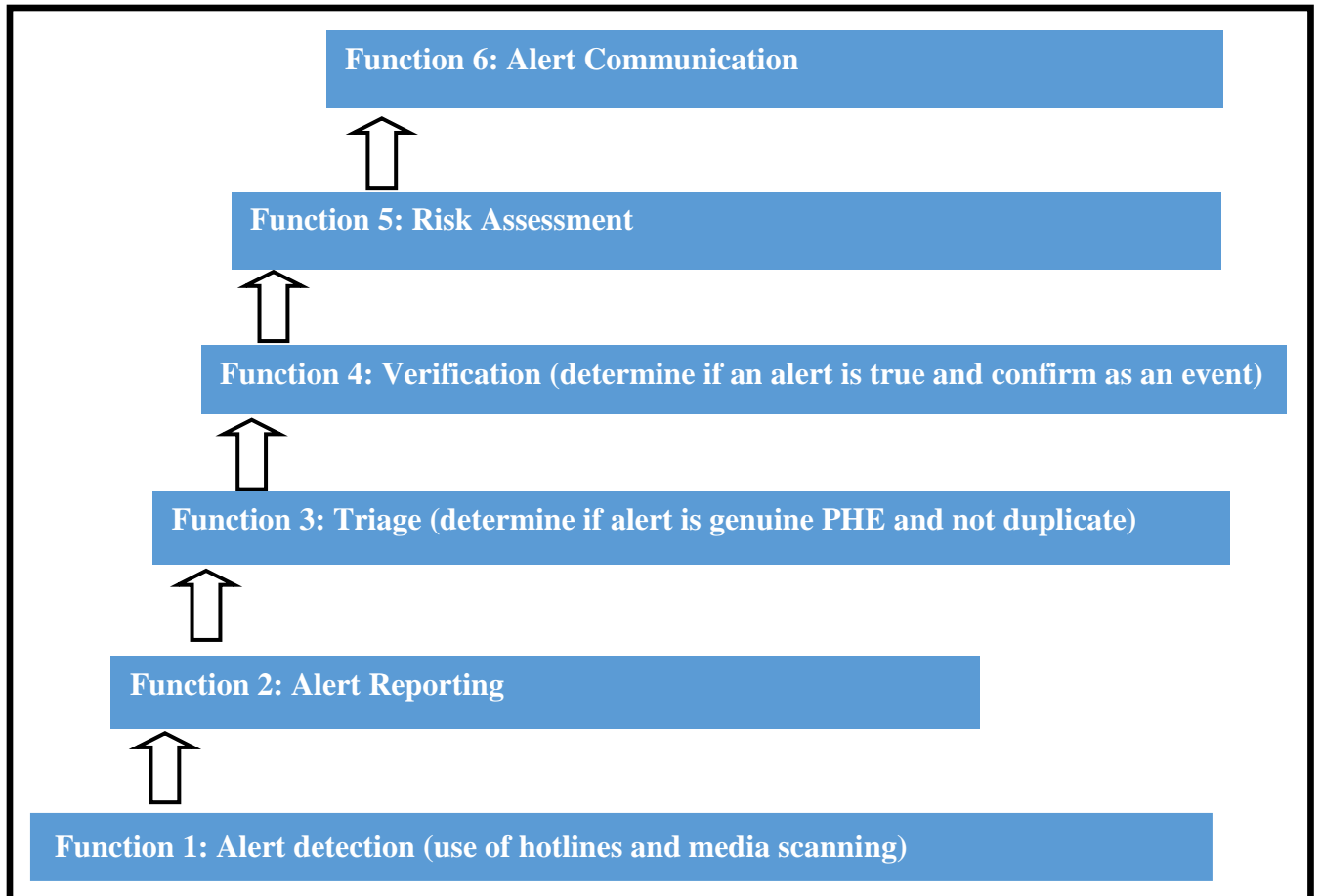
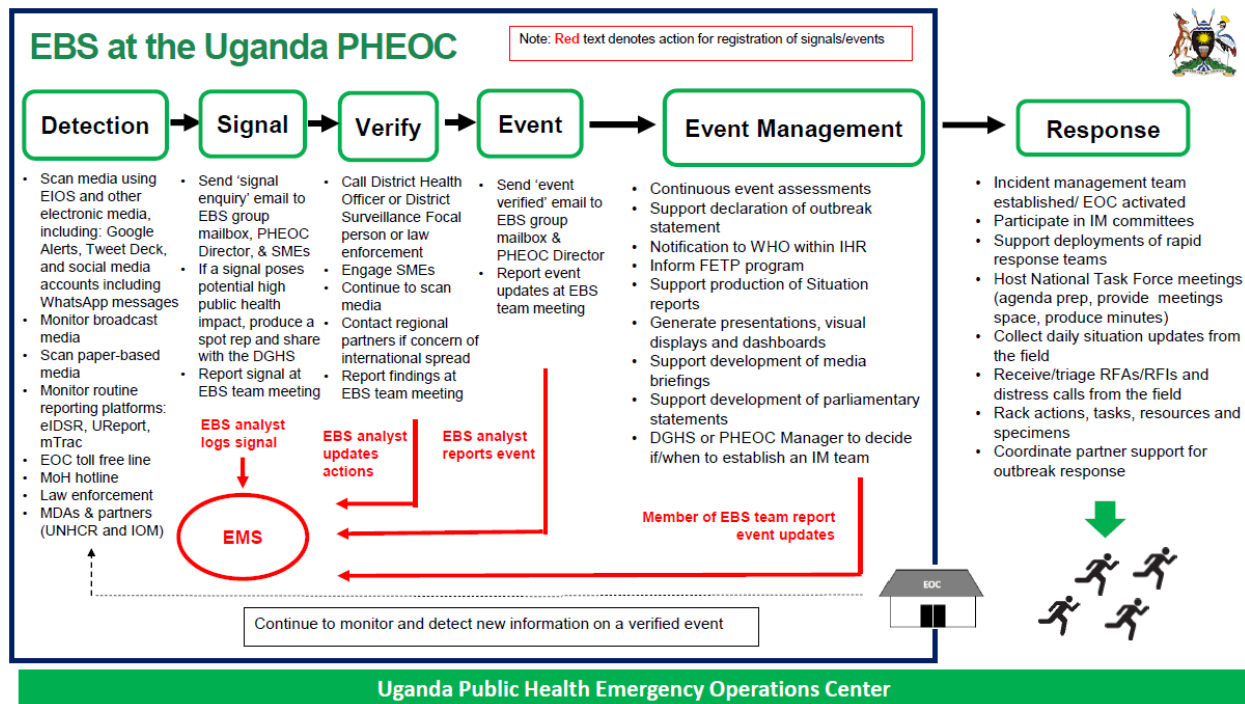


Figure 6: Standard Operating Procedure for EBS implementation



The following steps should be followed in establishing and monitoring an EBS system:

- **Step 1:** Establish EBS Hotlines and Media Scanning tools for alert and signal detection
- **Step 2:** Signal Detection
- **Step 3:** Registration of EBS Signals
- **Step 4:** Conduct triaging of EBS Alerts
- **Step 5:** Conduct Verification of EBS alerts
- **Step 6:** Conduct risk assessment and characterization

The steps for establishing EBS at National, Regional, district and health facility levels are described in Annex 1C of this section.

1.6 Community Based Surveillance (CBS)

1.6.1 Guide for Establishing Community Based Surveillance and Response

This is defined as the systematic detection and reporting of events of public health significance within the community by Village Health Teams (VHTs). CBS is a simple, adaptable and low-cost public health initiative managed by communities in coordination with the formal surveillance structures. CBS incorporates both IBS and EBS methods. In CBS, there are identified focal person(s) who report cases or events to the designated focal point within the nearby local health facilities^{11,14}.

Community based surveillance strategies focus on two approaches to collect community information. The first one relies on identifying and reporting events based on agreed indicators (community case definitions). For example, village health teams are trained to identify diseases

such as measles, cholera, polio and Guinea worm, using community case definition and use standardized reporting system to the next level. The second strategy relies on reporting of unusual events (alerts) which can inform of early stages of an outbreak or any other public health threat in the community. Alerts may capture a wide variety of unusual events emerging at the community level and information from these alerts may be incomplete and unconfirmed and as such they all need to be triaged and verified. Information using this strategy can also come from people who have already been oriented on the agreed indicators (community case definitions) for example the VHTs and any other representatives from community. Often CBS focal persons would link the patient identified through any of the strategies, to nearby health facility and can help identify contacts.

Communities and designated community focal points are trained and empowered to be aware of potential health risks including emerging events that might indicate a new health risk, close monitoring for notifiable and seasonal diseases or signs of an existing disease outbreak. An event that appears ‘unusual’ to the community might be to a health-trained professional an early warning sign of a more serious and larger health risk or public health event.

Two different strategies of community-based surveillance can be used to collect community information;

Community Event-Based Surveillance (CEBS)

CEBS relies on reporting of unusual events and this is designed to rapidly identify whether something might be wrong in the community. Information may be incomplete, unconfirmed and may even be a rumour. The definition of an ‘unusual event’ will change from one community to another and needs to be defined in each context. It can be one event, or a cluster of events, that may be unusual for a specific community or during a certain time of the year. For example, an unusual event could be: “A cluster of deaths from an unknown cause in the same household or adjacent households”.

Community-Indicator Based Surveillance (CIBS). This type of surveillance is used to identify/report events based on agreed indicators (case definitions). Information from community can come from people who have already been oriented on the indicators and these include VHTs, or any other representatives from the community. CIBS relies on reporting a suspected case or the trend of a specific disease(s) using a community case definition

Both systems should be established and integrated at community level to ensure all information from the community is captured and quickly reported to a designated surveillance focal person at the next level for follow up.

1.6.2 Steps for establishing CBS

Step 1: Engage all stakeholders

- (a) Involve the health facility, sub-district, district, regional and national teams to ensure there

is a buy in of both the national and subnational level authorities.

- (b) CBS system should be made formally as part of the IDSR Strategy and using the established structure to identify the designated focal point to coordinate CBS.
 - (i) E.g., A designated health facility in-charge or surveillance officer responsible for coordinating CBS.
- (c) Organize series of meetings with the Community leadership
 - (i) Ensure proper community entry
 - Know the community involved.
 - Identify the cultural practices that exist in the community so as not to offend the community members.
 - Identify the community leaders or contact person who will introduce you to the community.
 - Schedule meetings with community leaders. Meeting days should not be imposed by the outsider but should be arrived at through consensus.
 - Introduce yourself and the work you do when you meet leaders.
 - Brief leaders on the purpose of the visit.
 - Seek their approval and support for your program
- (d) Sensitize community leaders, elders and other influencers on the following:
 - Importance and structure of CBS
 - What information is needed
 - How the information will be used?
 - Financial or human resource support being offered by the district
 - What the community gains by participating

Step 2: Define the sources of information about health events in the community

- a. Define the sources of information about health events in the community, including points of contact that the community has with health services. Key informants selected from the community can form networks that support the CBS focal persons in early detection of alerts. The sources of information include:
 - Home Visits: whereby CBS focal persons are expected to visit all homes in their catchment area regularly to inquire about the priority diseases, any deaths that might have occurred since last visit to the home.
 - All community-based health workers, community volunteers, including traditional health practitioners, school teachers, pharmacists, who have trusted relationships with the local community. Families often share information with a trusted, known health worker.
 - Community, traditional, youth or religious leaders and civil society: these individuals and groups may provide informal reports of unusual health events or health risks that they witness in their communities.
 - Media: local, national and international media are important sources of information for CBS.

- Places of congregation such as markets, places of worship, wedding receptions, schools, bars among others.

Step 3: Identify community-based surveillance (CBS) focal persons

- (a) The focal person is selected in consultation with the community
- (b) The roles and responsibility of the focal person are determined by the health system in consultation with the community

Step 4: Identify diseases the community is at risk of acquiring, or that occur at each catchment area from the IDSR priority list

Selected list should be in line with the National IDSR priority diseases, conditions and events list

Step 5: Define case or events or signals detection methods

- (a) Develop and disseminate simple community case definitions to health facilities and communities
- (b) Develop and define pre-determined signals
- (c) Sensitize/train community members including the CBS focal persons on the community case definitions and pre-determined signals

Step 6: Disseminate data collection and reporting tools

- (a) CBS registers
- (b) CBS Reporting forms

Step 7: Define methods of reporting/communicating diseases, conditions and public health Events

- (a) Define methods for communicating between health facility/surveillance officer and the CBS focal persons
 - Design simple alert forms and train them on how to use it
 - For non-literate ask a literate person to assist
 - Immediate reporting by telephone calls, text messages
 - Provide feedbacks during monthly meetings

Step 8: Train all key actors in the CBS system

- (a) Develop and pre-test training tools:
 - Picture based/simplified training material for non-literate/semi-literate populations for surveillance and reporting.
 - Develop picture and game-based based job aids and illustrative daily/weekly schedules.
- (b) Train CBS focal persons, Community health workers, Health facility, Sub-district and district team in surveillance and response skills and improved Interpersonal Communication skills (IPC).

Step 9: Develop Risk Communication and Social Mobilization structures

Develop general, pictorial, social mobilization materials for community, youth-based or school-based awareness

Step 10: Define methods for monitoring, supervision and evaluation

- (a) Conduct monthly meetings between the health facility surveillance focal persons, CBS focal persons and community leaders to discuss progress, issues, concerns and provide 2-way feedback
- (b) Conduct monthly/quarterly supervisory visits to CBS Focal Persons using CBS supervisory check list

Annex 2E illustrates community alert verification and information reporting structure to relevant health care levels

1.6.3 Community representatives on CBS team

Community representatives that can be members of CBS Team

Any community member acceptable by the community can be a CBS focal person. Representation could be from basic village-level services such as, village health teams, volunteers, village leaders (religious, traditional or political) or school teachers, animal health workers, extension workers, chemical sellers, and traditional healers. Once selected, the CBS focal persons should receive training and carry out supportive supervision on how to recognize certain diseases or health conditions for the purpose of reporting suspect cases.

Example: CBS focal persons hear of several cases of acute watery diarrhoea with vomiting in the community. The informant suspects cholera and reports the alert to the nearest health facility and to the District Health Officer by text messaging. Members of the District Rapid Response Team (DRRT) travel to the community to verify and investigate the possible outbreak, and, based on the investigation results, implement control and prevention measures. The outbreak is quickly contained. Thanks to the early warning from the community-based surveillance focal person.

District staff may identify informants in the community with opportunity to know about the community's health status. Examples of community informants include but not limited to:

Chemical sellers, school teachers, staff at private clinics, village leaders, religious leaders, traditional healers, birth attendants, community health workers, Community Based Animal Health Workers, Community Based Organizations (CBOs), other societal leaders, veterinary health workers, any individuals involved in neighbourhood watch or other active surveillance approaches, Other community resource persons

Depending on the event, resource availability and the context, districts may choose their informants.

- The District can organize community-based surveillance focal persons by:

- Working with community leaders to identify members of the community to receive relevant training.
- Train and provide job aids (e.g. Community Registers, leaflets of cases definitions etc.) on priority diseases and public health events or hazards to community informants. Give enough information about the disease so that the community informant can refer cases to the health facility, or notify the health facility when unusual or unexplained health events occur in the community
- Involve CBS focal persons in risk mapping, emergency simulation exercises and risk communication during outbreaks
- Ensure that the CBS gives regular and timely feedback of diseases/events reported from the community level. Districts need to ensure that there is sustained commitment by CBS and hence to continuously engage them.

Please refer to the list in Annex 1B of key signs and symptoms to use in case definitions for community surveillance.

1.6.4 Supervision of CBS

The goal of supervision is to improve timeliness of reporting, fine-tune understanding of case definitions, and improve interpersonal communication skills. It is important that supervision is done with evidence-based approaches so as to know what to improve in the surveillance. All activities for implementation by CBS should be supervised by a surveillance focal person or health facility in-charge in his or her locality. He or she will:

- Monitor surveillance and response activities, including timeliness and completeness of reporting;
- Supervise activities of the CBS focal points including the fine tune understanding of the case definitions. In case, CBS focal points are used for contact tracing, ensure the facility-based person leads the process.
- Identify and map key health determinants in the area.
- Provide regular and timely feedback to CBS teams and ensure a two-way process for feedback to build trust between the CBS and the health facility person.

Supervisory visits are undertaken to determine whether:

- The appropriate community-based surveillance supplies such as forms and tally sheets are available and are used properly.
- The required standard case definitions and guidelines are available.
- The community-based surveillance focal points know how to use the community case definitions to report suspected public health events in their catchment area.
- The goal of supervision is to improve timeliness of reporting, fine-tune understanding of case definitions, improve Interpersonal communication skills (IPC skills).

During supervisory visit:

- Feedback is given to community-based surveillance focal points.
- On-the-job training is provided as needed if a problem is identified.
- Follow-up on requests for assistance is provided.

- Supervisory plans for improvement of surveillance and response are updated.
- Successful activities are recorded and encouragement for their continuation provided.
- Feasible solutions are provided for identified problems.

1.6.5 Linkage between facility-based surveillance and CBS

- (a) All reported cases/unusual events/alerts received from the CBS Focal Persons are captured in the Sub-district or District Rumors/Outbreaks Log Book (Refer to Section 4, Annex 4A of the 3rd Edition IDSR TGs)
- (b) Health facility/sub-district health team should verify all reports by using verification tools with support from the district health team
- (c) If it is confirmed as TRUE by sub-district/health facility and district team this is then further investigated using the respective IDSR Case Investigation form and captured on the IDSR Weekly/monthly summary reporting form by the health facility surveillance focal person of the respective health facilities catchment area
- (d) This is then reported to district and subsequently to region and national authorities weekly and monthly

1.6.6 Conducting an investigation, confirmation and response to a suspected case/public health event/signal at the community level

An investigation will provide important and relevant information for determining how to respond to the suspected case/Public Health Event.

The steps for investigating and confirming a suspected public health event/signal reported by CBS Focal Person include:

- (i) Forming a field response team
 - The health facility/ sub-district team
- (ii) Verifying the community-based surveillance focal person's information to ensure that it is accurate
 - The health facility/ sub-district team gathers further information about the suspected case/public health event
 - Use the verification tool to access whether it is a true case
 - If it is a true case the district team is notified
 - Further investigation by the District Rapid Response Team (RRT)
- (iii) Carrying out the recommended response as per the outbreak investigation findings
 - The CBS Focal Person supports the Sub-district and District Teams to carry out the response activities

1.7 Continuous improvements on identification and recording priority DCEs

1.7.1 Update district procedures for surveillance and response

Use available assessment and evaluation results to plan improvements for surveillance and response activities. Each year national, regional and district health officials should collaboratively update and adjust procedures for surveillance and response accordingly.

1.7.2 Update the description of the catchment area

At least annually, update information about the catchment area (health facilities, PoE, laboratories). This activity should be part of the health planning at district, regional as well as national level. There should be a description on local population characteristics in the catchment area, what activities are happening, what risks should be accounted for, and what surveillance assets and gaps exist.

Risk assessment and mapping should be conducted periodically, and should extend to all public health hazards as specified by IHR (2005), including chemical, zoonotic, radiological and nuclear. The integrated risk profiling tool for assessment of public health threats can be used within the broader framework of disaster risk management¹⁵.

To update the catchment area description, make sure you have current information about:

- **Population:** The size of key target populations at all levels such as children less than 5 years of age, school-aged children, women of childbearing age, all children and adults of the relevant age groups, people living in refugee settlements, internally displaced persons settlements, out of school youth, and other vulnerable groups.
- **Major public health activities:** Major public health activities in the area including public, private, and non-governmental organization (NGO), immunization activities, clean water projects, family planning clinics, feeding centres for malnourished children, refugee camp health activities, information related to risk factors for non-communicable diseases etc.

To update the district profile, the District Task Force should convene a meeting of key health stakeholders at all levels, to discuss surveillance and response activities related to priority health events at the district. The District Task Force should meet routinely on a monthly basis and more frequently in case of an event. This should be an opportunity to provide feedback about surveillance data which is reported from their institutions. Involve officials from other relevant sectors in the DTF to address health matters in a One Health approach.

1.7.3 Update the list of reporting sites and the names of surveillance focal persons in the district

- Identify surveillance focal persons at all of the health facilities, Points of Entry, and any other location in the district including community. This list should be updated regularly to ensure an up-to-date inventory is maintained. Use Annex 1D to update the inventory.
- Create relationships with private and faith-based health facilities, learning/research institutions, and NGOs in the district, and involve them in surveillance activities.
- Ensure that all standalone laboratory facilities are recorded as reporting sites.

1.7.4 Distribute updated data collection forms, reporting tools, line lists, registers and technical guidelines

As the district conducts updates of the catchment area description, it should check to see that all reporting sites have an adequate supply of surveillance reporting tools (forms, line lists, registers or other means for reporting surveillance data to the district). This must also be done during regular supervisory visits. The district should include updates about forms and procedures for reporting, investigating and responding to public health events in quarterly district meetings with health facilities and other reporting sites.

1.8 Role of the laboratory in surveillance and response

There are several diseases or conditions with signs and symptoms that are the same or similar as other diseases or conditions. For example, a child with fever and rash over the entire body might be diagnosed with measles, even though there could be several causes for the child's clinical presentation (e.g., scarlet fever, rubella).

Laboratory investigation is essential for routine laboratory surveillance and therefore health workers should ensure that all suspected cases have appropriate samples collected for investigation. Laboratory confirmation of diagnoses of diseases, conditions and events under surveillance is essential in order to:

- Accurately confirm the diagnosis in an individual patient, and
- Verify the cause (aetiology) of a suspected outbreak^{16,17}

1.8.1 Specimen collection, storage and transportation

The type of specimen collected, its packaging and transportation depends on the suspected disease. Specimens should be collected in adequate quantity into appropriate containers at the

health facility level or in the field during an outbreak investigation and transported using recommended means.

All specimens for laboratory testing must be in good condition, triple packaged, correctly labelled accompanied with the laboratory investigation form, and should reach the laboratory at the earliest time possible to provide reliable results. Avoid delays between collection of the specimen and processing in the laboratory.

Ensure health facilities have trained personnel, equipment as well as adequate reagents and consumables to enable specimen collection and testing. Health facilities should utilize the hub (national specimen and result transport network) system or any other designated transport system for specimen transportation.

Many factors can affect the quality and timeliness of laboratory results:

- Poor and inappropriate specimen collection and handling
- Delay in specimen transportation and/or processing
- Wrong transport or storage media or container
- When patient has been started on antibiotics treatment before specimen especially for cultures are collected
- Inappropriate temperatures during specimen transportation and storage
- Delays in sample collection
- Lack of well trained and skilled laboratory personnel
- Poorly serviced, calibrated and maintained laboratory equipment
- No accompanying or incomplete case investigation forms
- Missing labels or mislabelling of specimens during laboratory processing
- Wrong choice of test

NOTE:

1. *For disease specific reference tables and laboratory procedures see section 11.*
2. *Always observe universal biosafety precautions when dealing with biological specimens.*
3. *Isolate patients basing on signs and symptoms and initiate case management even prior to laboratory results.*

1.8.2 Establishing a district laboratory network

- The district surveillance and the laboratory focal persons should maintain an updated list of the laboratories that have the capacity to perform required laboratory testing. A worksheet for listing national laboratories for confirming priority diseases and conditions is in Annex 1G.
- Provide SOPS to all health facilities about the methods for transporting specimens including how to prepare, handle, ship and store the specimens including packaging and shipping of infectious material.
- The district laboratory and surveillance focal person should strengthen routine communication with identified laboratories that receive specimens from health facilities.
- Follow the Government of Uganda guidelines for referring, testing and receiving samples.
- Improve collaboration between human, veterinary and other relevant public health laboratories at all levels in line with the One Health approach.

1.8.3 Update inventory of supplies, reagents and equipment used for disease confirmation

Based on the risk assessment and mapping, the district laboratory focal person should maintain an updated list of required supplies. This list should be used to inform requisitions at the district level to ensure adequate supply of equipment and related supplies. This list should be used in both public and private health facilities to obtain a comprehensive inventory and ensure that they have the required supplies.

1.8.4 Describe laboratory procedures for confirming priority diseases and conditions

The national level should make sure that laboratory protocols and guidelines are established and distributed to all levels. The district laboratory focal person should make sure that laboratory protocols, guidelines, and procedures are followed to diagnose each priority diseases and conditions. Refer to Annex 1F for roles and responsibilities of laboratory focal persons at all levels.

1.8.5 Establish a laboratory quality assurance program

Establish and maintain a quality assurance program (internal and external quality control) at all laboratory levels to improve reliability and reproducibility of results. Coordinate with regional or national laboratory authorities to establish activities for ensuring quality results from laboratories in the catchment area.

Ensure each laboratory has up-to-date written SOPs for all techniques performed in the laboratory in regard to external quality assurance. Refer to the WHO Stepwise Laboratory Improvement Process towards Accreditation (**SLIPTA**) if not yet accredited ¹⁸

Annexes to SECTION 1

- Annex 1A:** Standard case definitions for reporting suspected priority diseases, conditions and events
- Annex 1B:** Community level case definitions using key signs and symptoms
- Annex 1C:** Guide for establishing Event Based Surveillance (EBS) at National, Regional, District and Health Facility levels
- Annex 1D:** Sample list of district reporting sites
- Annex 1E:** Laboratory functions by health system level
- Annex 1F:** Roles and Responsibilities of Laboratory Focal Persons at All Levels
- Annex 1G:** List of national health and veterinary laboratories for confirming priority diseases, conditions, and events
- Annex 1H:** Sample verification tool for unusual health events

Annex 1A: Standard case definitions for reporting suspected priority diseases, conditions and events from the health facility to the district

Health facilities should use these standard case definitions for reporting suspected cases of priority diseases and conditions to the district level. Please refer to the disease-specific guidelines in Section 11 for additional information about surveillance for priority diseases and conditions.

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
Acute Watery Diarrhoea	<p>Any person aged 2 or more years with 3 or more loose stools within the last 24 hours and a danger sign *or dehydration.</p> <p>(*<i>Danger signs include lethargy, unconsciousness, vomits everything, convulsions, and in children less than 5, unable to drink or breast-feed</i>)</p>
Acute Haemorrhagic fever syndrome	<p>Suspected case: Acute onset of fever of less than 3 weeks duration in a severely ill patient/ or a dead person AND any 2 of the following; haemorrhagic or purpuric rash; epistaxis (nose bleed); haematemesis (blood in vomit); haemoptysis (blood in sputum); blood in stool; other haemorrhagic symptoms and no known predisposing factors for haemorrhagic manifestations OR clinical suspicion of any of the viral diseases.</p> <p>Confirmed case: A suspected case with laboratory confirmation or epidemiologic link to confirmed cases or outbreak.</p> <p>Note: During an outbreak, case definitions may be changed to correspond to the local event. It is important to note that during outbreaks, most cases might not show haemorrhagic manifestation, a proper history taking is crucial.</p>

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
Acute and chronic viral hepatitis	<p>I) Acute Viral Hepatitis: <i>Suspected case:</i> Any person with discrete onset of an acute illness with signs/symptoms of;</p> <p>(i) Acute infectious illness (e.g. fever, malaise, fatigue) and (ii) Liver damage (e.g. anorexia, nausea, jaundice, dark coloured urine, right upper quadrant tenderness of body),</p> <p>AND/OR</p> <p>(iii) Raised alanine aminotransferase (ALT) levels more than ten times the upper limit of normal</p> <p><i>Confirmed case:</i> A suspected case that is laboratory confirmed by virus specific biomarkers:</p> <ul style="list-style-type: none"> • Acute Hepatitis A: anti-HAV IgM positive or positive for HAV RNA • Acute Hepatitis B: Hepatitis B surface antigen (HbsAg) positive AND anti-hepatitis B core antigen (anti-HBc) IgM positive, HBV DNA positive • Acute Hepatitis C: HCV RNA positive (Viral Load), HCV core antigen positive (where available) and anti-HCV IgM positive. Markers of acute hepatitis A (anti-HAV IgM) and hepatitis E (anti-HEV IgM) are negative. • Acute Hepatitis D: HbsAg positive (or anti-HBc IgM positive) plus anti-HDV positive (usually IgM), and HDV RNA (HDV infection ONLY occurs as co-infection or super-infection of hepatitis B) • Acute Hepatitis E: anti-HEV IgM positive <p>II) Chronic Viral Hepatitis Case definition (HBV and HCV):</p> <p>Chronic Hepatitis B:</p> <ul style="list-style-type: none"> • HbsAg is the first serological marker to appear. Persistence of HbsAg for at least 6 months indicates chronic infection • Anti-HBc positive (usually IgG) <p>Chronic Hepatitis C:</p> <ul style="list-style-type: none"> • Hepatitis C virus RNA positive in a person with anti-HCV positive (usually IgG) • HCV RNA positive OR HCV core antigen positive <p>NB: Antibody detection (i.e. HCV Ab positive) cannot differentiate between acute, chronic infection and past infection.</p>

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
Adverse events following immunization (AEFI)	Any untoward medical occurrence which follows immunization and which does not necessarily have a causal relationship with the usage of the vaccine. The adverse event may be any unfavourable or unintended sign, abnormal laboratory finding, symptom or disease.
Anthrax	<p>Suspected case: Any person with acute onset characterized by several clinical forms which are:</p> <ol style="list-style-type: none"> Cutaneous form: Any person with skin lesion evolving over 1 to 6 days from a papular through a vesicular stage, to a depressed black eschar invariably accompanied by edema that may be mild to extensive. Gastro-intestinal: Any person with abdominal distress characterized by nausea, vomiting, anorexia and followed by fever Pulmonary (inhalation): any person with brief prodromal resembling acute viral respiratory illness, followed by rapid onset of hypoxia, dyspnoea and high temperature, with X-ray evidence of mediastinal widening Meningeal: Any person with acute onset of high fever possibly with convulsions, loss of consciousness, meningeal signs and symptoms; commonly noted in all systemic infections, but may present without any other clinical symptoms of anthrax. <p>AND has an epidemiological link to confirmed or suspected animal cases or contaminated animal products</p> <p>Confirmed case:</p> <p>A confirmed case of anthrax in a human can be defined as a clinically compatible case of cutaneous, inhalational or gastrointestinal illness that is laboratory-confirmed by:</p> <ol style="list-style-type: none"> isolation of <i>B. anthracis</i> from an affected tissue or site; or Other laboratory evidence of <i>B. anthracis</i> infection based on at least two supportive laboratory tests. <p>Note: <i>It may not be possible to demonstrate B. anthracis in clinical specimens if the patient has been treated with antimicrobial agents.</i></p>

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
Buruli ulcer (<i>Mycobacterium ulcerans</i> disease)	<p>Suspected case: A person presenting a painless skin nodule, plaque or ulcer, living or having visited a BU endemic area</p> <p>Confirmed case: A suspected case confirmed by at least one laboratory test (Ziel-Neelsen stain (ZN stain) for AFB, PCR, culture or histology). Confirmation of presence of mycolactone in skin lesions.</p>
Brucellosis	<p>Suspected case: Acute or insidious onset of fever AND ONE OR MORE of the following: night sweats, arthralgia, headache, fatigue, anorexia, myalgia, weight loss, arthritis/spondylitis, meningitis, or focal organ involvement (endocarditis, orchitis/epididymitis, hepatomegaly, splenomegaly).</p> <p>Confirmed case: A suspected case with confirmatory laboratory diagnosis by way of: culture and identification of <i>Brucella</i> spp. or evidence of a fourfold or greater rise in <i>Brucella</i> antibody titre.</p>
Chikungunya	<p>Suspected case: Any person with acute onset of fever >38.5°C and severe arthralgia/arthritis not explained by other medical conditions.</p> <p>Confirmed case: A suspected case with laboratory confirmation.</p>
Cholera¹⁹	<p>Suspected cholera case: In areas where a cholera outbreak has not been declared: Any patient aged two years and older presenting with acute watery diarrhoea and severe dehydration or who have died from acute watery diarrhoea.</p> <p>In areas where a cholera outbreak is declared: any person presenting with or dying from acute watery diarrhoea.</p> <p>Confirmed cholera case: A suspected case with <i>Vibrio cholerae</i> O1 or O139 confirmed by culture or PCR polymerase chain reaction and, <i>in countries where cholera is not present or has been eliminated, the Vibrio cholerae O1 or O139 strain is demonstrated to be toxigenic.</i></p>

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
COVID-19	<p>Suspected case: A person who meets the clinical:</p> <p>Clinical criteria:</p> <p>1. Acute onset of fever AND cough;</p> <p>OR</p> <p>2. Acute onset of ANY THREE OR MORE of the following signs or symptoms: fever, cough, general weakness/fatigue, headache, myalgia, sore throat, coryza, dyspnoea, anorexia/nausea/vomiting, diarrhoea, altered mental status.</p> <p>OR</p> <p>3. A patient with severe acute respiratory illness (SARI: acute respiratory infection with history of fever or measured fever of ≥ 38 °C; and cough; with onset within the last 14 days; and who requires hospitalization</p> <p>Probable Case:</p> <p>A. A patient who meets clinical criteria above AND is a contact of a probable or confirmed case, or linked to a COVID-19 cluster</p> <p>OR</p> <p>B. A suspect case (described above) with chest imaging showing findings suggestive of COVID-19 disease</p> <p>OR</p> <p>C. A person with recent onset of loss of smell or loss of taste in the absence of any other identified cause</p> <p>OR</p> <p>D. Death, not otherwise explained, in a person with respiratory distress preceding death AND who was a contact of a probable or confirmed case or linked to a COVID-19 cluster</p> <p>Confirmed Case:</p> <p>A person with laboratory confirmation of COVID-19 infection, irrespective of clinical signs and symptoms.</p>

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
Dengue Fever	<p>Dengue Fever Suspected case: Any person with acute febrile illness of 2-7 days duration with 2 or more of the following: headache, retro-orbital pain, myalgia, arthralgia, rash, haemorrhagic manifestations, leukopenia.</p> <p>Dengue Fever Confirmed case: A suspected case with laboratory confirmation (positive IgM antibody, fourfold or greater increase in IgG antibody titres in paired (acute and convalescent) serum specimens, positive PCR or Isolation of the dengue virus using cell culture).</p> <p>Dengue Haemorrhagic Fever: A probable or confirmed case of dengue with bleeding tendencies as evidenced by one or more of the following: positive tourniquet test; petechiae, ecchymoses or purpura; bleeding: mucosa, gastrointestinal tract, injection sites or other; haematemesis or melaena; and thrombocytopenia (100 000 cells or less per mm³) and evidence of plasma leakage due to increased vascular permeability, manifested by one or more of the following: 20% rise in average haematocrit for age and sex, 20% drop in haematocrit following volume replacement therapy compared to baseline, signs of plasma leakage (pleural effusion, ascites, hypo-proteinemia).</p> <p>Dengue Shock Syndrome: All the above criteria, plus evidence of circulatory failure manifested by rapid and weak pulse, and narrow pulse pressure (≤ 20 mm Hg) or hypotension for age, cold, clammy skin and altered mental status.</p>
Diabetes	<p>Suspected new case: Any person presenting with the following symptoms:</p> <ul style="list-style-type: none"> ▪ Increased thirst ▪ Increased hunger ▪ Frequent urination <p>Confirmed new case:</p> <p>Any person with a fasting 6.1 mmol/L (110 mg/dl) Or venous plasma glucose measurement of ≥ 7 mmol/L (126 mg/dl) or capillary glucose ≥ 6.1 mmol/L (110 mg/dl)</p> <p>OR</p> <p>Any person with a non-fasting glucose ≥ 11.1 mmol/L (200mg/dl) Or venous plasma glucose measurement of ≥ 11.1mmol/L (200 mg/dl)</p> <p>*Report only the first lab-confirmed</p>

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
Diarrhoea with blood	<p>Suspected case: A person with (abdominal pain) and diarrhoea with visible blood in stool.</p> <p>Confirmed case: Suspected case with stool culture positive for <i>Shigella dysenteriae</i> type 1.</p>
Diarrhoea with dehydration in children less than 5 years of age	<p>Suspected case:</p> <p>Passage of 3 or more loose or watery stools in the past 24 hours with or without dehydration and:</p> <p><i>Some dehydration</i> -- two or more of the following signs: restlessness, irritability; sunken eyes; thirsty; skin pinch goes back slowly, or</p> <p><i>Severe dehydration</i> -- two or more of the following signs: lethargy or unconsciousness; sunken eyes; not able to drink or drinking poorly; skin pinch goes back very slowly.</p> <p>Confirmed case:</p> <p>Suspected case confirmed with stool culture for a known enteric pathogen.</p> <p><i>Note:</i> Laboratory confirmation of specific agent causing outbreak is not routinely recommended for surveillance purposes.</p>
Dracunculiasis	<p>Rumour</p> <ul style="list-style-type: none"> Information about the occurrence of Guinea worm disease (Dracunculiasis) from any source. <p>Suspected case</p> <ul style="list-style-type: none"> A person presenting a skin lesion with itching or blister living in an endemic area or risk areas for Guinea worm, with the emergence of a worm. <p>Confirmed case</p> <p>A case of guinea-worm disease is a person exhibiting a skin lesion with emergence of a Guinea worm, and in which the worm is confirmed in laboratory tests to be <i>D. medinensis</i>. That person is counted as a case only once during the calendar year, i.e. when the first worm emerges from that person. All worm specimens should be obtained from each case patient for laboratory confirmation and sent to the United States Centres for Disease Control and Prevention (CDC). All cases should be monitored at least twice per month during the remainder of the calendar year for prompt detection of possible emergence of additional guinea worms.</p>

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
Ebola or Marburg virus diseases	<p>Routine Surveillance:</p> <p><i>Suspected case:</i> Illness with onset of fever and no response to usual causes of fever in the area, and at least one of the following signs: bloody diarrhoea, bleeding from gums, bleeding into skin (purpura), bleeding into eyes and urine.</p> <p><i>Confirmed case:</i> A suspected case with laboratory confirmation (positive IgM antibody, positive PCR or viral isolation), or epidemiologic link to confirmed cases or outbreak</p> <p>In Outbreak setting, the following standard case definitions may guide appropriate detection of cases:</p> <p><i>Suspected case:</i> Any person, alive or dead, suffering or having suffered from a sudden onset of high fever and having had contact with: - a suspected, probable or confirmed Ebola or Marburg case; - a dead or sick animal (for Ebola) - a mine (for Marburg)</p> <p>OR</p> <p>Any person with sudden onset of high fever and at least three of the following symptoms: - headaches - lethargy - anorexia / loss of appetite - aching muscles or joints - stomach pain - difficulty swallowing - vomiting - difficulty breathing - diarrhoea - hiccups;</p> <p>OR</p> <p>Any person with inexplicable bleeding;</p> <p>OR</p> <p>Any sudden, inexplicable death;</p> <p>Probable case:</p> <p>Any suspected case evaluated by a clinician;</p> <p>OR</p> <p>Any deceased suspected case (where it has not been possible to collect specimens for laboratory confirmation) having an epidemiological link with a confirmed case Note: if laboratory specimens are collected in due time during the illness, the preceding categories are reclassified as “laboratory confirmed” cases and “non-case”.</p> <p>Laboratory confirmed case: Any suspected or probably cases with a positive laboratory result. Laboratory confirmed cases must test positive for the virus antigen, either by detection of virus RNA by reverse transcriptase-polymerase chain reaction (RT- PCR), or by detection of IgM antibodies directed against Marburg or Ebola.</p>

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
Epilepsy	<p>Suspected case: Any person with one epileptic seizure</p> <p>Suspected new case: Report only the first diagnostic of the case in the health centre</p> <p>Confirmed case: Any person with recurrence of, at least, two epileptic seizures. A positive response to treatment with any AED strengthens the hypothesis of a confirmed case. Epileptic seizures can last for 30 seconds to 3 minutes. When they intricate without a pause, they can lead to <i>status epilepticus</i>.</p>
Foodborne Illnesses	<p>A foodborne illness is suspected when 2 or more people present with similar symptoms and who consumed common food or drink</p> <p>A foodborne illness is defined according to the specific agent causing the disease (for example, cholera, hepatitis A, salmonellosis, shigellosis).</p> <p>A confirmed foodborne illness is a laboratory confirmed case of a specific agent with a link to a common food or drink source.</p>
Human influenza caused by a new subtype	<p>Suspected H5N1 case: Any person presenting with unexplained acute lower respiratory illness with fever (>38 °C) and cough, shortness of breath or difficulty breathing AND</p> <p>one or more of the following exposures within the 7 days prior to symptom onset:</p> <ol style="list-style-type: none"> a) Close contact (within 1 meter) with a person (e.g. caring for, speaking with, or touching) who is a suspected, probable, or confirmed H5N1 case; b) Exposure (e.g. handling, slaughtering, de-feathering, butchering, preparation for consumption) to poultry or wild birds or their remains or to environments contaminated by their faeces in an area where H5N1 infections in animals or humans have been suspected or confirmed in the last month;

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
	<p>c) Consumption of raw or undercooked poultry products in an area where H5N1 infections in animals or humans have been suspected or confirmed in the last month;</p> <p>d) Close contact with a confirmed H5N1 infected animal other than poultry or wild birds;</p> <p>e) Handling samples (animal or human) suspected of containing H5N1 virus in a laboratory or other setting.</p> <p>Confirmed H5N1 case: A person meeting the criteria for a suspected case AND positive laboratory results from a laboratory whose H5N1 test results are accepted by WHO as confirmatory.</p> <p>NB: Include IHR case definition for reporting of human infection with a novel influenza virus</p> <p><i>For some zoonotic influenza subtypes, specific cases definitions are existing such as for H5N1 and H7N9</i></p>
Hypertension	<p>Suspected new case at first visit: Any individual presenting with a resting blood pressure measurement (based on the average of 3 readings) at or above 140 mm Hg for systolic pressure, or greater than or equal to 90 mm Hg for diastolic pressure.</p> <p>Confirmed case: Any individual presenting on at least two occasions with a resting blood pressure measurement (based on the average of 3 readings) at or above 140 mm Hg for systolic pressure, or greater than or equal to 90 mm Hg for diastolic pressure</p>
Influenza-like Illness (ILI)	<p>An acute respiratory infection in a child or adult with:</p> <ul style="list-style-type: none"> ▪ Sudden onset of fever > 38 °C AND ▪ Cough ▪ With onset within the last 10 days. <p>A confirmed case of influenza is a case that meets the clinical case definition and is laboratory confirmed (laboratory results must be positive for influenza virus).</p> <ul style="list-style-type: none"> • <i>Report only the first diagnostic of the case in the health center</i> • <i>Report only the first diagnostic of the case in the health center</i>

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
Injuries	<p>Road Traffic Accidents: Any person who has sustained an injury as a result of a road traffic crash presenting for the first time.</p> <p>Road traffic fatality: Any person killed immediately or dying within 30 days as a result of an injury crash.</p> <p>Due to gender-based violence: Any woman who sustains physical injuries due to violence perpetuated by a man and which is derived from unequal power relationships between men and women.</p> <p>Trauma due to other causes: Any person who sustains physical injuries from causes other than road traffic accidents or gender-based violence.</p>
Kala azar (Visceral Leishmaniasis)	<p>Suspected case: A person presenting with prolonged irregular fever, splenomegaly and weight loss as its main symptoms from a known endemic area</p> <p>Confirmed case: A suspect case with serological and/or parasitological confirmation of the diagnosis.</p>
Lassa and Crimean-Congo Haemorrhagic Fevers (CCHF)	<p>Suspected case of CCHF: Illness with sudden onset of fever, malaise, weakness, irritability, headache, severe pain in limbs and loins and marked anorexia. Early development of flush on face and chest and conjunctival infection, haemorrhagic exanthema of soft palate, uvula and pharynx, and often fine petechial rash spreading from the chest and abdomen to the rest of the body, sometimes with large purpuric areas.</p> <p>Confirmed case of CCHF: A suspected case with laboratory confirmation (positive IgM antibody, PCR, viral isolation or IgG sero-conversion by ELISA or IFA) or epidemiologic link to confirmed cases or outbreak.</p> <p>Suspected case of Lassa Fever: Illness with gradual onset with one or more of the following: malaise, fever, headache, sore throat, cough, nausea, vomiting, diarrhoea, myalgia, chest pain hearing loss and a history of contact with excreta of rodents or with a case of Lassa Fever</p> <p>Confirmed case of Lassa Fever: A suspected case that is laboratory confirmed (positive IgM antibody, PCR or virus isolation) or epidemiologically linked to a laboratory confirmed case.</p>

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
Leprosy	<p>Suspected case: A person showing one of three cardinal signs of leprosy: hypo-pigmented or reddish skin lesion, loss or decrease of sensations in skin patch, enlargement or peripheral nerve.</p> <p>Confirmed case: A person showing at least two cardinal signs of leprosy and who has not completed a full course of treatment with Multi Drug Therapy (MDT).</p>
Lymphatic Filariasis	<p>Suspected case: Resident of an endemic area with a clinical sign of hydrocoele or lymphoedema for which other causes of these findings have been excluded.</p> <p>Confirmed case: A person with positive laboratory diagnosis of microfilaremia in blood smear, filarial antigenemia or positive ultrasound test.</p>
Malaria	<p>Uncomplicated malaria Any person living in area at risk of malaria with fever or history of fever within 24 hours; without signs of severe disease (vital organ dysfunction) is diagnosed clinically as malaria.</p> <p>Confirmed uncomplicated malaria Any person with fever or history of fever within 24 hours; and with laboratory confirmation of diagnosis by malaria blood film or other diagnostic test for malaria parasites.</p> <p>Unconfirmed severe malaria Any patient living in area at risk of malaria hospitalised with severe febrile disease with accompanying vital organ dysfunction diagnosed clinically</p> <p>Confirmed Severe malaria Any patient hospitalized with <i>P. falciparum</i> asexual parasitaemia as confirmed by laboratory tests with accompanying symptoms and signs of severe disease (vital organ dysfunction) diagnosed through laboratory.</p>
Malnutrition	<p>Low birth weight new-borns: Any new born with a birth weight less than 2500 grams (or 5.5 lbs)</p> <p>Malnutrition in children:</p> <ul style="list-style-type: none"> - Children under five who are underweight (indicator: weight for age < -2Z Score) - Children 6 to 59 months with MUAC < 11.5 cm (high risk of mortality) - Bilateral pitting oedema <p>Malnutrition in pregnant women: Pregnant women given birth to low birth weight babies (birth weight < 2.5 Kg) (poor nutritional and health status of the women, can predict which population groups may benefit from improved antenatal care of women and neonatal care for infants).</p>

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
Maternal Deaths	The death of a woman while pregnant or within 42 days of the delivery or termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.
Measles	<p>Suspected case: Any person with fever and maculopapular (non-vesicular) generalized rash and cough, coryza or conjunctivitis (red eyes) or any person in whom a clinician suspects measles.</p> <p>Confirmed case: A suspected case with laboratory confirmation (positive IgM antibody) or epidemiological link to confirmed cases in an outbreak.</p>
Middle East Respiratory Syndrome Coronavirus (MERS-CoV)	<p>NB Several case definitions exist, depending on whether a person resides in Middle East or not. Please refer Section 11 for details</p> <p>Suspected case: A person with an acute respiratory infection, with history of fever and cough and indications of pulmonary parenchymal disease (e.g. pneumonia or ARDS), based on clinical or radiological evidence, and who has travelled within 14 days before onset of illness to the Middle East² or countries where MERS-CoV is known to be circulating in dromedary camels or where human infections have recently occurred. Individuals with acute respiratory illness of any degree of severity who, within 14 days before onset of illness, had any of the following exposures (Note: see section on Recommendations for testing in clusters associated with health care settings): close physical contact with a confirmed or probable case of MERS-CoV infection, while that patient was ill; a healthcare facility in a country where hospital-associated MERS-CoV infections have been reported; direct contact with dromedary camels or consumption or exposure to dromedary camel products (raw meat, unpasteurized milk, urine) in countries where MERS-CoV is known to be circulating in dromedary camel populations or where human infections occurred as a result of presumed zoonotic transmission.</p> <p>Confirmed case A person with laboratory confirmation of MERS-CoV infection, irrespective of clinical signs and symptoms.</p>

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
Bacterial Meningitis	<p>Suspected meningitis case: Any person with sudden onset of fever (>38.5 °C rectal or 38.0 °C axillary), and neck stiffness or other meningeal signs, including bulging fontanelle in infants.</p> <p>Probable meningitis case: Any suspected case with macroscopic aspect of cerebrospinal fluid (CSF) turbid, cloudy or purulent; or with a CSF leukocyte count >10 cells/mm³ or with bacteria identified by Gram stain in CSF; or positive antigen detection (for example, by latex agglutination testing) in CSF</p> <p>In infants: CSF leukocyte count >100 cells/mm³; or CSF leukocyte count 10–100 cells/mm³ and either an elevated protein (>100 mg/dl) or decreased glucose (<40 mg/dl) level.</p> <p>Confirmed meningitis case Any suspected or probable case that is laboratory confirmed by culturing or identifying (i.e. polymerase chain reaction) a bacterial pathogen (Neisseria meningitidis, Streptococcus meningitidis, Haemophilus meningitidis type b) in the CSF or blood.</p>
Meningococcal Meningitis	<p>Suspected case: Any person with sudden onset of fever (>38.5°C rectal or 38.0°C axillary) and one of the following signs: neck stiffness, altered consciousness or other meningeal signs.</p> <p>Confirmed case: A suspected case confirmed by isolation of N. Meningitidis from CSF or blood.</p>
Monkey pox	<p>Suspected case: An acute illness with fever > 38.3 C (101 F), intense headache, lymphadenopathy, back pain, myalgia, and intense asthenia followed one to three days later by a progressively developing rash often beginning on the face (most dense) and then spreading elsewhere on the body, including soles of feet and palms of hand.</p> <p>Probable case: A case that meets the clinical case definition, is not laboratory confirmed, but has an epidemiological link to a confirmed or probable case</p> <p>Confirmed case: A clinically compatible case that is laboratory confirmed.</p> <p>Differential diagnosis: Alternative causes of clinical symptoms that must be considered include other rash illnesses, such as, smallpox, chickenpox, measles, bacterial skin infections, scabies, syphilis, and medication-associated allergies.</p>

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
Neonatal tetanus/Non-neonatal tetanus	<p>Suspected case: <i>Neonatal Tetanus</i>—Any newborn with a normal ability to suck and cry during the first two days of life, and who, between the 3rd and 28th day of age, cannot suck normally, and becomes stiff or has convulsions or both.</p> <p><i>Non-neonatal Tetanus</i>—Any person > 28 days of age with acute onset of one of the following: lockjaw, sustained spasm of the facial muscles, or generalized muscle spasms.</p> <p>Confirmed case: No laboratory confirmation recommended.</p>
New HIV Case	WHO/AFRO recommends that countries use either Bangui or Abidjan HIV/AIDS case definitions. A positive ELISA for confirming HIV and a rapid test for confirming the positive results are sufficient for an epidemiologic case definition for HIV Infection.
Nodding Syndrome	<p>Suspected case: Any person (usually child or adolescent) who was normal prior to being reported with head nodding that manifests with repetitive involuntary drops of the head towards the chest on two or more occasions.</p> <p>Probable case: suspect case of head nodding, with <i>Both Major Criteria</i> – Age of onset of nodding between 3-18 y – Frequency of nodding 5-20/minute <i>Plus at least one of the following Minor Criteria</i> – Other neurological abnormalities (cognitive decline, school dropout due to cognitive / behavioural problems, other seizures or neurological abnormalities) – Clustering in space or time with similar cases – Triggering by food, cold weather – Stunting or wasting – Delayed sexual or physical development – Psychiatric symptoms</p> <p>Confirmed case: A probable case of head nodding with a documented nodding episode by a trained health care worker or videotaped nodding episode, or video/EEG/EMG</p>

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
Noma	<p>Suspected new case: Any child with a mouth ulcer and other warning signs such as; malnutrition, poor hygiene, recent illness from; measles, persistent diarrhoea, or malaria should be regarded as a potential noma case.</p> <p>Confirmed new case: Any person with a gangrenous disease which starts as gingival ulceration and spreads rapidly through the tissues of the mouth and face, destroying the soft and hard tissues.</p>
Onchocerciasis	<p>Suspected case: In an endemic area, any person with fibrous nodules in subcutaneous tissues.</p> <p>Confirmed case: A suspected case that is laboratory confirmed by presence of one or more of the following: microfilariae in skin snips, adult worms in excised nodules, or typical ocular manifestations (such as slit-lamp observations of microfilariae in the cornea, the anterior chamber, or the vitreous body).</p>
Perinatal deaths	<p>A Perinatal death is defined as the death of a baby of at least 28 weeks of gestation and/or 1,000 g in weight and early neonatal death (the first seven days after birth)</p> <p>A stillbirth is defined as any death of a baby before birth and with no signs of life at birth of at least 1,000 g birth weight and/or at least 28 weeks gestation and 35 cm long.</p> <p>Early neonatal death is defined as any death of a live new born occurring before the first 7 complete days of life. Day 1 is clinically considered the first day of life.</p>
Pertussis (Whooping cough)	<p>Suspected case: A person with cough lasting at least two weeks with AT LEAST ONE of the following symptoms</p> <ul style="list-style-type: none"> – Paroxysms (i.e. fits) of coughing – Inspiratory whooping – Post-tussive vomiting (i.e. vomiting immediately after coughing) without any other apparent <p>OR</p> <p>A case diagnosed as Pertussis by a physician</p> <p>Confirmed case: A suspect case that is laboratory confirmed by isolation of Bordetella pertussis or PCR or positive paired serology (two samples taken 4 weeks apart).</p>

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
Plague	<p>Suspected case: – compatible clinical presentation; (sudden onset of fever, chills, headache, severe malaise, prostration and very painful swelling of lymph nodes, or cough with blood stained sputum, chest pain, and difficulty in breathing). and – consistent epidemiological features, such as exposure to infected animals or humans and/or evidence of flea bites and/or residence in or travel to a known endemic focus within the previous 10 days.</p> <p>Confirmed case: Any person with Suspected case confirmed by isolation of <i>Yersinia pestis</i> from blood or aspiration of buboes, or specific sero-conversion or rapid diagnostic test detecting the Ag F1 in endemic areas</p>
Poliomyelitis (Acute flaccid paralysis)	<p>Suspected case: Any child under 15 years of age with acute flaccid paralysis or any person with paralytic illness at any age in whom the clinician suspects poliomyelitis.</p> <p>Confirmed case: A suspected case with virus isolation in stool.</p>
Human Rabies	<p>Suspected: A person with one or more of the following: headache, neck pain, nausea, fever, fear of water, anxiety, agitation, abnormal tingling sensations or pain at the wound site, when contact with a rabid animal is suspected.</p> <p>Confirmed: A suspected case that is laboratory confirmed</p>
Rift Valley Fever (RVF)	<p>Suspected case Early disease</p> <ul style="list-style-type: none"> ▪ Acute febrile illness (axillary temperature >37.5 °C or oral temperature of >38.0°C) of more than 48 hours duration that does not respond to antibiotic or antimalarial therapy, and is associated with: ▪ Direct contact with sick or dead animal or its products AND / OR: <ul style="list-style-type: none"> ▪ Recent travel (during last week) to, or living in an area where, after heavy rains, livestock die or abort, and where RVF virus activity is suspected/confirmed AND / OR: ▪ Abrupt onset of any 1 or more of the following: exhaustion, backache, muscle pains, headache (often severe), discomfort when exposed to light, and nausea/vomiting AND / OR: ▪ Nausea/vomiting, diarrhoea OR abdominal pain with 1 or more of the following: <ul style="list-style-type: none"> - Severe pallor (or Hb < 8 gm/dL)

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases

<p>Rift Valley Fever, continued</p>	<ul style="list-style-type: none"> -Low platelets (thrombocytopenia) as evidence by presence of small skin and mucous membrane haemorrhages (petechiae) (or platelet count < 100x10⁹ / dL) - Evidence of kidney failure (oedema, reduced urine output) (or creatinine > 150 mol/L) AND / OR: <ul style="list-style-type: none"> -Evidence of bleeding into skin, bleeding from puncture wounds, from mucous membranes or nose, from gastrointestinal tract and unnatural bleeding from vagina AND / OR: - Clinical jaundice (3-fold increase above normal of transaminases) <p>Late stages of diseases or complications (2-3 weeks after onset)</p> <ul style="list-style-type: none"> ▪ Patients who have experienced, in the preceding month a flu-like illness, with clinical criteria, who additionally develop the following: <ul style="list-style-type: none"> ▪ CNS manifestations which resemble meningo-encephalitis AND/OR ▪ Unexplained visual loss OR ▪ Unexplained death following sudden onset of acute flu-like illness with haemorrhage, meningo-encephalitis, or visual loss during the preceding month. <p>Confirmed case: Any patient who, after clinical screening, is positive for anti-RVF IgM ELISA antibodies (typically appear from fourth to sixth day after onset of symptoms) or tests positive on Reverse Transcriptase Polymerase Chain Reaction (RT-PCR).</p>
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<p>Severe Acute Respiratory Infections (SARIs)</p>	<p>Severe acute respiratory infection (persons \geq 5 years old): Any severely ill person presenting with manifestations of acute lower respiratory infection with:</p> <ul style="list-style-type: none"> ▪ Sudden onset of fever ($>38^{\circ}\text{C}$) AND ▪ Cough or sore throat AND ▪ Shortness of breath, or difficulty breathing ▪ With or without Clinical or radiographic findings of pneumonia OR <p>Any person who died of an unexplained respiratory illness.</p>
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Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
Severe Acute Respiratory Syndrome (SARS)	<p>Suspected case of SARS is an individual with: A history of fever, or documented fever ≥ 38 °C AND One or more symptoms of lower respiratory tract illness (cough, difficulty breathing, shortness of breath) AND Radiographic evidence of lung infiltrates consistent with pneumonia or ARDS or autopsy findings consistent with the pathology of pneumonia or ARDS without an identifiable cause AND No alternative diagnosis can fully explain the illness.</p> <p>Confirmed case of SARS: An individual who tests positive for SARS-CoV infection by the WHO recommended testing procedures.</p>
Severe Pneumonia in Children under 5	<p>Clinical case definition (IMCI) for pneumonia: A child presenting with cough or difficult breathing and:</p> <ul style="list-style-type: none"> ▪ 50 or more breaths per minute for infant age 2 months up to 1 year ▪ 40 or more breaths per minute for young child 1 year up to 5 years. <p><i>Note: A young infant age 0 up to 2 months with cough and fast breathing is classified in IMCI as “serious bacterial infection” and is referred for further evaluation.</i></p> <p>Clinical case definition (IMCI) for severe pneumonia: A child presenting with cough or difficult breathing and any general danger sign, or chest in-drawing or stridor in a calm child. General danger signs for children 2 months to 5 years are: unable to drink or breast feed, vomits everything, convulsions, lethargy, or unconsciousness.</p> <p>Confirmed case: Radiographic or laboratory confirmation of pneumonia may not be feasible in most districts.</p>
Sexually transmitted infections	<p>Genital ulcer syndrome (non-vesicular): Suspected case: Any male with an ulcer on the penis, scrotum, or rectum, with or without inguinal adenopathy, or any female with ulcer on labia, vagina, or rectum, with or without inguinal adenopathy.</p> <p>Confirmed case: Any suspected case confirmed by a laboratory method.</p> <p>Urethral discharge syndrome: Suspected case: Any male with urethral discharge with or without dysuria.</p> <p>Confirmed case: A suspected case confirmed by a laboratory method (for example Gram stain showing intracellular Gram-negative diplococci).</p>

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
Smallpox (<i>Variola</i>)	<p>Suspected case: An illness with acute onset of fever > 38.3 C (101 F) followed by a rash characterized by vesicles or firm pustules in the same stage of development without other apparent cause.</p> <p>Probable case: A case that meets the clinical case definition, is not laboratory confirmed, but has an epidemiological link to a confirmed or probable case.</p> <p>Confirmed case: A clinically compatible case that is laboratory confirmed.</p>
Trachoma ^{20,21}	<p>Suspected case: Any patient with red sticky eyes who complains of pain and itchiness of the eyes.</p> <p>Confirmed case: Any patient with red sticky eyes who complains of pain and itchiness of the eyes where examination of the eyes confirms one of the stages of Trachoma infection according to the WHO Simplified Trachoma Grading System.</p>
Trypanosomiasis	<p>Suspected case:</p> <p><i>Early stage:</i> a painful chancre originating as a papule and then evolving into a nodule at the primary fly bite site. There may be fever, intense headache, insomnia, painless lymphadenopathy, anaemia, local oedema and rash.</p> <p><i>Late stage:</i> cachexia, somnolence, and central nervous system signs.</p> <p>Confirmed case: A suspected case confirmed by card agglutination trypanosomal test (CATT) or by isolation of trypanosomes in blood lymph nodes or cerebrospinal fluid.</p>

<p>Tuberculosis</p>	<p>Community presumptive TB case definition: Any person with cough of 2 or more weeks and/or fever of 2 or more weeks and/or noticeable weight loss and/or contact with TB patient or a child who is not growing well</p> <p>Presumptive (likely) TB Case: Any person who presents with unexplained weight loss (more than 3Kgs), OR excessive night sweats for ≥ 3 weeks, OR persistent fever for ≥ 2 weeks, OR poor weight gain in the last 1 month for children > 5 years. the above may be accompanied with respiratory symptoms of: coughing for longer than 2 weeks, and or coughing up blood or chest pain or shortness of breath or \pmcontact of bacteriologically confirmed TB patient</p> <p>Confirmed TB</p> <ol style="list-style-type: none"> a. Bacteriologically confirmed TB (lab confirmed): Any person in whom mycobacteria TB is positive in a biological specimen by: smear microscopy or smear from any other biological specimen, OR culture, OR Nucleic Acid Amplification Tests e.g. Xpert MTB/RIF, TB LAMP, OR any other WHO recommended new diagnostics e.g. TB LAM for PLHIV with $CD4 < 200$ OR HIV positive who is critically ill¹ b. Clinically diagnosed TB: Any person who meets the presumptive TB criteria but does not fulfil the criteria for bacteriological confirmation and has been diagnosed with active TB by a clinician or other medical practitioner who has decided to give the patient a full course of TB
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¹ Respiratory rate > 30 /minute, Temperature of $> 39^{\circ}C$, heart rate > 120 /minute and unable to walk unaided

² Clinically diagnosed cases subsequently found to be bacteriologically positive (before or after starting treatment) should be reclassified as bacteriologically confirmed

Priority Diseases and Conditions	
Disease/Condition	Standard case definition for suspected cases
Tuberculosis Continued	<p>Monoresistance: Resistance to one first-line anti-TB drug only.</p> <p>Polydrug resistance: Resistance to more than one first-line anti-TB drug (other than both isoniazid and rifampicin).</p> <p>Multidrug resistance TB (MDR-TB): TB resistant to at least both isoniazid and rifampicin</p> <p>Rifampicin Resistance: resistance to rifampicin detected using phenotypic or genotypic methods, with or without resistance to other anti-TB drugs. It includes any resistance to rifampicin, whether monoresistance, multidrug resistance, polydrug resistance or extensive drug resistance</p> <p>Pre-XDR-TB: TB caused by <i>Mycobacterium tuberculosis</i> (<i>M. tuberculosis</i>) strains that fulfil the definition of MDR/RR-TB and that are also resistant to any fluoroquinolone (either levofloxacin or moxifloxacin or both)</p> <p>XDR-TB: TB caused by <i>Mycobacterium tuberculosis</i> (<i>M. tuberculosis</i>) strains that fulfil the definition of MDR/RR-TB and that are also resistant to any fluoroquinolone (either levofloxacin or moxifloxacin or both) and at least one additional Group A drug (either bedaquiline or linezolid or both)</p>
Typhoid Fever	<p>Suspected case: Any person with gradual onset of steadily increasing and then persistently high fever, chills, malaise, headache, sore throat, cough, and, sometimes, abdominal pain and constipation or diarrhoea.</p> <p>Confirmed case: Suspected case confirmed by isolation of <i>Salmonella typhi</i> from blood, bone marrow, bowel fluid or stool.</p>
West Nile Fever	<p>Suspected case: A hospitalized case of encephalitis due to unknown cause</p> <p>Confirmed case: Confirmation of West Nile Fever is through laboratory diagnostics to identify WNV-specific IgM</p>

<p>Yaws and endemic syphilis or bejel</p>	<p>Suspected case: a person with a history of residence in an endemic area (past or present) who presents with clinically active (visible) yaws lesions</p> <p>Confirmed case: a suspected case with a positive serological test (rapid treponemal test for syphilis confirmed by DPP test)</p> <p>Imported case: a person who presents with clinically active yaws serologically confirmed in an area where yaws is not known to be endemic</p> <p>Index case: first case of yaws which is detected in a community</p> <p>Contact of a case: a person who has close, frequent contact with the infected person. A contact for the purpose of yaws eradication is the household, classmates or close playmates as identified by the contact</p>
<p>Yellow Fever</p>	<p>Suspected case: Any person with acute onset of fever, with jaundice appearing within 14 days of onset of the first symptoms.</p> <p>Probable case: A suspected case AND One of the following</p> <ul style="list-style-type: none"> ▪ Epidemiological link to a confirmed case or an outbreak ▪ Positive post-mortem liver histopathology
<p>Priority Diseases and Conditions</p>	
<p>Disease/Condition</p>	<p>Standard case definition for suspected cases</p>
<p>Yellow Fever continued</p>	<p>Confirmed case: A probable case AND One of the following</p> <ul style="list-style-type: none"> ▪ Detection of YF-specific* IgM ▪ Detection of four-fold increase in YF IgM and/or IgG antibody titres between acute and convalescent serum samples ▪ Detection of YFV-specific* neutralizing antibodies <p><i>*YF-specific means that antibody tests (such as IgM or neutralizing antibody) for other prevalent flavivirus are negative. This testing should include at least IgM for Dengue and West Nile and may include other flavivirus depending on local epidemiology.</i></p> <p>OR One of the following</p> <ul style="list-style-type: none"> ▪ Detection of YF virus genome in blood or other organs by PCR ▪ Detection of yellow fever antigen in blood, liver or other organs by immunoassays Isolation of the yellow fever virus

<p>Zika virus disease</p>	<p><i>Suspected Case:</i> A person presenting with rash and/or fever and at least one of the following signs or symptoms:</p> <ul style="list-style-type: none"> • arthralgia; or • arthritis; or • conjunctivitis (non-purulent/hyperaemic). <p><i>Probable case:</i> A suspected case with presence of IgM antibody against Zika virus and an epidemiological link (with no evidence of infection with other flaviviruses).</p> <p><i>Confirmed case:</i> A person with laboratory confirmation of recent Zika virus infection:</p> <ul style="list-style-type: none"> • presence of Zika virus RNA or antigen in serum or other samples (e.g. saliva, urine, tissue, whole blood); or <p>IgM antibody against Zika virus positive (commercially available ELISA) <i>These case definitions may change based on new knowledge</i></p>
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Annex 1B: Community level case definitions using key signs and symptoms

Inform community leaders, community health workers, traditional healers, and health workers who conduct outreach activities about the priority diseases and conditions under surveillance in your area. The following are some of the case definitions which can be used to help the community to recognize the diseases and refer a person with these signs for treatment and notify the health facility.

Priority Diseases and Conditions	
Disease/Condition	Community case definition
Acute Flaccid Paralysis (AFP)	Any child under 15 years old with a sudden onset of weakness and /or inability to use their hand(s) and or leg(s)
Acute watery diarrhoea	Any person with 3 or more loose stools within the last 24 hours
Acute haemorrhagic fever syndrome	Any person who has an unexplained illness with fever and bleeding or who died after an unexplained severe illness with fever and bleeding
Adverse event following immunization (AEFI)	Any unusual event that follows immunization
Cholera	Any person aged 2 or more years with lots of watery diarrhoea
COVID-19	Any person with acute onset of fever and any one of the following, cough, runny nose, sore throat, general malaise or body aches
Diarrhoea in children less than 5 years of age	Any child who has three or more loose or watery stools in the past 24 hours with or without dehydration
Diarrhoea with blood (Dysentery)	Any person with diarrhoea, stomach pain and visible blood in the stool
Guinea Worm (Dracunculiasis)	Any person presenting with a skin wound living in an endemic area or risk areas of Guinea worm, with a worm coming out
Hepatitis	Any person with fever and yellowing in the white part of the eyes
Animal bite (potential rabies)	Any person who is bitten by a dog or other mammal
Influenza-like Illness (ILI)	Any person with fever and cough or throat pain or runny nose

Priority Diseases and Conditions	
Disease/Condition	Community case definition
Leprosy	Any person with skin patch with loss of feeling
Malaria	[If in an endemic country]: Any person with fever or a history of fever in the previous 24 hours and or the presence of pallor (whiteness) of the palms in young children [If in or from a non-endemic country]: Any person who has been exposed to mosquito bite and a history of fever or fever in the previous three days
Measles	Any person with fever and rash
Meningitis	Any person with fever and neck stiffness
Maternal death	The death of a woman while pregnant or within 42 days after delivery
Neonatal death	Any death of a live new born occurring before the first 28 complete days of life
Neonatal tetanus	Any new born who is normal at birth, and then after 2 days, becomes stiff and unable to suck or feed or has convulsions/fits.
Onchocerciasis	Any person in an endemic area with fibrous nodules under the skin
Plague	Any person with painful swelling under the arms or in the groin area. In an area known to have plague, any person with cough, chest pain and fever.
Pneumonia	Any child less than 5 years of age with cough and fast breathing or difficulty in breathing.
Rabies (Human)	Any person with a sense of apprehension, headache, fever, malaise and indefinite sensory changes often referred to the site of a preceding animal bite. Excitability and hydrophobia are frequent symptoms
Sexually transmitted infections (STIs)	Any person male or female who has a urethral/vaginal discharge or genital sores or pain
Tuberculosis	Any person with cough for 2 weeks or more
Typhoid fever	Any person with a prolonged fever during the previous 3 weeks or more

Priority Diseases and Conditions	
Disease/Condition	Community case definition
Viral haemorrhagic fevers	Any person who has fever and two or more other symptoms (headache, vomiting, yellow eyes, runny stomach, weak in the body,) or who died after serious sickness with fever or bleeding
Yellow fever	Any person who has fever and two or more other symptoms (headache, vomiting, runny stomach, weak in the body, yellow eyes) or who died after serious sickness with fever or bleeding
Unusual health events	<ul style="list-style-type: none"> • Two or more persons presenting with similar severe illnesses in the same setting (e.g., household, workplace, school, street) within one week • Two or more persons dying in the same community within one week • Increase in number of animal sicknesses and/or deaths, including poultry, within one week • Any human illness or death after exposure to animals and animal products, including poultry (e.g., eating, physical handling) • Any person who has been bitten, scratched, or whose wound has been licked by a dog, or other animal. • Two or more persons that pass watery stools and/or vomiting after eating/drinking at a given setting (e.g., wedding, funeral, festival, canteen, food sellers etc.) • Unexpected large numbers of children absent from school due to the same illness • Any event in the community that causes public anxiety

Annex 1C: Guide for establishing Event-Based Surveillance (EBS) at National, Regional, District and Health Facility levels

Event-based surveillance (EBS) is the organized and rapid capture of information about events that are of potential risk to public health. Information is initially captured as a signal which is considered by the Early Warning and Response system as a signal representing potential acute risk to human health, such as an outbreak. All signals may not necessarily become real events, as such they all need to be triaged and verified before a response is initiated. EBS provides the opportunity for early detection of events leading to timely response. It is therefore mandatory that EBS is established alongside IBS at all levels of the health system; national, regional, district, health sub-district, health facility and community levels.

NB: *EBS at community level have been described in the Introduction Section of these Guidelines.*

I) Steps for establishing EBS at National, Regional Levels

Step 1: Establish EBS Hotlines and Media Scanning for Signal Detection

This step involves two major activities namely establishing EBS Hotlines and Media Scanning Centres as described below:

A. Establish EBS Hotlines:

- A hotline is a designated phone line or social media platform that the public can use to obtain information from an organization or to give the organization information. If a phonenumber it is desirable that a hotline should be a short number for ease of memory. It should be able to receive direct phone calls or information from social media platforms such as WhatsApp, Facebook, or Twitter.
- It should be toll free .
- It is recommended to have a single number that can be used as a hotline to make reporting easy to remember. The national hotline number is 0800203033 and / or send a free SMS to 6767.
- Community members should be motivated to self-report events that may impact the public health including emerging public health events or outbreaks.
- Disseminate the hotline number by advocacy through health authorities, community health volunteers, non-governmental organizations, religious and other leaders, or schools and also advertise through messaging in local languages by TV, radio and newspapers.
- Develop partnership with communication companies that can spread the hotline number by text messages to their clients. The messages sent should include the purpose of the EBS, the importance of immediately reporting alerts and how alerts can be reported.
- Train a team of employees to operate the EBS hotline 24hours to respond to calls or request information from the community.

The Call methodology:

The responder to the call should start by greating and thanking the caller for their proactivity to report to the

ministry of health or district, or relevant ministry hosting the hotline, concerning potential public health events. Then the responder should follow a prepared set of questions that directly reflect the questions posed in the rumors logbook. The call should be ended by thanking the caller for their time, patience and proactivity. The responder should directly register in the rumors logbook the signal/alerts that meet the pre-defined list of signal/alerts. Calls should be returned as soon as possible in situations where a call is interrupted or disconnected or if calls are received while the responder is busy; this will ensure that all signal/alerts are collected.

The Messaging methodology:

Once an SMS or a social media message is received, an instant automated message should greet the sender, thank them and state that an operator will contact them. Automated questions or responders can collect information from the sender. Data should be registered directly in the rumors logbook according to the pre-defined list of signal/alerts for the country. Information about the sender should be collected for further communication and details about the signal/alerts reported. A direct call to the sender may be needed if more information is required.

B. Establish Media Scanning Centre

- Media are channels of general communication amongst a population and they act as gathering tools used to store and disseminate information or data. E.g. newspapers, magazines, TV, radio, bulletins and other printed forms of communication, as well as electronic or online sources.
- Media scanning is an active process that should be performed using different media.
- Media scanning should be performed at national level.
- Train health personnel to conduct media scanning daily.
- The sources of media scanning can be **official** and **non-official**.

(i) Official media sources:

Alerts detected from official sources are reliable and do not need further verification.

Examples of official media sources:

- Websites of governmental sectors including, Ministries of health, Agriculture, Environment, foreign Affairs etc.
- Websites for official organizations such as universities, Centres of research, and recognized partners.
- WHO Official websites for Early Warning e.g. WHO IHR Event Information Site for National Focal Points.
- WHO Disease Outbreak News.
- Websites for WHO regional offices.
- Disease-specific websites e.g. Global Influenza Surveillance and Response.

(ii) Unofficial Media sources:

Alerts detected through these sources are not reliable and need to be verified.

Examples of unofficial media sources:

- Newspapers and magazines
- Online content of TV and radio channels
- Social media e.g. Facebook, Twitter, WhatsApp
- Unofficial websites e.g. ProMED, The Global Information Network (GPHIN), HealthMap, MEDISYS etc.

Methods of online media scanning

Online information scanning can be done **manually** and **automatically**.

The Steps for manual Scanning

- (a) Develop a checklist for scheduled (e.g. Daily) review of online sources.
- (b) Develop a list of prioritized signal/alerts regarding strategies, capacities and resources of the country.
- (c) Develop a list for keywords related to the prioritized signal/alerts including diseases, syndromes or events.
- (d) Visit all predetermined websites in the checklist of online sources to scan for keywords.

The steps for automated scanning

- (a) There are multiple automated technological tools that can be used for scanning of online information from predefined sources.
- (b) These tools can save time and effort and support early detection of public health threats.
- (c) Examples of automated scanning are:
 - (i) Rich site summary (RSS feeds) are standardized software tools that monitor the pre-defined websites and inform the user with updates.
 - (ii) Contributor-based sources are based on sharing information among health professionals, in which individuals collect information that can be accessed through shared feeds e.g. ProMed.
 - (iii) Automated information feeds or services developed by governments or international organizations that collect health information from several sources and then can decrease time spent in scanning for individual sources. These are called data aggregators.

Step 2: Signal Detection

Signal detection is the process of capturing information on the potential public health events reported to the hotline. Members of the general public may communicate with the hotline desk through phone calls, SMS, social media messaging or website chats.

The hotline desk team should filter received notifications from callers to determine which signals are valid. A list of signals definitions developed by national public health authorities should be provided to the hotline desk operators, or responders, so that they are able to continue with the registration of signals. The call responder or operator should register valid signals in a signal logbook. Signals can also be detected by media scanning either manually or automated.

Examples of pre-determined signal/alerts:

Code	Signal/alerts to be reported
01	Two or more persons presenting with similar severe illness in the same setting (e.g. household, workplace, school, street) within one week
02	Unexplained large number of deaths of poultry, livestock, other domestic animals or wildlife
03	Severe illness of a healthcare worker after exposure to patients with similar symptoms
04	One or more hospitalized patients with unexplained severe illness, including failure to respond to standard treatment

Step 3: Registration of EBS Signals

- Signals that are captured from media and hotlines and correspond to the pre-defined list of signals. Signals should be registered in the Signal book. See Sample Signal Logbook for Hotlines and/or Media Scanning on the next page.
- Each signal captured should include data about the signal's detection, triage and verification, until the response.
- Signal registration should include the minimum data set for tracking the signals for example;
 - Source/informant: Name, contact phone and time and date of the call/detection.
 - Signal: when it happened, who was affected (cases, deaths) and where it starts and spreads.
 - Follow-up of the signal: Triage, verification, risk assessment and response.

Sample Signal Logbook for Hotlines and/or Media Scanning

Signal Logbook for Hotlines and/ or Media Scanning	
<i>[NB: This should be completed by The Call Responder/Designated Media Scanner]</i>	
Variables	Response
1.Source of Information:	
(a) Source: CBS, Health facility based EBS, Media Scanning, Hotline (This can be further categorized)	
(b) Reporter info: Employee at national team, community health volunteer, healthcare worker etc.	
(c) Date and Time: of detection/receiving alert (DD/MM/YYYY and HH:MM)	___/___/___()__ :__
(d) Reference/Contact: Link, Contact name and Phone number	
2.Alert Information:	
(a) Signal Type: Human; Animal; Environmental	
(b) Signal/Alert: from the country’s list of alerts	
(c) Location: details about the location that can follow the administrative levels	
(d) Date of start: when did this start	
(e) Cases: number of cases	
(f) Deaths: number of deaths	
(g) Description: narrative text for any further information including any response activities (by community or health authority or else	
3. Follow up activities	
(a) Follow up: Discard, Monitor, Verify Date-Time: DD/MM/YYYY/ HH:MM	___/___/___()__ :__
(b) Sent for verification: Yes/No Date-Time: DD/MM/YYYY/ HH:MM	___/___/___()__ :__
(c) Verified: Yes/No Date-Time: DD/MM/YYYY/ HH:MM	___/___/___()__ :__
(d) Risk Assessment: Very Low/Low/Moderate/High /Very High	
(e) Sent to Response: Yes/No Date-Time: DD/MM/YYYY/ HH:MM	___/___/___()__ :__
(f) Response Status: Not started; On-going; Completed Date-Time: DD/MM/YYYY/ HH:MM	___/___/___()__ :__

Step 4: Conduct triaging of EBS Alerts

Conduct assessment of signals for verification

- (a) If the signal matches with one of the priority signals for the country, the alert should immediately undergo verification.
- (b) If the signal is generically defined, e.g. an unusual event that may pose a public health threat, a qualified public health specialist or team leader should assess the signal to decide whether to discard the it, or to proceed for verification.

Step 5: Conduct Verification of EBS signals

- (a) Verification is an essential step to confirm the validity of the captured signals and should be conducted by subject matter experts e.g. public health specialist.
- (b) Verification should be done at the local level nearest to the location of the signal.
- (c) If the signal is detected at national level, this is reported to the respective DHO and regional focal point where the signal is located by phone call or SMS or email etc.
- (d) Trained District Health Team with support from regional/national experts should conduct verification of the signals.
- (e) All signals should be verified within 24hours.
- (f) **Once a signal is verified and requires public health action, it is determined to be an EVENT.**
- (g) The District Health Team should promptly start investigations by collecting further information in the field using appropriate case investigation forms, conduct physical examinations, collect lab samples etc.
- (h) The confirmed events that meet the standard case definition should be captured by the respective District Health Team in the IBS system and reported to the next level of health care system i.e. through the existing *HMIS data collection tools and follow the HMIS reporting procedures (refer to section 2 of these Technical Guidelines)*.

Step 6: Conduct risk assessment and characterization

- (a) Once a signal is verified as an event, risk assessment begins.

Risk assessment is a systematic and continuous process for gathering, assessing and documenting information to provide the basis for actions to manage and reduce the negative consequences of an acute public health event.

- (b) The first risk assessment of an event should take place within 48 hours of the detection of one or more signals.
- (c) The District health team should lead the risk assessment with support from the regional and national team.
- (d) For a signal that has been substantiated as a true event but does not pose an immediate threat to the public, the team should monitor the event and undertake risk assessments when new information becomes available (refer to section 4 of these Technical Guidelines).

II) Steps for establishing EBS at district level

The steps for establishing EBS at district level is similar to national level. However, the district health office mostly receives EBS-related information in the form of alerts mainly from the health facilities and communities through Walk-ins, phone calls, text messages, WhatsApp, etc.

Record verbal or written information from health facilities and communities about suspected outbreaks, rumours, unexplained events into the district log of suspected outbreaks (refer to Section 4, Annex 4A of these Technical Guidelines).

The district health team should carry out the following functions: Triage, Verification and Risk Assessment.

Step 1: Triage signals

When the district health team receives information about a reported alert, they should conduct triage by asking the following questions:

- Is the reported information relevant to early warning (i.e. could this alert be genuine public health event?)
- Was this alert previously reported (i.e., is this alert a duplicate?)

Triage can take place through field visits, text messaging or over the phone.

After triage:

- If the report is not relevant or is a duplicate, then it can be discarded. There is no further action that is needed to be taken.
- If the information is to be discarded, communicate the following information to the Health facility surveillance focal persons/ who reported the signal:
 - They should continue to monitor the situation and notify the district if the situation changes and alert is met.
 - It is okay that they have reported an alert that has been determined to be a false alert, and they are encouraged to continue reporting alerts when they are detected.
- If the report is pertinent and is not a duplicate, then the information must be verified by the district health team that received the information about the signal.

Step 2: Verify alerts

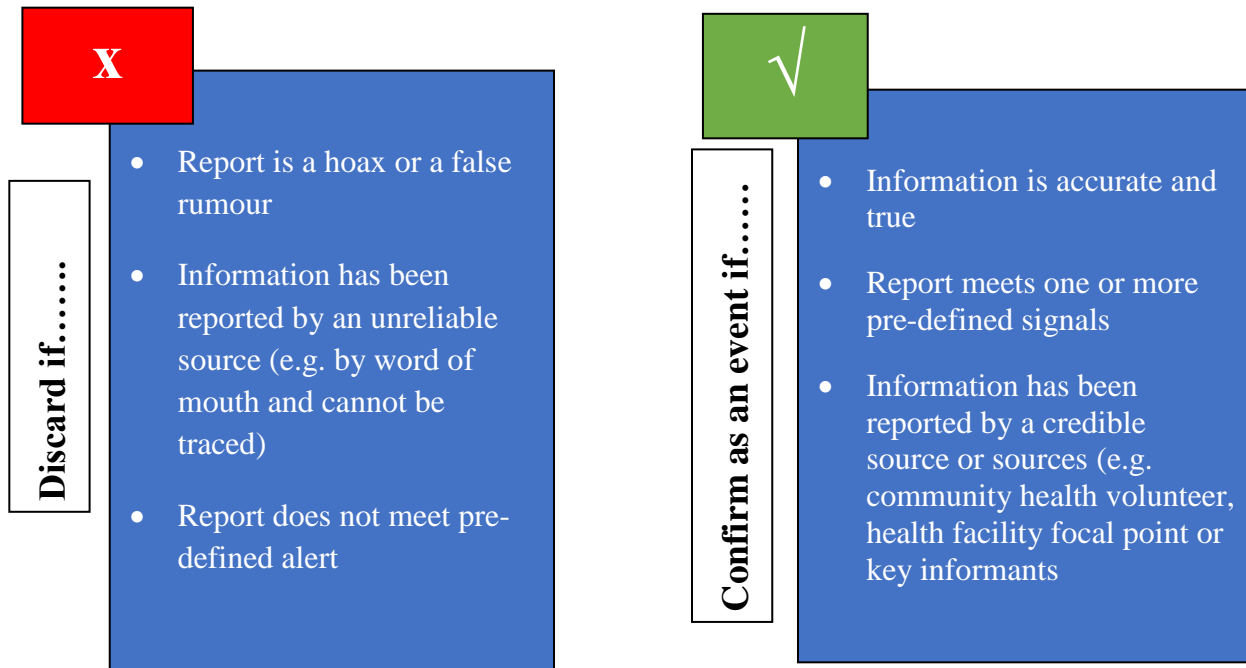
- The district health team receiving signals from health facilities and communities must verify these signals before they are determined to be events.
- Use the EBS verification tool; see sample of Event-Based Surveillance: Verification Tool on next page.
- The result of verification is the confirmation that the signal is true or false. Once alert is verified it becomes an event.

The process of signal verification should answer three main questions:

- (a) Is the report accurate (i.e. true)?
- (b) Has the information been reported by a reliable source or sources?
- (c) Does the report meet the criteria for one or more alerts?

Sample of Event-Based Surveillance: Verification Tool

The graphic shown below can be used to determine the outcome of the alert verification, once sufficient information has been collected and validated



After verification:

- If the alert is considered to be a public health event, it is reported immediately to the PHEOC.
- If the alert is not considered to be a public health event, the situation will be monitored.
- Record confirmed events in existing HMIS data collection tools and platforms and report to next level (Refer to section 2 of these Technical Guidelines).

Step 3: Conduct Risk assessment (Refer to step 6 under setting up EBS at national level)

III) Steps for establishing EBS at health facility level

Important points to consider:

- Indicator-Based Surveillance (IBS) in health facilities encompasses immediate, weekly or monthly reporting of pre-determined list of diseases based on case definitions.
- Health facility based EBS trains clinicians, nurses, and other relevant healthcare professionals to report on pattern of disease alerts, such as a cluster of illnesses.
- EBS may allow for detection of emerging or re-emerging public health threats because it is not disease-specific, requires immediate notification, and is highly sensitive and broad.
- Additionally, since reporting does not require laboratory results for reporting and relies on clinicians' experience, EBS is more practical and fairly simple to establish and sustain.

- Health facilities should participate in both IBS and EBS since the two complement each other leading to early detection of diseases, conditions and events.

Steps for establishing EBS in health facilities

Step 1: Alert detection

- Select and train Health Facility EBS focal persons: Existing health facility surveillance focal persons can be trained to perform this role.
- Health Facility EBS focal persons must inform other staff to immediately notify them when they see or hear about one of the alerts happening in their workplace.

Examples of Health Facility EBS alerts:

- Any severe illness in health staff after taking care of a patient with similar illness
- Large, sudden increase in admission for any severe illness of the same type
- Any severe, unusual, unexplainable illness including a failure to respond to standard treatment
- Increased use of a particular medicine

Step 2: Reporting Alerts

Reporting alerts involves communicating with surveillance Focal Persons in the health facilities that reports to the district team immediately by phone call to the DSFP, SMS to 6767, or in person.

Step 3: Triaging and verification

The district health team upon receipt of report of alerts should triage and verify all alerts within 24 hours of alert detection using the verification tool. In case of true event immediate investigations and response measures is implemented as per the existing IDSR structures. The district team should provide regular feedback to the reporting health facilities.

Annex 1D: Sample list of district reporting sites

Below is an example of an inventory for reference

EXAMPLE: List of reporting sites in Hoima District for the FY 2020/21

Name of health facility /reporting sites	Location of facility/reporting sites	Designated focal person for surveillance and response	Telephone or email (or other contact information)
<i>Mparangasi HCIII</i>	<i>Village: Mparangasi cell; Parish: Central ward; Sub County: Bulindi Town Council; District: Hoima</i>	<i>Mr. Kugonza Fred.</i>	<i>Tel: 077-2 ***** or send email on xxxxx@gmail.com</i>

Annex 1E: Laboratory functions by health system level

Laboratory functions by health system level			
Level	Collect	Confirm	Report
Health Facilities	<p>Use standard case definitions to determine initiation of specimen collection process</p> <p>Assist Field Laboratory in specimen collection within approved guidelines</p> <p>Document specimens with clinical history</p> <p>Transport specimens to Field Laboratory and Referral Laboratory per approved guidelines including the laboratory reporting form</p>	<p>Use standard case definitions to initiate or request appropriate testing for disease confirmation</p> <p>Handle specimens using approved SOPs and guidelines</p>	<p>Record details of specimen collection and transport</p> <p>Receive test results and provide feedback</p>
District	<p>Communicate specimen collection policies and procedure to providers</p> <p>Request additional specimen collection materials as needed</p> <p>Store specimens per appropriate conditions pending transport or additional studies</p>	<p>Perform laboratory tests for presumptive diagnosis as appropriate and available</p> <p>Store representative samples for transportation in specified conditions as per guidelines</p> <p>Routinely examine the laboratory analysis for changes in trends</p>	<p>Record, store and backup laboratory results and details of laboratory testing including all tests done and timeliness of testing</p> <p>Provide feedback of results to clinical staff and patients</p> <p>Ensure regular receipt of Laboratory results from National level</p> <p>Update line-lists with laboratory results and follow-up on any missing results with testing laboratory</p> <p>Report results and timeliness details to next level</p> <p>Report observed changes in trends during routine analysis of laboratory results to the National level</p>

Laboratory functions by health system level			
Level	Collect	Confirm	Report
	<p>Direct additional collection as needed based on outbreak investigation</p> <p>Arrange for specimen transport to Field Laboratory and Referral Laboratory per approved guidelines including the laboratory investigation and reporting form</p>		<p>Use summary information for outbreak investigation</p>
National Referral Labs	<p>Set specimen collection guidelines, policies and procedures with the national authorities</p> <p>Distribute appropriate specimen collection materials, triple packaging and transport media for epidemic prone diseases</p> <p>Request for additional specimen to be collected by laboratory or providers as needed</p> <p>Store specimens within approved conditions for further referral and analysis or additional research or investigation</p>	<p>Set confirmation policies and procedures with the national authorities</p> <p>Perform laboratory studies for confirmation as appropriate: microscopy, culture, antimicrobial susceptibility testing, serotyping, serological investigation, molecular detections and identification, genomic sequencing</p> <p>Store representative isolates from the outbreak as needed</p>	<p>Record, store and backup laboratory results and details of laboratory testing including all tests done and timeliness of testing</p> <p>Report results to Regional/District Health Teams and all relevant stakeholders at National and Regional/District levels for onward dissemination to submitting health facility or laboratory</p> <p>Report case-based and summary data according to the agreed protocol</p> <p>Report laboratory results from screening sentinel populations at target sites</p> <p>Carry out routine analysis of laboratory data and results so as to monitor changes in trends</p>

Laboratory functions by health system level			
Level	Collect	Confirm	Report
Global / Collaborating Reference Laboratories	<p>Set specimen collection guidelines, policies and procedures, and share with the national authorities</p> <p>Request for additional specimen to be collected, as needed</p>	<p>Perform additional analysis on referred specimens or isolates as appropriate</p>	<p>Record, store and backup laboratory results and details of laboratory testing including all tests done and timeliness of analysis</p> <p>Report laboratory results to National Reference Laboratory or National Laboratory Coordination Team for onward dissemination</p>

Annex 1F: Responsibilities of Laboratory Focal Persons at All Levels

National level laboratory focal person

The national laboratory focal persons for the various diseases/ conditions should:

- Coordinate all laboratory related activities in support of disease preparedness, surveillance and response
- Establish and support collaboration with epidemiologists/surveillance officers
- Define laboratory testing capabilities in-country and those referred internationally and share this information with all stakeholders
- Coordinate laboratory logistics through development of supplies/reagents and equipment lists, their specifications and quantification based on the updated laboratory inventory. Support the laboratory through advocacy with higher levels in accessing the necessary infrastructure, equipment and supplies to collect, handle, test, store and ship specimens safely
- Support establishment and management of a national proficiency testing scheme for regional referral hospital and peripheral laboratories.
- Support development of standards and guidelines for collection, handling, testing, packaging, storage and transportation of specimens including proper record for laboratory results for regional and peripheral laboratories.
- Support Establishing protocols and guidelines for bio-safety

Regional laboratory focal person

- Maintain an updated list of the laboratories that will perform required laboratory testing.
- Provide information to all health facilities for appropriate specimen collection, packaging and shipment
- Maintain and update an inventory of supplies, reagents and equipment from all the laboratories in the region
- Ensure that laboratory confirmation procedures established at the national level are available and followed in the region and districts
- Ensure that specimen collection, transport materials and laboratory diagnostic tests are available to enable the timely detection of priority diseases
- Coordinate with health facilities and laboratory in collecting, safely packaging and reliably transporting the appropriate specimen for confirming the suspected case
- Receive results from the laboratory and promptly report them according to country procedures to all that require them for public health action and patient clinical care.
- Ensure there is a proper record for laboratory results
- Communicate with reference laboratory and National Laboratory Coordinators as necessary
- Ensure the laboratories have quality assurance programme to improve the reliability and reproducibility of laboratory results
- Ensure support supervision and mentorship of the laboratories in the region.

District laboratory focal person

- In liaison with the hub coordinator, establish or strengthen routine communication between identified laboratories that send and receive specimens at all levels

- Prepare district laboratory procurement plans and provide technical support in procurement of laboratory supplies, and equipment and monitor their distribution and utilization as informed by the laboratory inventory.
- Ensure that laboratory staff are trained and SOPs for sample collection, transportation, confirming the disease or condition and reporting the results are clear and in place Ensure the laboratories have quality assurance programme to improve the reliability and reproducibility of laboratory results.
- Coordinate and provide mentorship through support supervision to the hub laboratories.
- Ensure implementation of Laboratory Quality Management Systems in all laboratories within the district.

Facility laboratory focal person

- Maintain and update list of inventory of supplies, reagents and equipment at the facility.
- Ensure that standard operating procedures (SOPs) for sample collection, testing, storage, packaging, and transportation, confirming the disease or condition and reporting the results are available and being followed.
- Communicate with district laboratory focal person, hub coordinator, and the district health Office for laboratory data harmonisation.
- Ensure there is a proper record for laboratory results.
- Ensure the laboratory has quality assurance programme (internal and external quality control) to improve the reliability and reproducibility of laboratory results.

Annex 1G: List of National Reference laboratories for confirming priority diseases, conditions and events

Periodically update the list of laboratories in your district or those specified by the national level for confirming priority diseases and conditions. Include in the list whom to contact for assistance. The following list is an example.

EXAMPLE:

Priority disease, conditions and events	Focal Person, Name of Lab, address, phone number, email
Polio	EPI Laboratory, Uganda Virus Research Institute Plot 5159, Nakiwogo Road, P.O. Box 49, Entebbe Phone: +256 414 320385/6/ +256 414 320305
Cholera	Uganda National Health Laboratory and Diagnostic Services (UNHLDS), Plot 106-1062, Butabika Phone +256-0800221100
HIV	Uganda National Health Laboratory and Diagnostic Services (UNHLDS), Plot 106-1062, Butabika Phone: +256 0800221100
Tuberculosis	National Tuberculosis Reference Laboratory/SRL Plot 106-1062, Butabika
Measles	EPI Laboratory, Uganda Virus Research Institute Plot 5159, Nakiwogo Road, P.O. Box 49, Entebbe Phone: +256 414 320385/6/ +256 414 320305
Plague	Uganda Virus Research Institute Plague Reference Laboratory, Weather Head Park Lane, Arua.
Human influenza caused by a new subtype	National Influenza Centre, Uganda Virus Research Institute Plot 5159, Nakiwogo Road, P.O. Box 49, Entebbe Phone: +256 414 320385/6/ +256 414 320305
Viral Haemorrhagic Fevers (e.g. Ebola, Marburg)	Special pathogens laboratory, Uganda Virus Research Institute Plot 5159, Nakiwogo Road, P.O. Box 49, Entebbe Phone: +256 414 320385/6/ +256 414 320305
Dengue fever	Arboviral Laboratory, National Influenza Centre, Uganda Virus Research Institute Plot 5159, Nakiwogo Road, P.O. Box 49, Entebbe Phone: +256 414 320385/6/ +256 414 320305
Public health events of national or international concern	Uganda National Health Laboratory and Diagnostic Services (UNHLDS), Plot 106-1062, Butabika Phone: +256 0800221100
Anthrax	Uganda National Health Laboratory and Diagnostic Services (UNHLDS), Plot 106-1062, Butabika Phone: +256 0800221100

Chikungunya	Arboviral Laboratory, National Influenza Centre, Uganda Virus Research Institute Plot 5159, Nakiwogo Road, P.O. Box 49, Entebbe Phone: +256 414 320385/6/ +256 414 320305
Typhoid fever	Uganda National Health Laboratory and Diagnostic Services (UNHLDS), Plot 106-1062, Butabika Phone: +256-0800221100
COVID-19	National Influenza Centre, Uganda Virus Research Institute Plot 5159, Nakiwogo Road, P.O. Box 49, Entebbe Phone: +256 414 320385/6/ +256 414 320305

Annex 1H: Sample verification tool for unusual health events

The process of signal verification should answer three main questions:

- (a) Is the report accurate (i.e. True)?
- (b) Has the information been reported by a reliable source or sources?
- (c) Does the report meet the criteria for the respective community case definition or the criteria for one or more signals?

The following are examples:

Community-based Surveillance: Verification Tool for Unusual Health Events

Two or more persons presenting with similar severe illnesses in the same community within one week



False if...

- There is only one person presenting with illness
- The persons present with dissimilar signs and symptoms
- There is no temporal association, and >1 week separates the patients' illness
- The persons presenting with similar symptoms reside in different communities that are physically well-separated



True if...

- There are two or more persons presenting with similar signs and symptoms who live or work in the same community
- The ill persons had an opportunity for exposure or close contact with one another
- The persons' illness requires hospitalization
- One or more persons has died

SECTION 2:

REPORT PRIORITY DISEASES, CONDITIONS AND EVENTS

SECTION 2: REPORT PRIORITY DISEASES, CONDITIONS AND EVENTS

2.0 Report priority diseases, conditions and events

Integrated Disease Surveillance and Response (IDSR) is a system with the potential to ensure a reliable supply of epidemiologic information to the national and district levels in order to fulfil IHR (2005) requirements. Ensuring reliable reporting of surveillance data throughout the system is important. Reliable reporting provides information for surveillance focal persons, district or regional health authorities, epidemiologists, competent authority at Point of Entry (PoE), program managers, the national IHR focal point, the WHO contact point and other health staff to:

- Identify emerging problems or conditions and plan appropriate responses, including informing relevant staff or levels
- Take action in a timely way
- Monitor disease trends in the area
- Evaluate the effectiveness of the response

This section describes how to report priority diseases, conditions and events within the required timelines. In IDSR, data collection and data reporting follow different timeliness for different purposes:

- Immediate reporting of case-based information allows for early detection of unexpected or highly pathogenic/lethal public health events.
- Weekly reporting: Aggregate reporting of epidemic prone diseases and disease of public health concern provides data for monitoring trends of diseases, conditions or events to detect outbreaks early
- Monthly (HMIS 105 & HMIS 108), quarterly (HMIS 097) and annually (HMIS 107) aggregated reporting provides data for monitoring the health status of the population and impact of disease specific programs, and for planning allocation of resources.

To increase the sensitivity of surveillance and allow for early detection of outbreaks, reporting should NOT be limited to cases detected through inpatient and outpatient data but should be followed up with additional community case search.

Event notification is done through an SMS based system for most conditions while other conditions/disease that require immediate reporting is paper-based at the point of service delivery and digitized higher in the health system. All other disease reporting is done using a hybrid system that is partly paper-based and with data digitized at the district level. However, Uganda is transitioning to using electronic tools to facilitate rapid transmission of data to enable timely response to public health threats. The potential benefits of using electronic reporting tools for eIDSR include: more timely reporting, investigation, and response to outbreaks. Electronic reporting may also improve data quality; enhance virtual, near real-time disease and events monitoring capability; may lead to reduced system costs and easily generate automated alerts. In addition, information can be more easily stored and accessed. (See Section 9 ON electronic IDSR (eIDSR)).

The targeted public health workforce for IDSR are primarily staff at all levels (health facility, district, regional and decision makers at national) of the health system (both human and animal), data management personnel who will oversee the Information Communication Technology (ICT) aspect of the system, supervisory and disease specific program personnel. Uganda aims to have an interoperable approach of strengthening eIDSR by creating system linkages and information sharing platforms. This will be done through the One Health platform.

2.1 Immediate reportable diseases, conditions and events

Immediate reporting is indicated when an epidemic-prone disease or other potential Public Health Emergency of International Concern (PHEIC) is suspected or is otherwise required under the International Health Regulations (2005). The diseases, conditions and events requiring immediate notification to the next level are listed in **Table 2**. Immediate reporting allows timely action to be taken to prevent the re-emergence or rapid transmission of epidemic prone diseases or events or their propagation, especially those due to highly virulent infectious organisms, chemical, biological or radio nuclear agents.

Information that is reported immediately, such as single cases or clusters of reportable events, will generate an alert and initiate a case-based reporting system. This means that, specific information about that suspected case or if it is a cluster, specific information of each of cases identified, will be collected thoroughly and reported to the next level. At the same time, an initial investigation will be initiated. For events reported at PoE, information is reported to the next level (district in which the PoE is situated) as well as simultaneously to the IHR National Focal Point. Reporting units with no diagnostic capacity, will use the suspected case definition given to identify and report diseases, conditions and events. Additionally, information of contacts will be collected. Section 4 describes how to conduct contact tracing and reporting contacts.

For conditions like maternal and perinatal deaths, the circumstances leading to the death need to be gathered and analysed. Health providers should use the national Maternal Perinatal Death Surveillance and Response (MPDSR) in consultation with the relevant focal points.

In IDSR, there are two types of thresholds used to initiate response: an alert threshold and an epidemic threshold. These thresholds are normally expressed in terms of the number (or proportion) of cases of a disease and the critical point (threshold) beyond which action must be taken. Trained health workers should always determine the alert and epidemic thresholds. Thresholds for alerts and epidemic prone diseases, conditions or events are shown in Section 11.

***NB:** Please refer to Section 11 for disease-specific information including surveillance case definitions, alert and epidemic thresholds for reporting suspected cases or events.*

Table 2: Diseases, conditions or events requiring immediate reporting

<ol style="list-style-type: none"> 1. Acute haemorrhagic fever syndrome (Ebola Virus Disease, Marburg, Lassa Fever, RVF, Crimean-Congo) 2. Acute Viral Hepatitis 3. Adverse Events Following Immunization (AEFI) 4. Anthrax 5. Bacterial meningitis 6. Buruli Ulcer 7. Chikungunya 8. Cholera 9. Dengue fever 10. Diarrhoea with blood (<i>Shigellosis</i>) 11. Dracunculiasis (Guinea Worm disease) 12. Hepatitis B 13. Influenza due to new subtype 14. Listeriosis 15. Maternal death 16. Measles 	<ol style="list-style-type: none"> 17. Meningococcal meningitis 18. Middle East Respiratory Syndrome Coronavirus (MERS-CoV) 19. Neonatal tetanus 20. Noma 21. Perinatal death 22. Plague 23. Poliomyelitis (Acute Flaccid Paralysis) (AFP) 24. Rabies (Human) 25. SARIs 26. SARS e.g. COVID-19 27. Smallpox 28. Typhoid fever 29. Yellow fever 30. Zika virus disease 31. Unexplained cluster of illness/death from human or animal/bird* 32. Any public health event of international concern (infectious, zoonotic, food borne, chemical, radio nuclear or due to an unknown condition)
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* Examples of clusters can be;

- any cluster of illness or deaths among people living in the same community within a specific time period (for-example one week)
- Unexplained cluster of deaths of animals/birds within a specific time period
- Illness or death among people after exposure to animals
- Health worker illness after exposure to patients with similar illnesses
- Unexpected increases in admission to health facilities of persons with similar severe symptoms
- Sudden illness in a person who has travelled out of the country in the past 14 days
- Any unusual illness or sudden death in the community within a specific time period
- Unexpected large numbers of children absent from school due to the same illness
- Unexpected large numbers of sales at pharmacies of many people buying medicines for the same kind of illness

NB: Ensure that adequate information is collected for events which are reported. Some of the events might have a link with the Agricultural or Livestock/Wildlife sector or Food or Environment or other sectors. Ensure that information is also sought from these sectors.

2.1.1 Report case-based information to the next level

If an immediately reportable disease, condition or other public health event is suspected, the health facility must report case-based information to the next level **within 24 hours of detection**. Information obtained through preliminary investigation of a suspected case includes;

- Patient's geographical location

- Health facility or facilities that managed or handled the patient or referred the patient
- Patient's identification and demographic information
- Information about signs and symptoms including date of onset, history of vaccination (where applicable) and information about any relevant risk factors including contacts
- Laboratory results (if available)
- History of travel
- History of Exposures (Human, Animal or Environment)

Any maternal or perinatal death should be reported immediately within 48 hours of occurrence. A sample reporting form is provided in Annex 2K. Reference should be made to the national integrated Maternal Perinatal Death Surveillance and Response guidelines.

Make the initial report by the fastest means possible (telephone, e-mail, radiophone, text message, social media). The health facility should contact the District Health Officer immediately and provide information about the patient or event.

- Follow up the initial verbal report with a written report using a standardized case-based reporting form. A sample case-based reporting form for recording case-based information is in Annex 2F at the end of this section. If a computer or other electronic device is available for surveillance or case management, complete and submit the form electronically to the next level. On electronic platforms, protect the patient privacy by encrypting patient ID data so only few health staff can access the detailed information, or set up appropriate user rights such as creating a password when using a common office computer.
- If a laboratory specimen is requested at this time, make sure that the patient's identifying information on the specimen, the lab investigation form, and the case-based reporting form all match. Ensure proper packaging for reliable results. A copy of the case-based form must accompany the laboratory form and the specimen. A sample laboratory form is included in Annex 2G.

Note: Some epidemic-prone diseases or conditions like Maternal or Perinatal deaths, have specific reporting requirements. Please refer to disease-specific and conditions requirements in Section 11 of this guide.

Ensure that adequate information is available for events which are reported, as some events might have links with Agriculture, Livestock, Wildlife, Food, Water and Environment and other sectors. Information sharing is crucial and should start at the community, health facility, district, regional and national level. At the National level, the IHR National Focal Point (NFP) should notify WHO of an event that is a potential Public Health Emergency of International Concern (PHEIC) using the decision instrument in the IHR 2005 (Annex 2A). In addition, for food safety events, information sharing should be made through the National INFOSAN focal point.

For all events, establish a line listing of suspected cases or events or conditions reported as part of initial and ongoing investigation and ensure it is always updated, while at the same time maintaining the link with appropriate sectors, depending on a particular disease or event. The line list should be kept where there is a suspected outbreak and where an isolation unit has been opened, but if several isolation units have been opened, the district should maintain a combined line list. Refer to Annex 4E for a sample line list.

2.1.2 Notifying a potential PHEIC under IHR (2005)

If a potential Public Health Emergency of International Concern (PHEIC) is suspected (as defined in Annex 2 of the IHR 2005), the District Health Officer should report to the National IHR Focal Point immediately using the fastest means of communication. If the potential PHEIC is detected at Point of Entry, immediate reporting should also be made to the National IHR Focal Point, while at the same time notifying the district and region (See Annex 2B for a framework of reporting).

The process of notifying WHO of events under the IHR involves the use of the “Decision instrument” in the IHR. This is a national level function coordinated by the IHR NFP with the support of appropriate experts, depending on the emergency.

2.1.3 Reporting events from community sources

Any suspected event occurring in the community including cases of maternal and neonatal deaths should be reported immediately. The trigger mechanisms of reporting must be clearly defined and the information must be immediately notified to a VHT, or to a nearby health facility or sub district head. Minimum information collected should include:

- Date of event and date of report
- Suspected disease, condition, or event
- What happened?
- When did this happen? (day, month, year)
- Where did this happen? (Exact location, Village, Parish, sub-county, District)
- Who is affected? (age, gender, occupation etc)
- How many people have been affected?
- Has anyone died? If yes, how many?
- Is the event ongoing?
- Are there any animal deaths/exposures?
- Recent history of travel to an affected area
- Other information you have.
- Name and contact number of the person reporting
- Any action taken

See Annex 2C for a reporting format when an event is identified, Annex 2D for monthly summary and Annex 2E for reporting structure for community alert and verification of events from community sources.

2.2 Summarize immediate and weekly reportable diseases

After an initial case has been detected or an outbreak is suspected or confirmed, summary data are important for analysis and monitoring. For example, at the health facility or district, the surveillance focal person can draw an epidemic curve to see if and when the epidemic thresholds for specific diseases have been crossed. Additionally, these data from epidemic investigation can be used to check whether the case fatality rate is below, at or above the expected target. The weekly data analysis of the suspected or confirmed epidemic should also help point out possible high-risk groups with regard to a patients' case location or residence, age group, sex, and exposure during social events (for example, a funeral), and occupational hazards (for example, butchering, consuming game meat, or exposure to contaminated food or beverage).

At the district level, weekly data analysis includes; verification of the quality of the data coming from the health facilities for investigation, completeness and timeliness of these reports. For eIDSR, the Biostatistician and DSFP should ensure that data verification is done and approved by DHO for further transmission. Additionally, an in-depth analysis of individual immediate case-based reporting forms received from the health facilities will also be performed, in addition to the weekly aggregated data. Line lists should be used to calculate incidence and case fatality rates and compared with the set alert and epidemic thresholds to determine if the outbreak is increasing or decreasing. Districts should store the information electronically and forward the surveillance data sets to the next higher level in this format.

2.2.1 Weekly reporting of immediate notifiable diseases

Weekly reporting provides data for monitoring trends of diseases or conditions to early detect outbreaks. It is important to ensure that the HMIS weekly reporting format is adhered to across all health facilities and districts to facilitate comparison within and between the facilities and districts.

After immediately reporting to the next level about instances of notifiable diseases, conditions or events, collect and report weekly summary information of the event or disease or condition which has been reported and other weekly reported priority diseases, conditions and events, as listed in **Table 2**.

With eIDSR (See Section 9), this will be updated automatically in the database, and also manually entered into a computer. This aggregation is important to understand the trend of the immediate reportable diseases and plan for effective intervention.

Diseases, conditions or events not outlined in **Table 2** but could result in Public health action should be entered in the "others" section of the weekly reporting summary.

2.2.2 Zero reporting

If no cases of an immediately reportable disease have been diagnosed during the week as verified through health facility record review, record a zero (0) on the reporting form for that disease. If the space is left blank, the staff that receives the report will not be able to develop information from a blank space. Submitting a zero report for each immediately reportable disease when no cases were detected during the week tells the staff at the next level that a complete report has been filled and filed.

2.3 Report monthly and quarterly routine summary information for other diseases of public health importance

Other endemic diseases are reported to the next level each month through the HMIS monthly reports (HMIS 105 & HMIS 108). This information is valuable to disease specific programs and is used to monitor progress with prevention and control activities or detecting any emergent, unexplained or unusual events or disease patterns. The table below shows the diseases requiring monthly or quarterly reporting

Table 3: Diseases and conditions requiring monthly or quarterly reporting

1. Acute/Chronic Viral Hepatitis	12. Malnutrition in children under 5 years
2. Buruli ulcer	13. Noma
3. Diabetes mellitus (New cases)	14. Onchocerciasis
4. Diarrhoea with severe dehydration in children under 5 years of age	15. Severe pneumonia in children under 5 years of age
5. Epilepsy	16. Sexually transmitted diseases (STIs)
6. HIV/AIDS (New Cases)	17. Trachoma
7. Hypertension (New cases)	18. Trypanosomiasis
8. Injuries (Road Traffic Accidents)	19. Tuberculosis (quarterly)
9. Leprosy (quarterly)	20. Underweight New-borns (less than 2500 g)
10. Lymphatic Filariasis	
11. Malaria	

The total number of cases and deaths seen are reported on a monthly and quarterly basis. All health facilities including referral or regional or teaching hospitals and private sector should report summary totals to the district. Districts should aggregate reports from all health facilities and provide summary totals to the national level. Each level should observe for any unusual increases of events seen during analysis of monthly summary reports. The summary results should be analysed and the results used to monitor progress towards disease control and prevention targets at all levels.

All the cases seen during the month including those reported on a weekly basis are aggregated in the monthly summary reports. Each month, the health facility should calculate the total number of cases (Suspected and Laboratory Confirmed) and deaths due to priority diseases, conditions and events seen in the health facility. Separate totals are calculated for outpatient cases and inpatient cases. The summary totals are recorded on HMIS 105 and sent to the district level. The district enters the health facility specific data into DHIS2 and the district aggregate totals are automatically generated by the DHIS2.

On a regular basis district should review the overall Health Management Information System (HMIS) on weekly or monthly to ensure data has been well captured. At least once every month, data verification and validation should be conducted by the DHT before transmission to national level.

Surveillance and case management patient records should be analysed to generate the weekly, monthly or quarterly reports. The reports should be shared with the DHT and national authorities and copy to the respective disease prevention and control programs to inform program specific actions.

Laboratory data should be organized in a register so that it can generate monthly summaries. During outbreak, submission of the weekly summaries from the laboratory of the specimen processed, types of specimen and the results should be done to update and complete the variables in the line list including the IDSR data and link epidemiologic/clinical data. This is important, as the analysis can produce important trends which can necessitate further investigations.

NB: Data harmonization between case-based reporting, weekly reporting and monthly reporting should be done.

2.4 Improve routine reporting practices

In some health facilities, more than one person may be responsible for recording information about patients seen in the facility. For example, the clinician records the patient's name and diagnosis in a clinic register. Later in the day, a nurse tallies the number of cases and deaths seen in an out-patient department. The ward nurse tallies the number of admitted cases.

Each week, month, or quarter, a records clerk or statistician calculates summaries for all the diseases and records them in a standard form. Events should be aggregated separately from diseases. In case the health facility is equipped with computers, individual patient records should be entered, from which the IDSR priority diseases or conditions subset will be extracted and analysed to get the required weekly, monthly or quarterly compilations.

In outbreak scenarios, isolation units that are separate from health facilities can be opened, and they will use a different register to record diseases or events. It is important that this information be captured in the overall HMIS weekly, monthly or quarterly summaries.

2.4.1 Support supervision to improve reporting at health facilities

During supervisory visits to health facilities, ensure that:

- All prioritized health facilities in the catchment area of the district are visited.
- Clinicians legibly record information in the patient registers using the recommended case definitions so that health workers who tally the cases at the end of the day can reliably record the required diagnoses on the tally sheet.
- Clinicians, ward nurses or other responsible staff complete the case-based reporting form preferably while the patient is still present.
- Clinicians, ward nurses or other responsible staff record laboratory results in the patient registers.

- Laboratories record results of IDSR priority diseases in the laboratory registers with linkage to epidemiologic data.
- Integration of laboratory results into the HMIS reporting forms be conducted at the health facility.
- Data Clerks/Health Information Assistants/medical records assistants or Biostatisticians have summary forms that contain spaces for recording cases and deaths due to the priority diseases or conditions according to the standard case definitions.
- Health workers record the summary totals on a recommended weekly, monthly and quarterly HMIS summary reporting forms.
- Health workers review the weekly, monthly and quarterly HMIS data summary totals and provide comments on the forms about results seen during data verification and validation.

2.4.2 Keeping records and procedures for managing reporting forms

Data Clerks / Health Information Assistants / Medical records assistants or Biostatisticians should ensure the following;

- Keep a record of HMIS forms, notifications and reports generated or received at their level. The records are an essential data source for calculating indicators for the IHR report and for monitoring performance of the IDSR indicators. Sample IDSR Reports and a Data Sharing Log Book form is in Annex 2I.
- Periodically check with health facilities that you supervise (community, health facility, sub-district and district) to ensure that the correct forms and procedures are available to staff so they can record and report the required cases of priority diseases and conditions:
- Take steps to ensure that all health workers know or have access to the standard case definitions recommended by the IDSR guidelines. Ensure that reporting procedures are in place so that all health workers are able to apply the standard case definitions in detection and reporting of priority diseases, conditions, outbreaks or events.
- Sensitize staff on diseases or conditions that require immediate reporting for case-based surveillance including potential PHEIC and other priority diseases, conditions or events. All the health staff should be aware of epidemic-prone diseases for which a single suspected or probable case is a suspected outbreak requiring immediate reporting and action, and of any unusual or unexplained events with potential for affecting human health.
- Review with health staff the role that case-based data plays in determining risk factors and the means of disease transmission or exposure to health risks in a public health event. The staff should have access to standardized forms for reporting case-based information.

2.4.3 Perform periodic checks on data quality

While each provider may have some preferred methods for filling in forms, describing diseases, or abbreviating terms, it is important for every level of reporting (Facility, district, region, national) to use a standard approach to recording and reporting, as data that are not comparable, will lead to inappropriate decisions.

Some of the examples of factors which may affect data quality that need to be periodically checked include;

- Poorly completed forms (wrong name, sex, dates, etc.)
- Incomplete forms (e.g. presence of blanks)
- Under-reporting or Over-reporting of cases
- Duplicate reporting
- Unsystematic data collection and reporting
- Untruthful reporting, (e.g. reporting zero, while there is an ongoing outbreak of epidemic prone diseases)
- Inconsistent reporting formats (forms)
- Late submission or reporting
- Inconsistent reporting periods
- Calculation errors on aggregate reports
- Lack of documentation and source Data or files are lost

During supervision, stress the importance of data quality and surveillance; that correct data will lead to analysis, interpretation, and the information that will be communicated will lead to action and evaluation. It is recommended that health facilities, districts and MoH conduct regular data quality audits as well as surveillance performance reviews. (See Annex 2J for checklist on key elements to assess in data quality audits)

2.4.4 Enhance linkages to strengthen community-based surveillance

A community-based surveillance system relies on the community members' capacity to identify and report public health problems to the nearest health facility or to the district health office. In this system, CBS focal persons identify and report events in the community that have public health significance. CBS focal persons act as community informants, and they report to the health facility, or in the case of a serious event, directly to the district authorities. Refer to section 1 for details on who can be a member of the CBS team.

2.4.5 Strengthen linkages between Laboratory and Surveillance information

Public health laboratory system complements the syndromic disease surveillance.

- Ensure samples are tracked from the point of sample collection to the laboratory ensuring that the case report forms are properly filled and the integrity is maintained during collection, packaging, storage, transportation and receiving at the laboratory.
- In case of a public health event, the laboratory where confirmation took place should report the results as soon as the confirmation has been done to the respective health facility and surveillance officer, and simultaneously to the National level, as well as district.
- To strengthen the linkages between epidemiological and laboratory data, the case reported and the lab samples should have the same unique ID.
- Submission of the weekly summaries of the samples processed, and the types of samples as well as the results should be done whenever there is an outbreak, to assist in completion of the variables in the line list.

- During supervision at health facilities, liaise with the Laboratory Focal Person to ensure that the laboratory personnel, record correctly data for diseases under surveillance and also that there is an established register.
- Make sure that the test results are linked with HMIS data at national, regional and district levels.
- The laboratory component of the HMIS Weekly or Monthly Summary Reporting Forms should be regularly updated immediately the respective disease laboratory results are ready
- Liaise with the animal sector, so as to have a comprehensive report also from Veterinary laboratory especially if they have recorded any animal information which might have risks to public health.

2.4.6 Promote a One Health approach to strengthen reporting

At national level, the one health platform is in place. It is comprised of the Ministry of Health, MAAIF, Ministry of Water and Environment, UWA, and others. The platform aims to improve communication, coordination and collaboration for reporting of public health risks across all levels.

At district level, the DTF should ensure representation from all the One Health stakeholders. Emphasis on strengthening the technical and community capacities of staff for all relevant sectors including human physicians/nurses, veterinarians (for livestock or wildlife) and environmental inspectors.

Interoperable and interconnected platforms with emphasis on strengthening information systems within and between the human, animal, and environmental sectors would be ideal in enhancing real time information sharing. There should be a conscious effort to formalize the system of sharing information with other sectors.

The other multi-sectoral key actors that should be included on the One Health platform include: private sector, civil society, faith-based organizations, defence and security forces, prisons, Internally Displaced Persons (IDP) and refugees' camps, technical and financial partners and academic institutions and research institutions. Ensure that they are also included to strengthen routine reporting and analysis of public health risks and events.

2.5 Data protection and security to protect patients confidentially

Ministry of Health recognizes that there might be risks to both individuals and communities, if one uses name-based reporting of private health-related information. While patient names are used at the health facility level for outpatient, inpatient data, and case-based reporting, health facility and district data in HMIS is de-identified and aggregated²².

Districts need to have guidelines on privacy and security of health data, which should be guided by the National level guidelines

NB: Use of names may be required during outbreak of infectious diseases for the purpose of contact tracing. Refer to section 4 on contact tracing and recording.

For further reading, refer to ^{1,3,4,9,12,14,23}.

Annexes to SECTION 2

Annex 2A: IHR (2005) Decision Instrument

Annex 2B: Algorithm of reporting immediate notifiable events/diseases

Annex 2C: Community Alert Form for reporting of event from community sources

Annex 2D: Community-Based Surveillance Suspected Diseases and Public Health Events Monthly Log Sheet

Annex 2E: Reporting Structure for community alert and verification

Annex 2F: IDSR immediate case-based reporting form

Annex 2G: IDSR case-based laboratory reporting form

Annex 2H: IDSR weekly/monthly summary reporting form

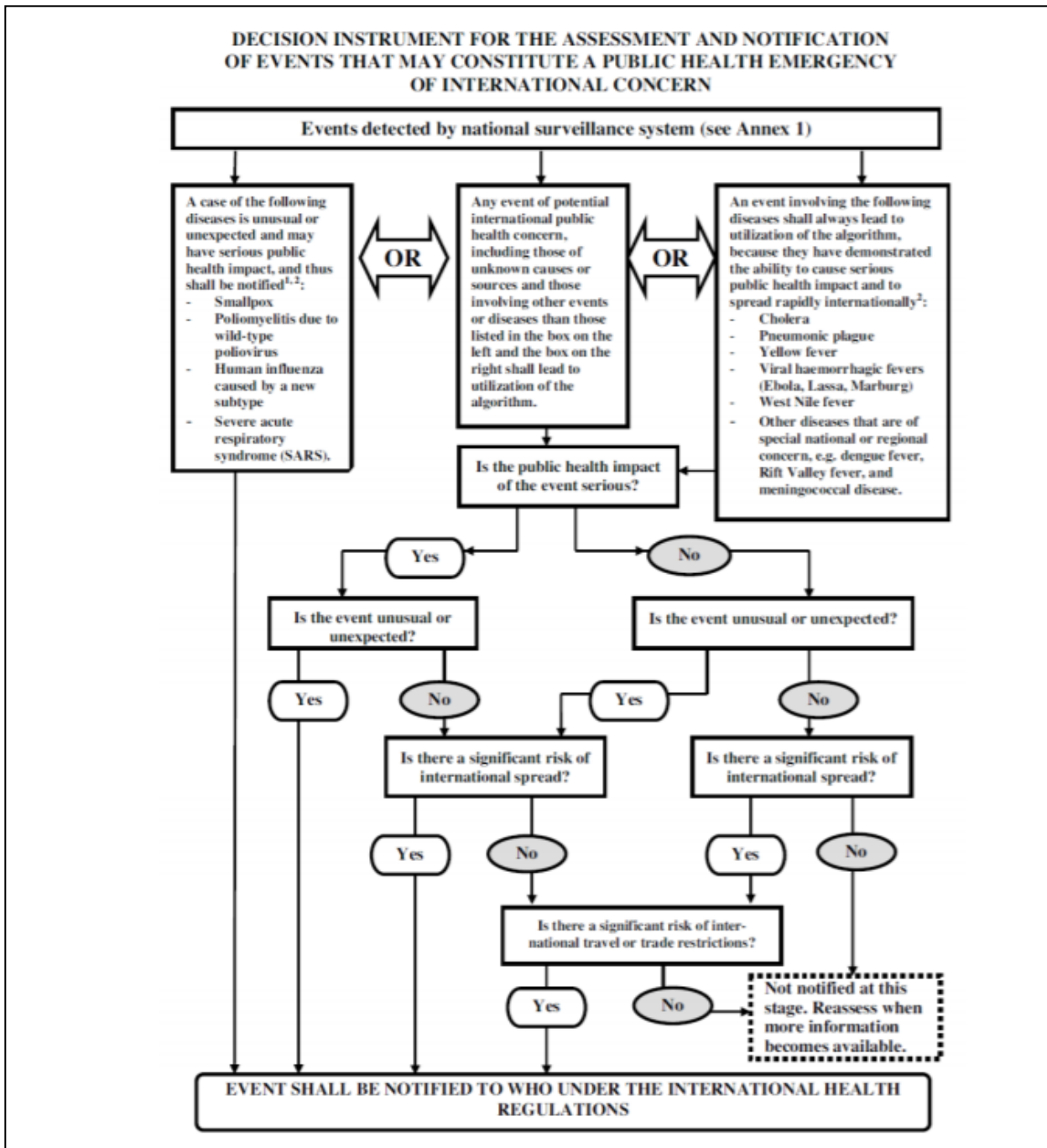
Annex 2I: IDSR reports and data sharing log book

Annex 2J: District level IDSR data quality audit checklist

Annex 2K: Maternal deaths, Perinatal deaths reporting form, and Still and neonatal deaths summary reporting form

Annex 2L: WHO weekly reporting format

Annex 2A: IHR 2005 Decision Instrument

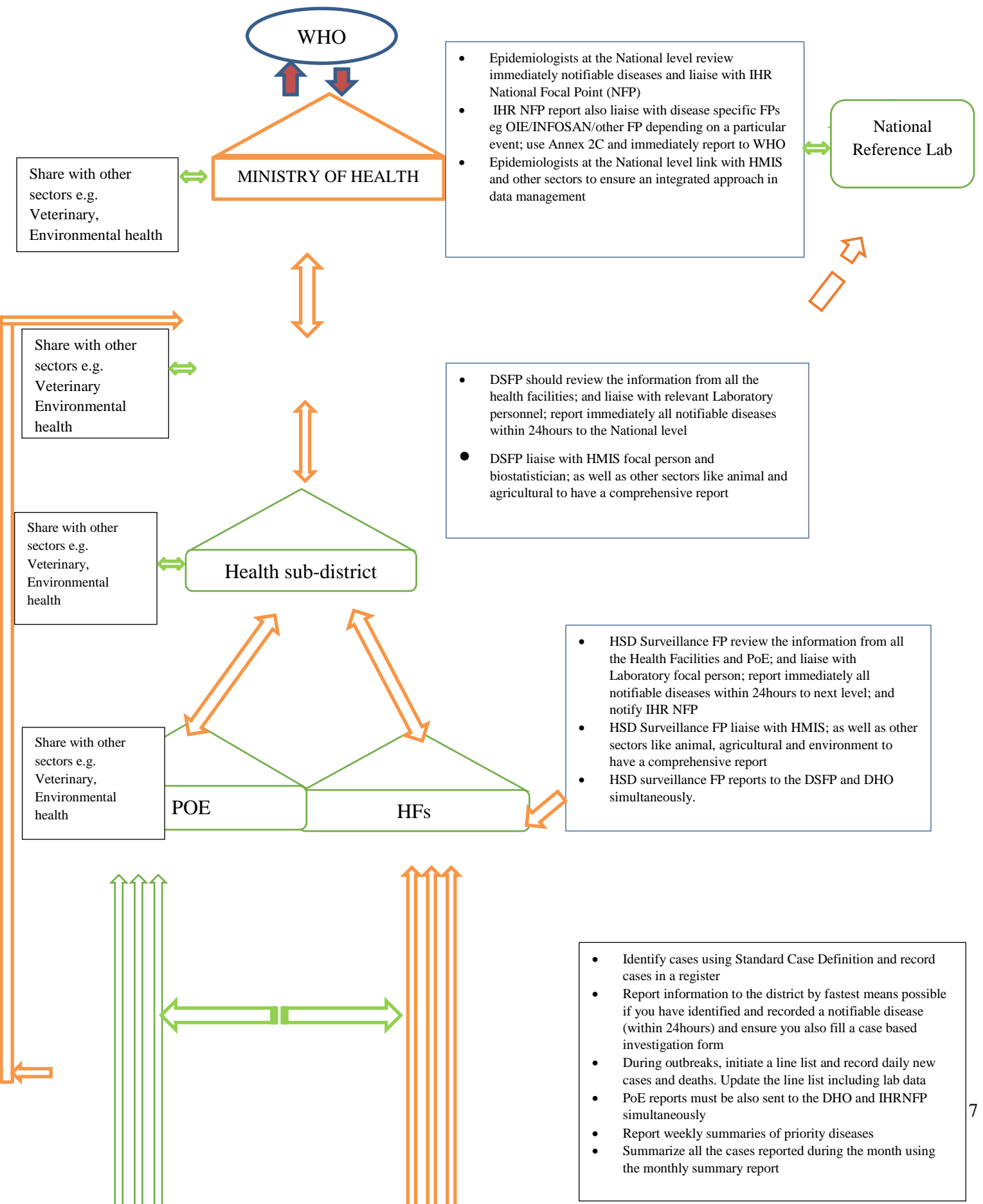


¹ As per WHO case definitions.

² The disease list shall be used only for the purposes of these Regulations.

*States Parties that answer "yes" to the question whether the event meets any two of the four criteria above shall notify WHO according to Article 6 of the IHR

Annex 2B: Algorithm of reporting immediate notifiable diseases/conditions/events



Annex 2C: Community alert reporting form

[Send this form immediately to your supervisor or nearby health facility]

Instructions: This form is completed by the VHT and submitted immediately to nearest health facility in charge/ surveillance focal person. He or she identifies disease (s) or public health event as per the community case definition. It is also completed for unusual health events/alerts that are not captured by the given case definition. It is also used to initiate additional case search for additional community cases following identification of cases in OPD and IPD.

Community alert reporting form

[Send this form immediately to your supervisor or nearby health facility]

Community alert reporting form

[Send this form immediately to your supervisor or nearby health facility]

1. Name of CBS focal person reporting: _____ Telephone number:

2. Village/LC1 _____ Parish/Ward: _____ Sub-county: _____ District _____

3. Date reporting (day, month, year) __ __/__ __/____

4. Type of illness/Condition/Event/Alert (please describe): _____

5. When did the illness/Condition/Event/Alert happen (Date:
Day/Month/Year); Time

__ __/__ __/____; ____:____

6. Date/time this was detected (Date: Day/Month/Year); Time:

__ __/__ __/____

7. Where did this happen?

(Location: village, parish/ward, sub-county/division, district)

8. How many people have been affected?

9. Has anyone died? If yes, how many

10. Are there sick or dead animals involved?

11. Is the event on-going as at the time of this report?

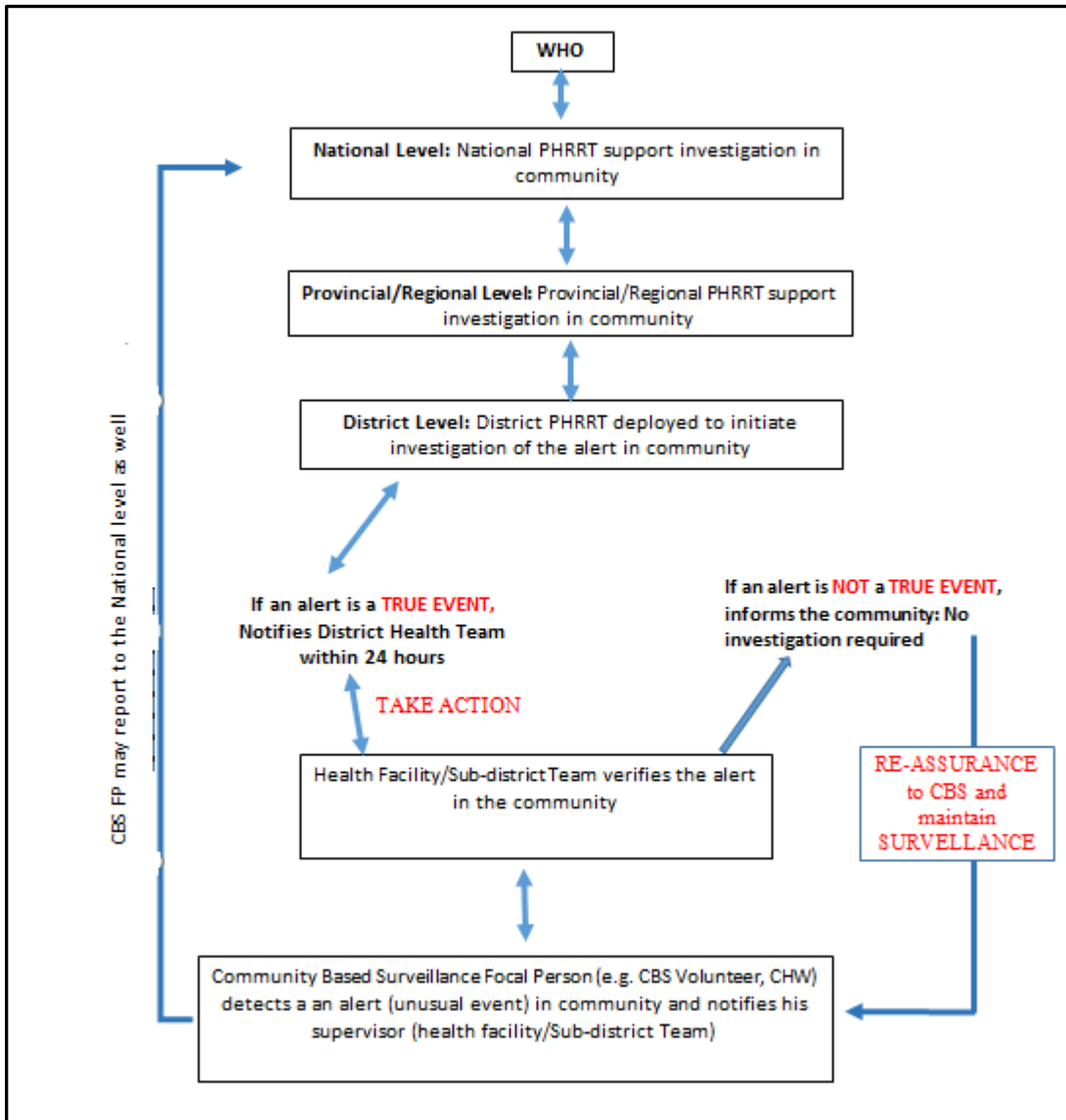
12. What action has been taken?

**Annex 2D: Community-Based Surveillance (CBS) Suspected Diseases and Public Health Events
Monthly Log Sheet**

Instructions: This form is a line listing of all the diseases/events/alerts identified during the month. It is completed by the VHT and submitted monthly to nearest health facility in-charge/ surveillance focal person every month.

Community-Based Surveillance Suspected Diseases and Public Health Events Monthly Log Sheet						
District: _____ Sub-county/Division: _____ Parish/Ward _____ Village: _____						
Month _____ FY _____ ()						
Serial Number	Type of illness/ Condition/Event/Alert	When did this happen? (DD/MM/YYYY)	Where did this happen (Community, District)	How many have been affected	How many died	what action was taken

Annex 2E: Reporting Structure for community alert and verification



Annex 2F: Generic case-based reporting form

Generic Case-Based Reporting Form		Answers - Case n
Variables / Questions		
XX	Record's unique identifier (YYYY-WEEK-CCC-PPP-DDD-Case nnn)	
1	District	
2	Reporting Site (Health Facility, Camp, Village...)	
3	Disease/Event (diagnosis): *	
4	In-patient or Out-patient?	
5	Date seen at health facility (day/month/year)	_____\
6	Patient Name(s)	
7	Date of Birth (day/month/year)	_____\
8	Age (...Years/...Months/...Days).	
9	Sex: M=Male F=Female	
10	Patient's residence: Name of village/ Neighbourhood	
11	Phone and email address of clinician	
12	Town/City	
13	District of residence	
14	Urban/Rural? (U=Urban R=Rural)	
15	Address, (cell)phone number ... If applicable, name of mother and father if neonate or child	
16	Occupation	
17	Date of onset (day/month/year) of first symptoms	_____\
18	Travel history (Y or N), if Yes, state destination	
19	Number of vaccine doses received in the past against the disease being reported**	
20	Date of last vaccination	_____\
21	Date specimen collected	
22	Date specimen sent to lab	
23	Date specimen received by lab	
24	Type of test(s) performed	
25	Final Laboratory results	
26	Date (dd/mm/yyyy) lab sent results to district	
27	Outcome: (Alive, Dead, transferred out, Lost to follow-up or unknown)	
28	Final Classification: Confirmed, Probable, Compatible, Discarded	
29	Date health facility notified District (day/month/year)	_____\ _____\ _____\
30	Date form sent to district (day/month/year)	_____\
31	Person completing form: name, function, signature	
32	Date Results sent to the clinician (dd/mm/yyyy)	

* Disease/Event (Diagnosis):

AFP, Anthrax, Cholera, Bloody Diarrhoea, Dracunculiasis (Guinea Worm Disease), Neonatal Tetanus, Non-neonatal Tetanus, Measles, Dengue, Chikungunya, Meningitis, Monkey Pox, Yellow Fever, SARS, SARI, Maternal death, Neonatal death, Viral Haemorrhagic Fever, Plague, Typhoid fever, Rabies (Human), Smallpox, death, Influenza due to new subtypes, Adverse Effects following immunization (AEFI), Any event or disease of public health importance (Specify)

** Measles, Neonatal Tetanus (TT in mother), Yellow Fever, and Meningitis, etc.

For cases of Measles, NT (TT in mother), Yellow Fever, and
Meningitis; 9=unknown

***NOTE: Some diseases/event/conditions have existing case
reporting and investigation forms()***

Annex 2G: Sample case-based laboratory reporting form

IDSR Case-based Laboratory Reporting Form		
Part I: Referring health worker to complete this form and a copy sent to the laboratory with the specimen		
	Variables	Answers
1	Date of specimen collection (day/month/year)	
2	Suspected Disease or Condition	
3	Specimen type *	
4	Specimen unique identifier **	
5	Patient Name (s)	
6	Sex (M= Male F= Female)	
7	Age (..... Years/ Months/.....Days).	
8	Date Specimen sent to lab (day/month/year)	_/_/___\
9.	Phone and email address of clinician	
Part II. Lab to complete this section and return the form to district and clinician		
	Variables	Answers
1	Laboratory Name and location	
2	Date lab received specimen (dd/mm/yyyy)	_/_/___\
3	Specimen condition: (Adequate/Not adequate)	
4	Type of test(s) performed	
5	Final Lab Result(s)	
6	Date (dd/mm/yyyy) lab sent results to district	_/_/___\
7	Date Results sent to the clinician (dd/mm/yyyy)	_/_/___\
8	Date district received lab results (dd/mm/yyyy)	_/_/___\
* Blood, Plasma, Serum, Aspirate, CSF, Pus, Saliva, Biopsy, Stool, Urethral/Vaginal discharge, Urine, Sputum, food/water samples		
** Same as the patient's identifier in the IDSR immediate case-based reporting form		

Annex 2H: Weekly summary reporting form

DESCRIPTION AND INSTRUCTIONS

Objective: To report cases of notifiable diseases, other diseases of public health importance, OPD attendances, eMTCT appointments, Malaria tested and treated, TB tested and treated and stock balances of select tracer items.

Frequency: Every Monday of the Week in a calendar year

Copies: **Three Copies (Triplicate).** Triplicate stays at the health unit, duplicate is sent to the HSD Headquarters, the Original copy is sent to the District health office.

Responsibility: Health Unit In-charge

PROCEDURE:

1. All health units must report this information (Government, Private Health Providers and PNFP) to the HSD and DHO. In addition, the health facility should report any other priority disease and/or events as required by the District Health Officer.
2. The report should be clearly labelled to show the period covered i.e., date for the first (Monday) and last day (Sunday) of the week for which the report is being made.
3. For each disease category indicate the number of new cases during the week (cases this week), the number of deaths that occurred during the week (deaths this week) and those tested (tested cases), tested positive (Pos(+ve) cases)
4. For Maternal deaths, Perinatal deaths, OPD and eMTCT summary, summary of malaria cases tested and treated, summary of tuberculosis cases tested and treated during the week, tracer medicines - stock balance, HIV testing kits, TB, & eMTCT drugs - stock balance, summary of Genexpert report and summary of IPT initiation, refer to the SOPs for the case definitions and how to extract the data.
5. For Other conditions (EPC.), refer to the given table below of other priority diseases/conditions for the codes when reporting using mTrac.
6. Refer to the SOPs for the case definitions and how to extract the data.
7. The health unit continues to report every week throughout the year whether there are cases or not and this should take care of “zero” report.
8. Transcribe the data every week into HMIS form 033c (Health Unit Weekly Epidemiological Surveillance Summary for the year) for the respective weeks. For example, 10 cases with 2 deaths are recorded as 10 (2).

SELECTED OTHER PRIORITY DISEASES UNDER IDSR (INTEGRATED DISEASE SURVEILLANCE AND RESPONSES)

Epidemic Prone Diseases/ Conditions	Cod e	Diseases/condition s targeted for elimination or eradication	Cod e	Disease of public health importance	Cod e
Chikungunya	CG	Dracunculiasis	DC	Diarrhoea with dehydration <5	DD
Dengue	DG	Leprosy	LP	Severe pneumonia <5	PN
Influenza-like illness	IL	Onchocerciasis	OC	Human African Trypanosomiasis	TX
Anthrax (human)	AX	Buruli ulcer	BU	Trachoma	TR
Acute viral hepatitis	HP	Lymphatic Filariasis	LF	Schistosomiasis	SC
		Noma	NO	Diphtheria	DP
		Human influenza due to a new subtype	HN	Pertussis (Whooping cough)	WC
		Severe Acute Respiratory Syndrome (SARS)	SS	Brucellosis	BC
		Smallpox	SP	Kala azar	KA
				Nodding Syndrome	NS
				Adverse Drug Reactions (ADR)	AR

NB:

The health unit continues to report every week throughout the year whether there are cases or not and this should take care of “zero report”. For standard case definition of all priority IDSR diseases and conditions refer to the standard operating procedures.

HMIS FORM 033b: HEALTH UNIT WEEKLY EPIDEMIOLOGICAL SURVEILLANCE FORM
Page 1

Date of Report _____ Period: From (Date) _____ To (Date) _____ Week No. (#) _____

Health Unit _____ Health Unit Code _____
 Parish _____

Sub-county _____ HSD _____ District _____

CASES and DEATHS THIS WEEK

1. CASES.	Code	Total Cases this week	2. DEATH.	Tested Cases	Pos.(+ve) cases
			Total Death this week		
Malaria (diagnosed)	MA.				
Dysentery	DY.				
Severe Acute Respiratory Infection (SARI)	SA.				
Acute Flaccid Paralysis	AF.				
Adverse Events Following Immunization (AEFI)	AE.				
Animal Bites (suspected rabies)	AB.				
Bacterial Meningitis	MG.				
Cholera	CH.				
Guinea Worm	GW.				
Measles	ME.				
Neonatal tetanus	NT.				
Plague	PL.				
Typhoid Fever	TF.				
Hepatitis B	HB.				
Rifampicin resistant TB cases	DR.				
Yellow Fever	YF.				

Other Viral Haemorrhagic Fevers (EVD, MVD, RVF, CCHF)	VF.				
Maternal death	MD.				
Macerated Still births	MB.				
Fresh Still Birth	FB.				
Early Neonatal deaths 0-7 days	ND.				

3. Other conditions (refer to the table below for the other priority diseases/conditions)

CASES (EPC.)	Code	Total Cases this week	DEATH (EPD.)		Tested Cases	Pos(+ve) cases
			Total week	Death this week		
1.						
2.						
3.						
4.						

HMIS FORM 033b: HEALTH UNIT WEEKLY EPIDEMIOLOGICAL SURVEILLANCE FORM
Page 2

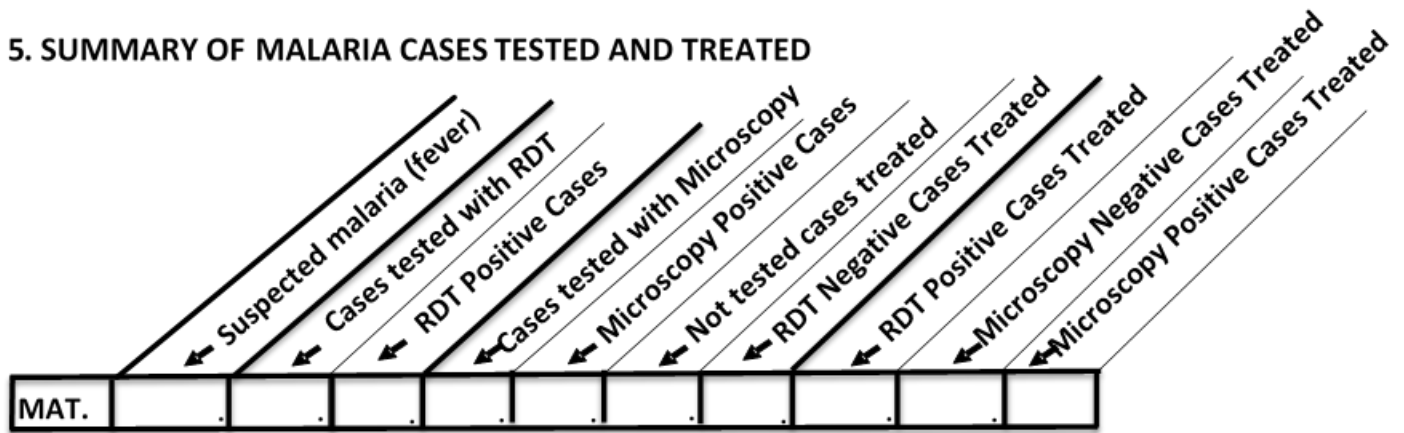
Health Unit _____ Wk No: _____

4. OPD AND eMTCT SUMMARY

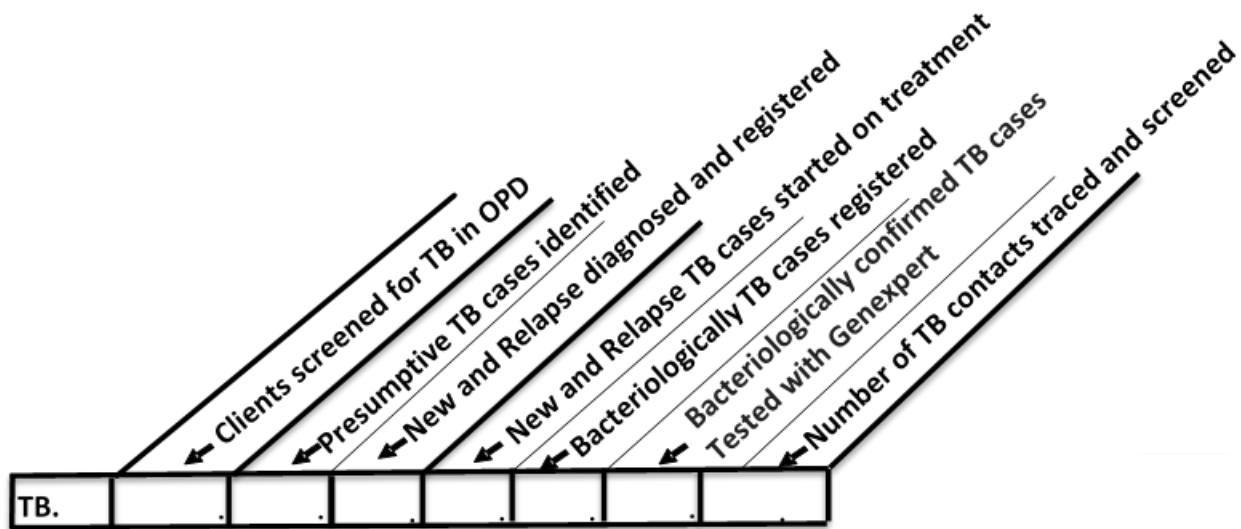
APT.							
------	--	--	--	--	--	--	--

← OPD New Attendance
 ← Total OPD Attendance
 ← Expected eMTCT Mothers on appt
 ← eMTCT Missed appointments

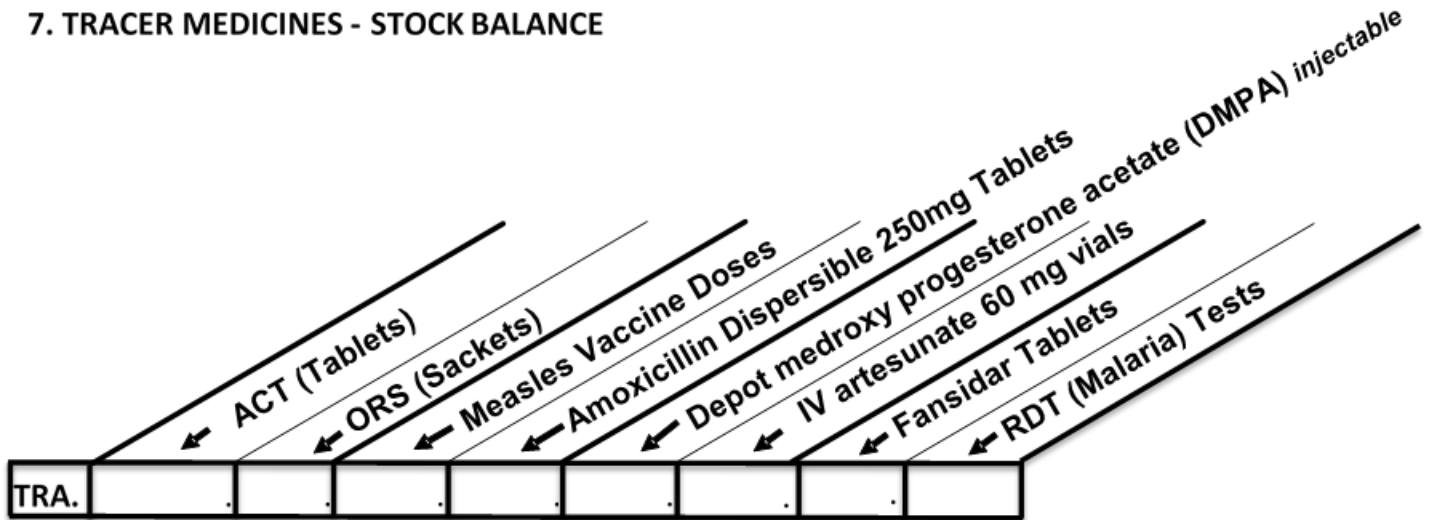
5. SUMMARY OF MALARIA CASES TESTED AND TREATED



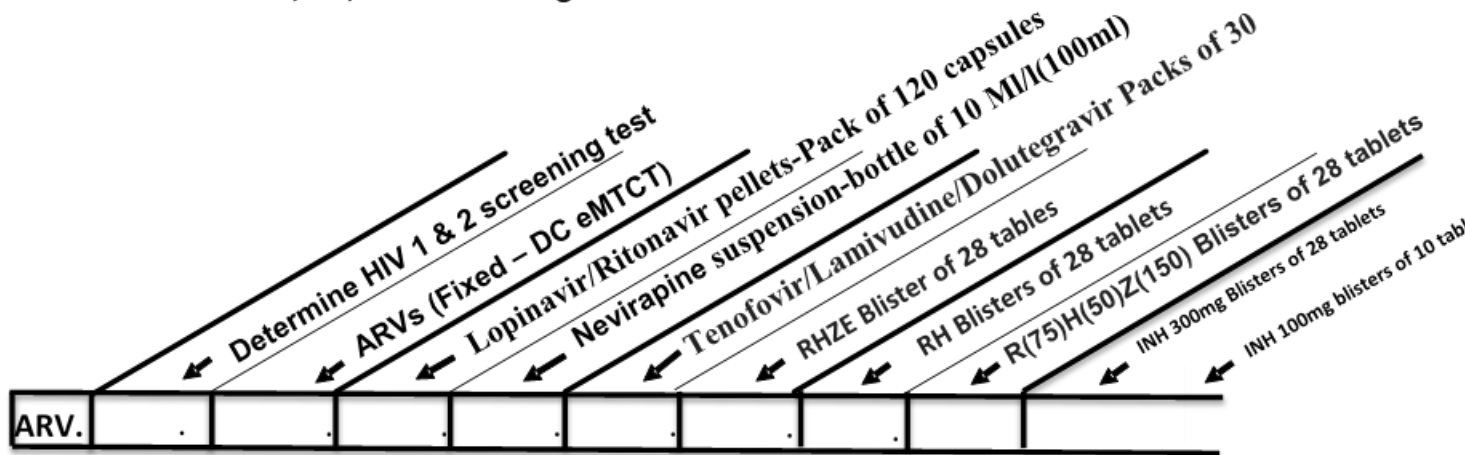
6. SUMMARY OF TUBERCULOSIS CASES TESTED AND TREATED DURING THE WEEK



7. TRACER MEDICINES - STOCK BALANCE



8. HIV TESTING KITS, TB, & eMTCT Drugs - STOCK BALANCE



9. SUMMARY OF GENEXPERT REPORT FOR GENEXPERT SITES ONLY

GP.							
-----	--	--	--	--	--	--	--

No of samples tested
 No of samples rejected
 Total MTB detected
 Total No. Rif R
 No. of errors/invalid results
 No of cartridges remaining

Tick upon feedback

10. SUMMARY OF TPT INITIATION

TPT				
-----	--	--	--	--

Number of TPT eligible adult ART clients
 Number of TPT eligible children/adolescent ART clients
 Number of Adult ART clients initiated TPT
 Number of children and adolescents on ART who started TPT

Tick upon feedback

For HMIS FORM 105: (HEALTH UNIT OUTPATIENT MONTHLY REPORT) and HMIS 108 (HEALTH UNIT INPATIENT MONTHLY REPORT) (Refer to HMIS Form 105 and HMIS 108 in the HMIS manual)

Annex 2I: IDSR reports and data sharing logbook

IDSR Reports and Data Sharing Log book							
District:							
Financial Year:							
Reception Date of the Report or Data set	Report description: pick one from the list below *	Reporting Site name	Reported Period **	Report form well filled? (Y/N)	Report received Timely or Late?	Feedback sent to the health facility? (Yes/No)	Comments

*Weekly AFP polio; Weekly Epidemic Prone Diseases; Weekly Influenza sentinel sites and labs findings; Monthly IDSR Aggregated data including malaria and Guinea worm disease; Monthly Paediatric bacterial Meningitis surveillance data; Monthly Measles and yellow fever lab data; Monthly Measles, yellow fever and NNT case-based data; Monthly Bacteriology lab data; Monthly Rotavirus surveillance data; Quarterly Tuberculosis Report; Quarterly MDR and XDR Tuberculosis Report; Quarterly Leprosy Report; Quarterly Trypanosomiasis Report; Annual HIV Surveillance data, Etc.

** (Use epidemiologic notation to record the reporting period, for example: W-2010-18 for weekly data, M-2010-12 for monthly data, Q-2010-02 for quarterly data)

Annex 2J: District level IDSR data quality audit checklist

District Level IDSR Data Quality Audit Checklist				
Name of Reporting Officer: _____				
Contact Phone Number: _____ E-mail: _____				
Health Facility: _____ District: _____				
Region: _____ Date: __/__/_____				
Persons Met and Title				
CORE ACTIVITY	THINGS TO LOOK IN THE FACILITY			NOTES
	General			
1. DATA COLLECTION TO IDENTIFY SUSPECTED CASES WITHIN HEALTH FACILITY	1) Is there an information flow for reporting to the district level (diagram or description)?			
	2) How frequently do you review and collect data (e.g., daily, weekly, monthly)?			
	3) Is there a list of the notifiable diseases?			
	4) Is there a list of priority reportable diseases/conditions/events?			
	5) For each priority reportable disease, condition or event, does this facility have case definitions for suspect and confirmed cases?			
	6.) Priority Reportable Diseases/conditions/events with case definitions			
	Disease (examples only)	Yes	No	Notes
	AFP (Suspected Polio)			
	Tuberculosis			
	Viral Haemorrhagic Fever e.g. Ebola			
	Yellow Fever			
	Monkey Pox			
	Others specify			
	Case Based Reporting or Line List Form, IDSR weekly/monthly summary forms			
	1) Is the cased-based form or line listing form or IDSR weekly/summary form paper-based or electronic?			
2) If paper based, do you have adequate supply of case-based reporting or line listing forms?				
3) Is your facility using them?				
4) Do you get feedback about the final diagnosis?				

Thoughts on Possible problems in data collection process Examples: <ul style="list-style-type: none"> • Unsystematic data collection and reporting procedures due to HCW not knowing • Lack of lab results due to lack of feedback from higher levels or from the requested lab 	List possible causes of omissions or problems.		
	List recommended solutions, including target date and person responsible.		
2. RECORDING OF CASES	1.For suspected cases, what material is reviewed to determine suspected cases (e.g. patient chart/folder/card, facility record, case-based form, line list)?		
	2.For suspected cases, how was diagnosis assessed (e.g., laboratory confirmatory tests, patient signs and/or symptoms, patient history, or consultation)?		
	3.Are priority reportable diseases recorded in the health facility register or facility line list according to the country		
	4.Select randomly 3 priority diseases; verify how they are diagnosed and recorded		
Thoughts on Possible problems in recording of cases e.g. Lack of documentation/recording Data or files are lost Poorly completed forms (missing values, forms not filled, presence of blanks, etc.).	List possible causes of omissions or problems		
	List recommended solutions, including target date and person responsible		
3.REPORTING	1) Who is responsible to report priority reportable diseases (health care provider, laboratory, institution)?		
	2) When was the last time a supervisor made a site visit to your facility?		
	3) How often do you report information to the next level?		
	4) Is there a standard method for reporting each immediate reportable disease?		
	5) Is there a standard method for summary reporting each priority disease?		
	6) Is there a standard method of reporting an outbreak?		
	7) Is the report case-based or aggregate format?		
	8) Is the reporting protocol process mapped out or summarized in narrative format and readily visible in the facility (e.g., on the wall)?		
	9) For priority diseases, are “0” cases recorded and reported?		
	10) Are number of cases of notifiable diseases seen at the facility within a specified reporting period same as that reported to the district level? (Randomly select 3 notifiable diseases and verify)		
	11) Are each of the immediately reportable diseases consistently reported in a timely manner?		
	Immediately Reportable Diseases		
Disease	Yes	No	

<p>List findings seen E.g.: Under-reporting or Over-reporting of cases. Duplicate reporting Untruthful reporting, (e.g. reporting zero, while there is an ongoing outbreak of epidemic prone diseases) Inconsistent reporting formats (forms). Late submission/reporting. Inconsistent reporting periods,</p>				
<p>Thoughts on Report</p>	<p>List possible causes of omissions or problems</p>			
	<p>List recommended solutions, including target date and person responsible</p>			

Annex 2K: Maternal and perinatal death-reporting form reporting forms

Maternal Death Reporting Form	
<i>The form must be completed for all deaths, including abortions and ectopic gestation related deaths, in pregnant</i>	
Questions / Variables	Answers
1	Country
2	District
3	Reporting Site
4	How many of such maternal deaths occurred cumulatively this year at this site?
5	Date this maternal death occurred (day/month/year)
6	Maternal death locality (Village or Town)
7	Record's unique identifier (year-Country Code-District-site-maternal death rank)
8	Maternal death place (Community, health facility, district hospital, referral hospital or private hospital, on the way to health facility or
9	Age (in years) of the deceased
10	Gravida: how many times was the deceases pregnant?
11	Parity: how many times did the late deliver a baby of 22 weeks/500g or more?
12	Time of death (specify "During pregnancy, At delivery, during delivery, during the immediate post-partum period, or long after
13	If abortion: was it spontaneous or induced?
Maternal death history and risk factors	
14	Was the deceased receiving any antenatal care? (Yes/No)
	Did she have Malaria? (Yes or No)
15	Did she have Hypertension? (Yes or No)
16	Did she have Anaemia? (Yes or No)
17	Did she have Abnormal Lie? (Yes or No)
18	Did she undergo any Previous Caesarean Section? (Yes or No)
19	What was her HIV Status? (choose "HIV+; HIV-; or Unknown HIV
Delivery, puerperium and neonatal information	
20	How long (hours) was the duration of labour
21	What type of delivery was it? (choose one from "1=Vaginal non-assisted delivery, 2= vaginal-assisted delivery (Vacuum/forceps), or 3=Caesarean section"
22	What was the baby status at birth? (Alive or Stillborn)

Maternal Death Reporting Form		
<i>The form must be completed for all deaths, including abortions and ectopic gestation related deaths, in pregnant</i>		
	Questions / Variables	Answers
23	In case the baby was born alive, is he/she still alive or died within 28 days after his/her birth? (choose 1=Still alive, 2=neonatal death, 3=died beyond 28 days of age)	
24	Was the deceased referred to any health facility or hospital? (Yes/No/Don't know)	
25	If yes, how long did it take to get there? (hours)	
26	Did the deceased receive any medical care or obstetrical/surgical interventions for what led to her death?	
27	If yes, specify where and the treatment received*	
28	Primary cause of the Maternal Death	
29	Secondary cause of the Maternal Death	
30	Analysis and Interpretation of the information collected so far (investigator's opinion on this death)	
	Remarks	
32	Maternal death notification date (day/month/year)	
33	Investigator (Title, name and function)	
	* Treatment received	
	I.V. Fluids; Plasma; Blood Transfusion; Antibiotics; Oxytocin; Anti-seizure drugs; Oxygen; Anti-malarial; Other medical treatment; Surgery; Manual removal of placenta; Manual intra uterine aspiration; Curettage, laparotomy, hysterectomy, instrumental delivery (Forceps; Vacuum), Caesarean section, anaesthesia (general, spinal, epidural, local)	
	Definitions	
	Gravida: The number of times the woman was pregnant- Parity: Number of times the woman delivered a baby of 22 weeks/500g or more, whether alive or dead	

Perinatal death - reporting form		
<i>The form must be completed for selected perinatal deaths, comprising of stillbirths and early neonatal deaths</i>		
Questions / Variables		Answers
Identification		
1	Country	
2	District	
3	Reporting site/facility	
4	Perinatal death locality (village or town)	
5	Place of death (community, health facility, district hospital, referral hospital or private hospital, on the way to health facility or hospital)	
6	Date this perinatal death occurred (day/month/year)	
7	Record's unique identifier (year-country code-district-site) for the mother.	
8	Record's unique identifier (year-country code-district-site) for the baby (diseased).	
Pregnancy progress and care (Perinatal death history and risk factors)		
9	Mother's age (in years)	
10	Type of pregnancy (singleton/twin/higher multiples)	
11	Did the mother of the deceased receive any antenatal care? (Yes/No/Unknown),	
12	If yes to 11, how many visits? _____	
13	Did the mother of the deceased have malaria? (Yes/No/Unknown)	
14	If yes to 13, did the mother receive treatment _ (Yes/No/Unknown)	
15	Did the mother of the deceased have pre-eclampsia disease? (Yes/No/Unknown)	
16	If yes to 15, did the mother receive any treatment? (Yes/No/Unknown)	
17	Did the mother of the deceased have severe anaemia (HB,7g/dl)? (Yes/No/Unknown)	
18	If yes to 17, did the mother receive any treatment? (Yes/No/Unknown)	
19	Did the mother of the deceased have recommended maternal immunizations (e.g. tetanus toxoid) (Yes/ No/Unknown)	
20	Did the mother of the deceased have Rhesus factor (Rh) or ABO incompatibility? (Yes/ No/Unknown)	
21	If Rhesus positive, did the mother of the deceased receive Anti-D injection during this baby's pregnancy? (Yes/ No/Unknown)	
22	Did the deceased present in an abnormal Lie (including breech presentation)? (Yes/ No/Unknown)	
23	What was the HIV status of the mother? (choose "HIV+; HIV-; or Unknown HIV status")	
24	What was the status of the syphilis test of mother? (Positive (+) or negative (-) If she was positive for syphilis did, she receive treatment	
Labour, birth, puerperium		

25	Date of birth (day/month/year)	
26	Attendance at delivery (Nurse/midwife/doctor/other-specify).	
27	Was foetal heart rate assessed on admission? (Yes, No)	
	What type of delivery was it? (choose one from "1=Vaginal non-assisted delivery, 2= vaginal-assisted delivery (Vacuum/forceps), or 3=Caesarean	
28	Sex of the baby (1=male; 2=female, 3=ambiguous)	
29	Birth weight in grams (\geq 2500; 1500-2499 (LBW); 1000-1499g (VLBW); <1000 (ELBW))	
30	Did the mother of the deceased have premature rupture of membranes (PROM) (Yes/No/Unknown)	
31	Did the mother of the deceased have foul smelling liquor?	
32	Gestational age (in weeks) Method of estimation: Ultrasound /LMP (DD/MM/YY)	
33	How long (hours) was the duration of labour	
Information on the death and actions taken before and after the death		
30	If stillbirth – gestational age (in weeks) of the deceased	
31	If neonatal death – age (in days) of the deceased	
32	If the deceased baby was born alive what was the APGAR Score?	
33	If the deceased baby was born alive, was resuscitation with bag and mask conducted?	
34	If the deceased baby was born alive was, he/she referred to any health facility or hospital? (Yes/No/Unknown)	
35	If the deceased baby was born alive did, he/she receive any other medical care beyond resuscitation? (Yes/No/Unknown)	
	If yes, specify where and the treatment received: * I.V. Fluids; Blood/Plasma transfusion; Antibiotics; Oxygen; Other medical treatment;	
	Primary cause of death:	
	Secondary cause of death:	
	Maternal condition (if applicable)	
34	Timing of death (1-fresh stillbirth; 2-macerated stillbirth)	
35	Any physical malformation noted on the deceased? (Yes/No)	
	If yes, type of birth defect (with full description):	
Investigator's report		
	Analysis and interpretation of the information collected so far (investigator's opinion on this death)	
37	Perinatal death notification date (day/month/year)	
38	Investigator (Title, name and function)	

Stillbirths and neonatal deaths monthly summary reporting form

The form must be completed for stillbirths and neonatal deaths	
Questions / Variables	Answers
Identification	

1	Data for the month of							
2	Country							
3	District							
4	Reporting site/facility							
5	Births							
		Total Births	Stillbirths			Neonatal deaths		
			Antepartum	Intrapartum	Unknown	Early	Late	
	<1000 g (ELBW)							
	1000-1499 g (VLBW)							
	1500 – 1999 g (LBW)							
	2000 – 2499 g (MLBW)							
	2500 + g							
	Total							
Pregnancy progress and care (Perinatal death history and risk factors)								
6	Multiple pregnancies							
7	Born before arrival							
8	Mode of delivery							
	Normal vaginal	Vacuum	Forceps	Caesarean	Unknown			
9	Gestational age							
	Term	Post-term	Ext preterm (<1000g)	Very preterm (1000-1499)	Mod preterm (1500-2499)	Unknown		
10	HIV status							
	Negative		Positive		Unknown			
11	Syphilis serology							
	Negative		Positive		Unknown			
12	Maternal age							
	>34 y	20-34	18-19 y	<18	Unknown			

Annex 2L: Ministry of Health Epidemiological week format, 2019-2020

Week Number	2019	2020
01	31-12-18 to 06-01-19	30-12-19 to 05-01-19
02	07-01-19 to 13-01-19	06-01-20 to 12-01-20

Week Number	2019	2020
03	14-01-19 to 20-01-19	13-01-20 to 19-01-20
04	21-01-19 to 27-01-19	20-01-20 to 26-01-20
05	28-01-19 to 03-02-19	27-01-20 to 02-02-20
06	04-02-19 to 10-02-19	03-02-20 to 09-02-20
07	11-02-19 to 17-02-19	10-02-20 to 16-02-20
08	18-02-19 to 24-02-19	17-02-20 to 23-02-20
09	25-02-19 to 03-03-19	24-02-20 to 01-03-20
10	04-03-19 to 10-03-19	02-03-20 to 08-03-20
11	11-03-19 to 17-03-19	09-03-20 to 15-03-20
12	18-03-19 to 24-03-19	16-03-20 to 22-03-20
13	25-03-19 to 31-03-19	23-03-20 to 29-03-20
14	01-04-19 to 07-04-19	30-03-20 to 05-04-20
15	08-04-19 to 14-04-19	06-04-20 to 12-04-20
16	15-04-19 to 21-04-19	13-04-20 to 19-04-20
17	22-04-19 to 28-04-19	20-04-20 to 26-04-20
18	29-04-19 to 05-05-19	27-04-20 to 03-05-20
19	06-05-19 to 12-05-19	04-05-20 to 10-05-20
20	13-05-19 to 19-05-19	11-05-20 to 17-05-20
21	20-05-19 to 26-05-19	18-05-20 to 24-05-20
22	27-05-19 to 02-06-19	25-05-20 to 31-05-20
23	03-06-19 to 09-06-19	01-06-20 to 07-06-20
24	10-06-19 to 16-06-19	08-06-20 to 14-06-20
25	17-06-19 to 23-06-19	15-06-20 to 21-06-20
26	24-06-19 to 30-06-19	22-06-20 to 28-06-20
27	01-07-19 to 07-07-19	29-06-20 to 05-07-20
28	08-07-19 to 14-07-19	06-07-20 to 12-07-20
29	15-07-19 to 21-07-19	13-07-20 to 19-07-20
30	22-07-19 to 28-07-19	20-07-20 - 26-07-20

Week Number	2019	2020
31	29-07-19 to 04-08-19	27-07-20 to 02-08-20
32	05-08-19 to 11-08-19	03-08-20 to 09-08-20
33	12-08-19 to 18-08-19	10-08-20 to 16-08-20
34	19-08-19 to 25-08-19	17-08-20 to 23-08-20
35	26-08-19 to 01-09-19	24-08-20 to 30-08-20
36	02-09-19 to 08-09-19	31-08-20 to 06-09-20
37	09-09-19 to 15-09-19	07-09-20 to 13-09-20
38	16-09-19 to 22-09-19	14-09-20 to 20-09-20
39	23-09-19 to 29-09-19	21-09-20 to 27-09-20
40	30-09-19 to 06-10-19	28-09-20 to 04-10-20
41	07-10-19 to 13-10-19	05-10-20 to 11-10-20
42	14-10-19 to 20-10-19	12-10-20 to 18-10-20
43	21-10-19 to 27-10-19	19-10-20 to 25-10-20
44	28-10-19 to 03-11-19	26-10-20 to 01-11-20
45	04-11-19 to 10-11-19	02-11-20 to 08-11-20
46	11-11-19 to 17-11-19	09-11-20 to 15-11-20
47	18-11-19 to 24-11-19	16-11-20 to 22-11-20
48	25-11-19 to 01-12-19	23-11-20 to 29-11-20
49	02-12-19 to 08-12-19	30-11-20 to 06-12-20
50	09-12-19 to 15-12-19	07-12-20 to 13-12-20
51	16-12-19 to 22-12-19	14-12-20 to 20-12-20
52	23-12-19 to 29-12-19	21-12-20 to 27-12-20
53		28-12-20 to 03-01-21

SECTION 3

ANALYSE AND INTERPRET DATA

SECTION 3: ANALYSE AND INTERPRET DATA

3.0 Analyse data

This section describes how to receive surveillance data and analyse it by time, place and person. The analysis may be done electronically or manually. Methods for carrying out the analysis, steps for interpreting and summarizing the findings are included. Information in this section can be applied at the national, district, health facility and community levels.

It is not enough to only collect, record and report numerical information about illness, death and disability from the catchment area; the data must also be analysed at each level where it is collected. Organizing and analysing data is an important function of surveillance. Analysing data provides the information that is used to take relevant, timely and appropriate public health action. Analysis of surveillance data allows for;

- Observing trends over time and alerting health staff and relevant stakeholders about emerging events or unusual patterns
- Identifying geographic areas at higher risk
- Characterizing personal variables such as age, gender or occupation that place a person at higher risk for the disease or event
- Monitoring and evaluation of public health interventions

In general, analysing routine surveillance data should address the following questions:

- Have any priority diseases or other public health events of concern been detected during the reporting period (this week, for example)? Is an outbreak or unusual public health event suspected?
- Of the cases, deaths or events detected, how many were confirmed?
- Where did they occur?
- How does the observed situation in a given geographical area this year compare to previous observation time periods the previous year in this same geographical area? For example, if Bududa district reports 60 cholera cases in September 2020, we could compare with the number of cases reported in October 2020, to find out whether the problem is increasing. We could also compare with the number of cholera cases reported in Bududa district in September 2019 and September 2018 to find out whether cholera at this time of year is expected or unusual.
- Are the disease trends stable, improving or worsening?
- Is the reported surveillance information representative enough of the reporting site's catchment area? Out of all the sites that should report, what proportion has actually reported (completeness)?
- How timely were the data received from the health facilities (timeliness)?
- What period (seasonality) is it occurring?

- Who is affected? Which occupational group are most at risk?

Each site that collects or receives data should prepare and follow an analysis plan for analysing routine surveillance information (refer to Annex 3A of this section).

3.1 Receive, handle and store data from health facilities

The routine flow of surveillance data is usually from health facilities to the district level up to the central level. A reporting site is a site which reports about surveillance and outbreak data to the next level. This includes all health facilities (Public, Private for Profit and Private not for Profit), standalone laboratories, and PoE. A reporting site also receives and forwards events reports from community surveillance and response.

At the health facility level, both in-patient and out-patient services are surveillance sites. The information collected from the site is compiled in standard forms (weekly and monthly out patients and in patient HMIS forms, line listing forms etc.), analysed and then forwarded, to the district health management team. Utilizing the eIDSR system, data should be entered using a mobile phone or a computer, and the district health management team can access compiled information from a computer (*Refer to Section 9 on eIDSR*). Districts merge, aggregate and send their data and reports to the national level through the DHIS2 (the national electronic health database).

Adequate data protection and security must be ensured. Care must be taken not to leave documents containing personal health information related to notifiable conditions on work desks or anywhere they may be visible to unauthorized people. Hard copies of identified notifiable conditions should be stored in locked cabinets in a secure location. Data which is stored in a computer should be password protected with appropriate restricted access. Network hardware and any back up or copies of notifiable conditions data must be password protected and stored in a secure location.

3.1.1 Receive data

Make a careful record of all data received from the reporting site. The surveillance team at each level or reporting site where data are received should:

- Acknowledge receipt of the data/report.
- Log into an appropriate logbook any data set or surveillance report received from any reporting site.
- Record in the log the date the data were received, what the report is about and who the sender is.
- Verify whether the data set arrived timely or was late.
- Check the completeness of the data set or reports i.e., the number of data sets/reports as against the number of expected data sets or reports
- Review the data quality;
 - Verify whether the form (hard copy or electronic file) is filled out accurately

- Ensure that the form is filled completely (e.g., no blanks)
- Check to be sure there are no discrepancies on the form. Verify from the reporting site (by phone, e-mail or text message) and correct any discrepancies
- Merge the data and store them in a database
- For electronic receiving of data, refer to the Section 9 on eIDSR

3.1.2 Enter and clean data

At each level where data are received (health facility, district, or national), the health facility management team, DHT, regional and national programs should always collaborate to extract the priority IDSR diseases from the OPD and IPD register and enter them correctly into aggregated HMIS forms while listing data from all the health facilities. Troubleshooting and cleaning data prior to analysis is an important data management practice. Disease trends and maps will not be accurate if information about number of cases, time of onset, or geographic location of cases are missing. Use opportunities during supervisory visits to sensitize clinicians and laboratory staff about the importance of quality practices for recording patient information in patient log-books/register or reporting forms. Emphasize that patient logs are sources of data for reporting public health information and may play a role in detecting an unusual event or otherwise undetected public health problem. Ensure that health facility personnel know the algorithm for reporting including reporting levels and that there are records including rumour logbooks.

Data may be recorded and aggregated either manually or electronically if a computer is available. Regardless of the method, use the following practices;

- Update aggregate totals for each week or month that data was received.
- Record a zero when no cases were reported. If a space which should have been filled in is left blank/dash/not applicable, the next level may have an incorrect picture of the situation. They will not know if data are missing or if no cases were reported. *Zero reporting allows the next level to know that surveillance did not detect a case of the particular disease or condition.*
- Ensure that weekly totals include only those cases or deaths actually reported for that Epidemiological week (Monday-12:00am to Sunday-11:59pm). Late reports from previous weeks should be entered with the relevant week and totals updated accordingly.
- Avoid duplicate entries by using the report or case record unique identifier to prevent, and also check for, multiple entries of the same records.
- Establish frequent contacts with the health facilities in order to clarify issues of missing information / errors and address inconsistencies detected in the reporting.
- Ensure consistency and harmonization of data.
- Ensure update of information on laboratory results is done by linking to the respective case record unique identifier.

Once the data have been received and entered into the aggregate forms, review them carefully to ensure no mistakes were made during entry. Since surveillance data informs decisions about

disease control and prevention actions, there are important ethical, social and economic consequences if data are not entered and managed correctly or on time. During an outbreak, ensure data is collected using a line list.

3.2 Analyse data by time, place and person

Findings from data analysis may trigger investigations and subsequent response to an outbreak, condition, or public health event. Data should be analysed by time, place and person (refer to **Table 4**).

Table 4: Types of analysis, objectives, data display tools and methods

Type of analysis	Objective	Method	Data Display Tools
Time	Detect abrupt or long-term changes in disease or unusual event occurrence, how many occurred, the seasonality and the period of time from exposure to onset of symptoms.	Compare the number of case reports received for the current period with the number received in a previous period (days, weeks, months, quarters, seasons or years)	Record summary totals in a table or on a line graph or histogram/epidemic curve or sequential maps
Place	Identify where cases are occurring (for example, to identify high risk area or locations of populations at risk for the disease)	Plot cases on a map and look for clusters or relationships between the location of the cases and the health event being investigated. (e.g., cases near a river, cases near a market)	Plot cases on a spot map of the district or area affected during an outbreak. Dot density analysis can also be used to depict the number of cases by geographic location. NB: The information can also be presented in a table or a bar chart, but plotting cases in a map will assist in quick assessment and allow prompt intervention

Person	Describe who is at greatest risk for the disease, how it occurred, potential risk factors and reasons for changes in disease occurrence.	Depending on the disease, characterize cases according to the data reported for case-based surveillance such as age, sex, place of work, immunization status, school attendance, and other known risk factors for the diseases	Extract specific data about the population affected and summarize in a table or a bar chart or a pie chart
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3.2.1 Measures of central tendency and dispersion

A measure of Central Location is a single value that summarizes or represents an entire distribution of data. The measures of central location include: Mode, Median and Arithmetic Mean/Average

A measure of dispersion describes how much the measurements of the observations vary and include: Range, standard deviation etc.

Mode: the value that occurs most frequently in a set of data. It is the most common value. To identify mode, follow these steps:

- Arrange raw data in ascending order.
- Identify the value that occurs most often.

Observations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Days	3	6	7	7	8	8	8	8	9	9	9	9	9	10	10	11	13	16	17



Days	3	6	7	8	9	10	11	13	16	17
Frequency	1	1	2	4	5	2	1	1	1	1

Mode = 9

Properties and uses of Mode

- The easiest measure to understand, explain and identify
- There may be more than one mode
- There may be no mode
- Mode may not be “central”
- The mode is not typically affected by one or two extreme values (outliers)

Median: the middle value of a set of data that has been put into rank order. It is the value that splits the data set or distribution into two equal parts

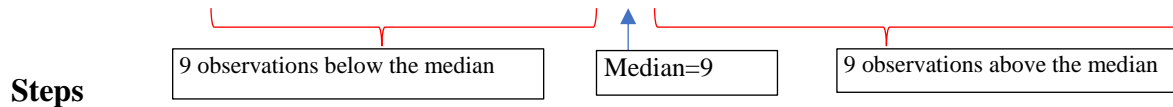
To calculate median, follow these steps:

- Arrange observations in increasing or decreasing order.
- Find middle position as $(n + 1) / 2$, where n is the total number (count)of observations.

- Identify the value at the middle.

Finding Median of Sorted Series, Odd number of values (n = 19)

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Observation	3	6	7	7	8	8	8	8	9	9	9	9	9	10	10	11	13	16	17

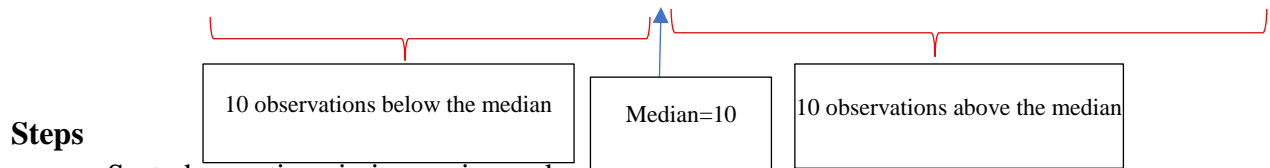


Steps

1. Sort.
2. Find middle position = $(19+1)/2 = 10$.
3. Median = value at 10th position = 9.

Finding Median of Sorted Series, even number of values (n = 20)

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Observation	3	6	7	7	8	8	8	8	9	9	11	11	12	13	14	14	15	16	17	19



Steps

Sort observations in increasing order.

1. Find middle position = Position between the two middle positions, i.e. between $n/2$ and $(n+2)/2$ observations = $20/2$ and $(20+2)/2$ i.e. the 10th and 11th observations.
2. Median = average of values of observations at 10th and 11th positions = $(9+11)/2=10$.

Properties and uses of Median

- Good descriptive measure
- Measure of choice for data that are not distributed symmetrically
- Focuses on the centre of the data, so is not affected by a few extreme values (“outliers”)

Arithmetic Mean: the value that is closest to other values in a distribution. Is the “Average” value. To calculate Mean, follow these steps:

1. Sum up all of the values
2. Divide the sum by the number of observations (n)

Mean = **Sum of all values/n**

Where **n = Number of observations**

Days	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
Observations	3	6	7	7	8	8	8	8	9	9	9	9	9	10	10	11	13	16	17	Sum=177

Sum = 177; n = 19

Mean = **177 / 19 = 9.3**

Properties and uses of Arithmetic Mean

- Probably best-known measure of central location
- Commonly used in additional statistical manipulations and analysis

- Uses all of the data
- Affected by extreme values (outliers)
- Best for symmetrically distributed data

Range: the description of smallest to largest value. Range includes the Minimum and Maximum values. To identify the range

- Sort data in increasing order
- Find minimum and maximum values

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Observation	3	6	7	7	8	8	8	8	9	9	9	9	9	10	10	11	13	16	17

In the data set above Minimum value is 3 and maximum value is 17. The Range =3 to 17.

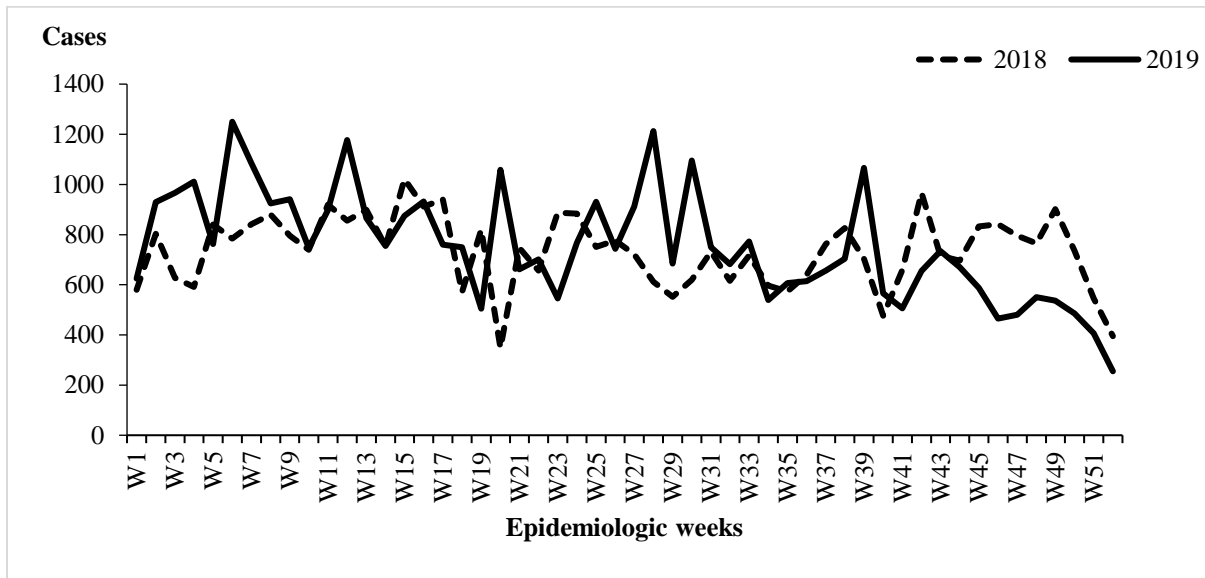
3.2.2 Analyse data by time

Data from this type of analysis is usually shown on a graph. The number or rate of cases or deaths is placed on the vertical or y-axis. The time period being evaluated is placed along the horizontal or x-axis. Events that occurred that might affect the particular disease being analysed can also be noted on the graph.

Graphs can show how many cases and deaths have occurred in a given time. It is easier to see changes in the number of cases and deaths by using a graph, especially for large numbers of cases or showing cases over a period of time.

Graphs are made with lines (a trend line) or bars (a bar graph or histogram) to measure the number of cases over time. How to *make a graph* is described in Annex 3B of this section.

Figure 7: Example of line graph showing Trend Line of Dysentery by Epidemiologic Week, 2018 to 2019, Uganda



Using a histogram

Prepare a histogram using data from the case reporting forms and line lists. Plot cases on the histogram according to the date of onset. **As the histogram is developed, it will demonstrate an epidemic curve.** The title of the graph should include the name of the geographical location being described.

Highlight significant events on the histogram with arrows. For example, review the log of reported outbreaks to highlight the dates when:

- Onset of the first (or index) case
- The health facility notified the district
- The first case was seen at the health facility
- The district began the case investigation
- Laboratory confirmation of the outbreak
- A response initiated
- The district notified the higher level

The results of this analysis allow users of this information to look back at the outbreak and answer questions such as when patients were exposed to the illness, the length of the incubation period, type of the source, duration between detection and confirmation of the outbreak, transmission pattern of the illness and likely time of exposure to the causative agent.

Figure 8: Example of Histogram (Epidemic Curve) showing Reported Cholera Cases, Bududa District, Epidemiologic week 1- 31, 2020

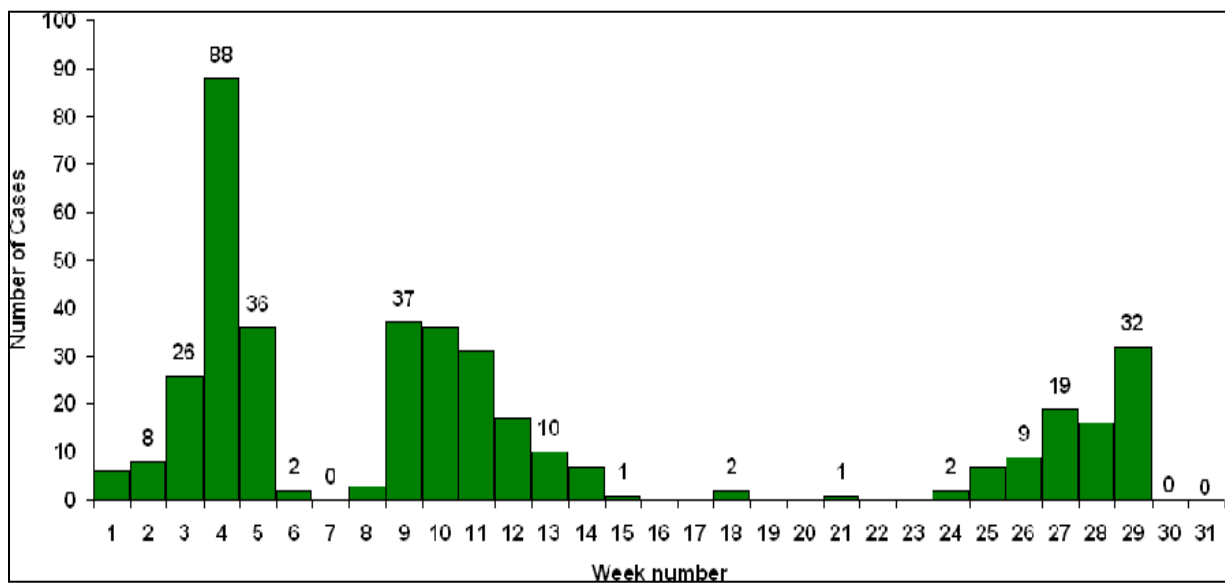


Figure 9: Cases of Aflatoxicosis by Date of Onset of symptoms, Ankole and Kigezi Sub-Regions, Uganda, 2016

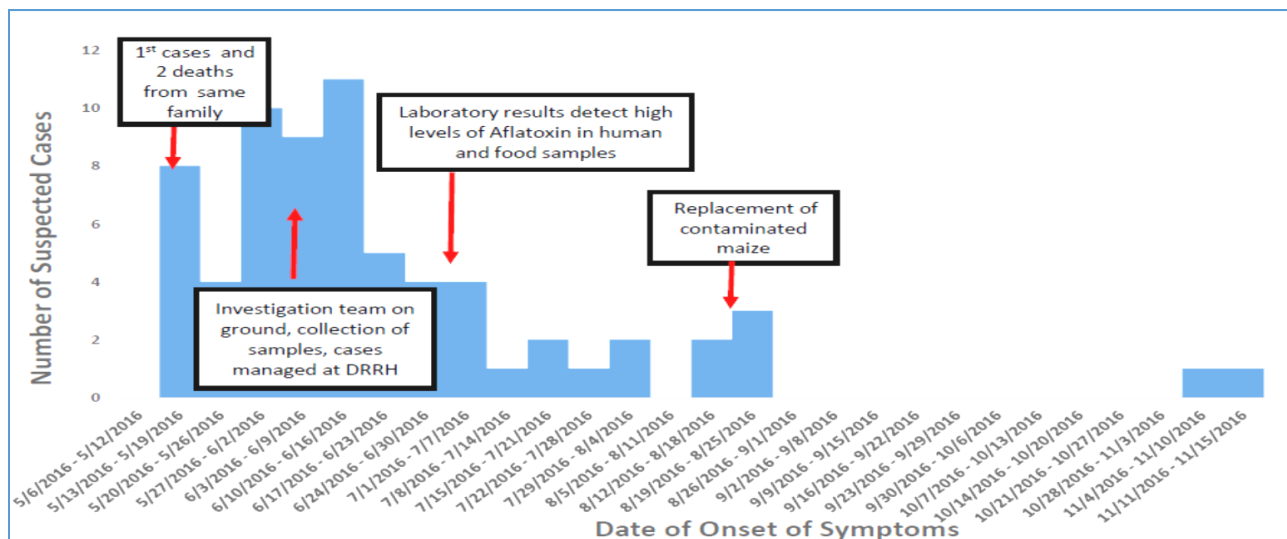


Table 5: Differences between a histogram and bar graph

Histogram/Epi curve	Bar chart
(a) Used for continuous data	(a) Used for discrete variable (non-continuous variable)
(b) Bars joined together	(b) Bars separated

(c) Compares the number of cases or a single variable over time (for example, reported cholera cases by epidemiologic week 1 to 31)	(c) Compares different variables at one point in time (for example, all reported diseases cases reported by weekly surveillance between January and August 2017)
(d) You can draw a line with a histogram	(d) You cannot draw a line with a bar chart

3.2.3 Analyse data by place

Analysing data by place provides insight about where a disease is occurring. Establishing and regularly updating a spot map of cases for selected diseases can give ideas as to where, how, and why the disease is spreading. The dot density will give the total number of cases per defined geographic area. Use the place of residence on the case reporting forms or line list to plot and describe:

- Clusters of cases occurring in a particular area
- Travel patterns that relate to the method of transmission for this disease
- Common sources of infection for these cases

Use manual methods or open-source Geographic Information System (GIS) software, such as Quantum Geographic Information System (QGIS), ArcGIS and ArcMap to create maps to use as part of routine analysis of disease surveillance data. DHIS2 also has a GIS feature which allows users to create maps.

On a map of the area where cases occurred, mark the following:

- Roads, water sources, location of specific communities and other factors related to the transmission risk for the disease or condition under investigation. For example, a map for neonatal tetanus includes locations of traditional birth attendants and health facilities where mothers deliver infants.
- Location of the patients’ residences or most relevant geographical characteristic for this disease or condition (for example, by village, neighbourhood, work camp, or refugee settlement). Another example is when mapping young patients during a meningitis outbreak; remember to locate the school that the patients attend or other locations as appropriate to the disease or condition being investigated. Please see section 11, for disease specific guidelines for specific recommendations for analysing data by place.

Figure 10: Example of District Spot Map Showing Location of Suspected and Confirmed Cases

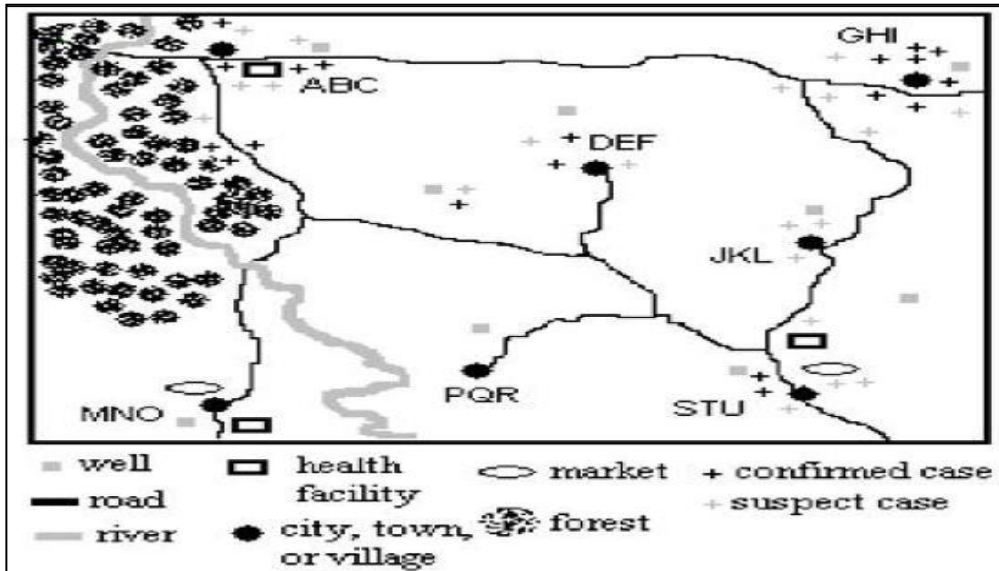
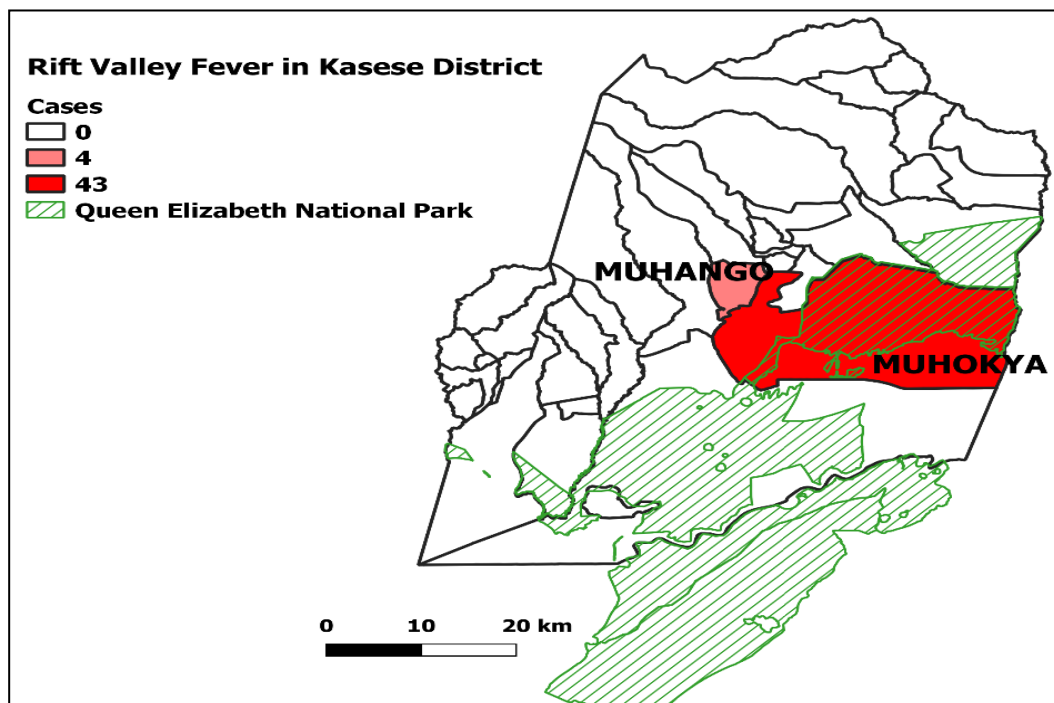


Figure 11: Example of a Map Drawn Using QGIS Software Showing Concentration of Rift Valley Fever Cases in Queen Elizabeth National Park in Kasese District



3.2.4 Analyse data by person

Analysis by person describes the population with the condition as well as those at risk of contracting the condition or being exposed to factors associated with it. These factors may reveal important clues to understanding the disease, why it occurred and how to control it, thus preventing

further spread. Make a distribution of the cases by each of the person variables in the reporting form. For example, compare the total number and proportion of suspected and confirmed cases by;

- Age group
- Sex
- Occupation
- Level of education
- Residence: urban and rural
- Vaccination status
- Risk factors
- Outcomes
- Final classification

Use disease-specific information to decide which variables to compare. For example, if information has been collected about a malaria outbreak, specify the age groupings that are targeted by the National Malaria Control Division. Compare the age groupings of cases detected in young children (age 2 months up to 59 months) cases in older children (age 5 to 14 years) and cases in adults (age 15 and over). Analysis by person is usually recommended for describing the population at risk. This analysis is easiest when the data are case-based.

Identifying numerators and denominators

A simple count of cases does not provide all of the information needed to understand the impact of a disease on the community, health facility or district. Simple percentages and rates are useful for comparing information reported to the district. The first step in analysing person data is to identify the numerator and denominator for calculating percentages and rates.

- The ***numerator*** is the number of specific events being measured (such as the actual number of cases or deaths of a given disease, for example, the number of cases of measles that occurred during the year in school age children)
- The ***denominator*** is the total number of people in the population in which the cases or deaths of a given disease occurred, or the population at risk

Using simple percentages

Simple percentages can be calculated to compare information from populations of different sizes. For example:

Health facility	Number of measles cases this year in school age children
A	42
B	30

By looking only at the number of reported cases, it appears that there was a higher occurrence of measles cases in health facility A. But when the number of reported cases at each health facility is compared to the total number of school-aged children living in each catchment area, then the situation becomes clearer.

Health facility	Number of school-aged children living in the catchment area
A	1,150
B	600

By calculating the incidence (i.e., number of new cases) of measles cases during the last 12 months in school aged children, the district officer can compare the impact of the illness on each facility. The numerator is the number of new cases that occurred over one year. The denominator is the number of school-aged children at risk in each catchment area. The measure obtained is called incidence rate or attack rate. In this example, the incidence rate is higher in health facility B than in health facility A.

Health facility	Incidence of measles per 100 school-aged children during last 12 months
A	4%
B	5%

3.2.5 Make a table for person analysis

For each priority disease or condition under surveillance, use a table to analyse characteristics of the patients who are becoming ill. A table is a set of data organized in columns and rows. The

purpose of a table is to present the data in a simple way. For surveillance and monitoring, use a table to show the number of cases and deaths from a given disease that occurred in a given time.

To make a table:

- Decide what information you want to show on the table. For example, consider analysis of measles cases and deaths by age group
- Decide how many columns and rows you will need. Add an extra row at the bottom and an extra column at the right to show totals as needed. In the example, you will need a row for each age group, and a column for each variable such as age group or cases and deaths.
- Label all the rows and columns, including measurements of time. In the example below, the analysis is done yearly. Analysis of person is also recommended for analysis of outbreak data.
- Record the total number of cases and deaths as indicated in each row. Check to be sure the correct numbers are in the correct row or column.

Age group	Number of reported measles cases per year	Number of deaths per year
0 - 4 years	40	4
5-14 years	9	1
15 years and older	1	0
Age unknown	28	0
Total	78	5

3.2.6 Calculate the percentage of cases occurring within a given age group

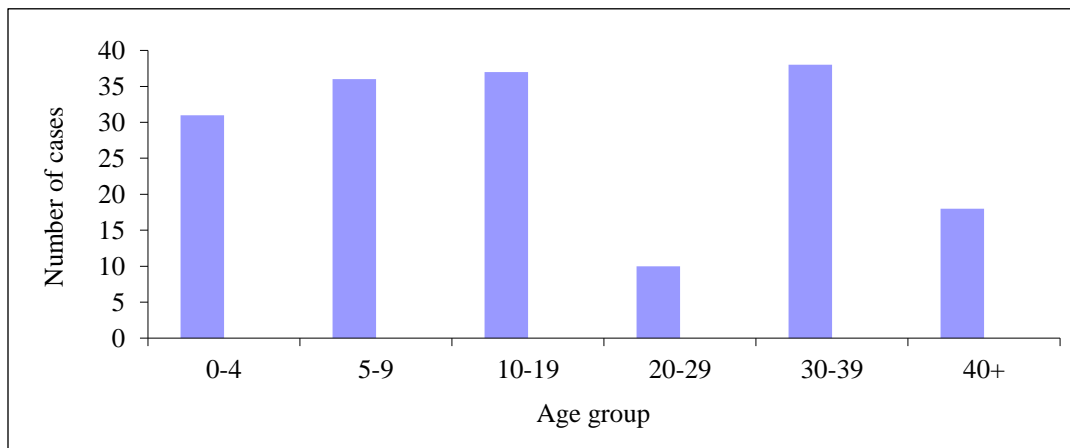
When the summary totals for each age group are entered, one analysis that can be done is to find out what percent of the cases occurred in a given age group. To calculate this percentage:

1. Identify the total number of cases reported within each age group from the summary data for which time or person characteristics are known. (For example, there are 40 cases among children 0 - 4 years of age.)
2. Calculate the total number of cases for the time or characteristic being measured. (In this example, there are 50 cases whose age is known.)

3. Divide the total number of cases within each age group by the total number of reported cases. (For example, for children age 0 -4 years, divide 40 by 78. The answer is 0.51.)
4. Multiply the answer by 100 to calculate the percent. (Multiply 0.51 X 100. The answer is 51%.)

Age group	Number of reported cases	% of reported cases in each age group
0-4 years	40	51
5-14 years	9	12
15 years and older	1	1
Age unknown	28	36
Total	78	100

Figure 12: Example of a bar graph showing Age distribution of Diarrheal Cases During an Outbreak in Kasese District, 2019



3.2.7 Calculate the attack rates

The attack rate is the measure of frequency of morbidity, or speed of spread, in a population at risk. An attack rate describes the risk of getting the disease during a specified period, such as the duration of an outbreak. Attack rate is defined as the frequency with which an event (such as a new case of disease) occurs in a population at risk over a specified period, and is usually calculated in an outbreak scenario. It is expressed per population at risk; for example: 4.5/100 000 population.

$\frac{\text{No. of new cases during specified period}}{\text{Size of population at risk at start of that period}}$	$\times \text{constant (such as 100 or 1,000)}$
---	---

Example: 16 cases of cholera in village with a population of 800. Attack rate = $16/800 = 0.02$
 $0.02 \times 100 = 2.0$, i.e., 2 cases per 100 population = 2.0

During an outbreak, these data will need to be updated frequently (often daily) to see if the information being received changes the ideas regarding the causes of the outbreak.

3.2.8 Calculate a case fatality rate

A case fatality rate helps to:

- Know the proportion of deaths among cases
- Indicate whether a case is identified and managed promptly
- Indicate any problems with case-management once the disease has been diagnosed
- Identify a more virulent, new or drug-resistant pathogen
- Indicate poor quality of care or no medical care.
- Compare the quality of case management between different catchment areas, cities, and districts
- Assess health seeking behaviours
- Identify underlying conditions to severe diseases e.g., immune deficiency

Public health programs can impact the case fatality rate by ensuring that cases are promptly detected and good quality case management takes place. Some disease control recommendations for specific diseases include reducing the case fatality rate as a target for measuring whether the outbreak response has been effective

To calculate a case fatality rate:

1. Calculate the total number of deaths. (In the example of the measles data, there are a total of 5 deaths.)
2. Divide the total number of deaths by the total number of reported cases. (For example, the total number of reported cases is 78. The number of deaths is 5. So, divide 5 by 78.
3. $5 \div 78 = 0.06$
4. Multiply the answer by 100 (0.06×100 equals 6).

Age group	Number of reported cases	Number of deaths	Case fatality rate
0-4 years	40	4	10
5-14 years	9	1	11
15 years and older	1	0	0
Age unknown	28	0	0
Total	78	5	6

Please see the disease specific guidelines in Section 11.0 for recommendations about the essential variables to compare for each disease.

3.3 Alert and action thresholds for public health action

Thresholds are markers that indicate unusual situation and require that something should happen or change. They help surveillance and program managers answer the question, “When should I take action, and what will that action be?”

Information on establishing thresholds is in Section 11.0 of this guide.

Thresholds are based on information from two different sources:

- In some instances, there might be already a situation analysis which has been done to describe the risks for occurrence of a particular disease, and who the people at risk might be and there is already a described action that needs to be done once the risks have been identified to prevent a wider outbreak
- International recommendations from technical and disease control program experts

These guidelines discuss two types of thresholds: an alert threshold and an epidemic threshold. Not every disease or condition uses both types of thresholds, although each disease or condition has a point where a problem must be reported and an action taken.

An ***alert threshold*** suggests to health staff and the surveillance team that further investigation is needed. Depending on the disease or condition, an alert threshold is reached when there is one suspected case (as for an epidemic-prone disease or for a disease targeted for elimination or eradication) or when there is an unexplained increase for any disease or unusual pattern seen over a period of time in weekly or monthly summary reporting.

Action (***epidemic***) ***threshold*** triggers a definite response. It marks the specific data or investigation finding that alerts an action beyond confirming or clarifying the problem. Possible actions include communicating laboratory confirmation to affected health centres, implementing an emergency response such as an immunization activity, community awareness campaign, or improved infection control practices in the health care setting. Several thresholds have been proposed for action based on disease surveillance findings. For rare diseases or diseases targeted for eradication, detection of a single case suggests an epidemic. In such situations, one case is unusual and is a serious event. This is because these rare or targeted diseases have the potential for rapid transmission or high case fatality rates.

In other situations, a number of cases will trigger a response. For example, the epidemic threshold for bacterial meningitis in countries of the meningitis belt is 10 suspected cases per 30,000 - 100,000 inhabitants per week and under 30,000 inhabitants is 5 suspected cases in one week or doubling of the number of cases in a three-week period (Minimum of 2 cases in one week), and the alert threshold is 3 suspected cases per 30,000 - 100,000 inhabitants per week and under 30,000 inhabitants is 2 suspected cases per week or an increased incidence compared to previous non-epidemic years (Source: *Weekly Epidemiological Record No 51/52, 577-588, , 19 December 2014*(<http://www.who.int/wer>).

The epidemic threshold for malaria in some countries is 3rd Quartile of confirmed malaria cases for the past 5 years; Alert threshold is 2nd quartile/Median of confirmed malaria cases

Ministry of Health has provided the thresholds for priority diseases in Section 11.0. This facilitates use of surveillance information for action at the level where it is collected. Periodically, surveillance thresholds are assessed and reset at national or international levels according to the observed trends of the diseases, events or conditions under surveillance.

3.4 Draw conclusions from the findings to generate information

Routinely (weekly, monthly or quarterly) health facility management teams/ health unit management committees (HUMIC) should meet to discuss the results of the analysis for action

Routinely (weekly, monthly or quarterly) gather or present the graphs, maps and tables and meet with the district health team or relevant stakeholders to review analysis results and discuss the findings during performance review meetings.

Systematically review the findings following the district's analysis plan (see Annex 3A) if one has been prepared

Correlate the analysis with other reporting mechanisms, data sources, like from animals (domestic or wildlife), or the environment to assist in correct interpretation of your findings. For example, for a number of human rabies cases reported, it will be important to get information from the animal sector on the status of any current bite investigations, quarantined animals, or dogs vaccinated.

Consider quality of the data when interpreting results for example;

- missing data values (completeness per month, per event)
- inconsistencies (between linked data elements - validation)
- arithmetic errors (in correlation & aggregation)
- obvious fluctuations (sharp increase or decrease per month, per event)

It is important in a system where eIDSR has been established, to ensure that there are features to improve data quality and these might include:

- Data input validation
- Maximum and Minimum values
- Validation rules

At a minimum, review the findings to:

- Assess whether the situation is improving or not, and
- Make comparison of the observed data to the expected data
- Consider possible explanations for an apparent increase in cases/deaths
- Has there been a change in the number of health facilities reporting information?
- Has there been a change in reporting procedures or surveillance system?
- Has there been any change in the case definition that is being used to report the disease or condition?
- Is the increase or decrease a seasonal variation?
- Has there been a change in screening or treatment programs, or in community outreach or health education activities that would result in more people seeking care?
- Has there been a recent immigration or emigration to the area or an increase in refugee populations?
- Has there been any change in the quality of services being offered at the facility (for example, lines are shorter, health staff are more helpful, drugs are available, clinic fees are charged)?

- Is there an increase or improvement in laboratory testing / diagnostic procedure?
- Is there an increase in awareness of disease in the public? E.g., mass vaccination? campaign and awareness of a particular disease will lead to increase of cases presented to the facility
- Backlog of cases being reported which were supposed to be reported earlier?

3.5 Summarize and use the analysis to improve public health action

Prepare and share with all stakeholders including affected communities who need this information, a concise action-oriented summary report of the surveillance findings. Use simple tables, graphs and maps, with clear and short description, interpretation, comments and recommendations.

Make statements that describe the conclusions you have drawn from the surveillance data analysis results. Use them to take action to:

- Conduct an investigation to find out why there is an increase/decrease in the number of cases.
- Collaborate with specific disease reduction programs to intensify surveillance if an alert threshold has been crossed,
- Advocate with political, Partners, religious leaders and the community for more resources, if a lack of resources is identified as a cause for the increased number of cases.

Information sharing is an important surveillance function and a powerful mechanism of coordination. It motivates the staff who send reports and builds partnership through the transparency that information sharing displays. Thus, it is important to share analysis results and provide feedback on time. Please refer to Section 7 and 8 of these guidelines for information and examples about communication and sharing feedback.

For further reading refer to ^{3,6,12,24,25}

Annexes for SECTION 3

Annex 3A: Plan for routine analysis of surveillance information

Annex 3B: How to manually make a line graph

Annex 3A: Plan for routine analysis of surveillance information

A minimum plan for routine analysis of surveillance information should include the following information which could be presented as tables, graphs and maps.

1. Calculate completeness and timeliness of reporting

Monitoring whether surveillance reports are received on time and if all health facilities have reported is an essential first step in the routine analysis of the surveillance system. This assists the district (or other level) surveillance team in identifying silent areas (areas where health events may be occurring but which are not being reported) or health facilities that need assistance in transmitting their reports. It also depicts how representative the data is for the specific level.

2. Calculate district (or other level) totals by week (or by month). Update the total number of reported cases and deaths for the whole year. This is summary information that helps to describe what has happened in the particular reporting period.
3. Prepare cumulative totals of cases, deaths and case fatality rates since the beginning of the reporting period.
4. Use geographic variables (such as hospitals, residence, reporting site, neighbourhoods, village and so on) to analyse the distribution of cases by place. This is the information that will help to identify high risk areas.
5. Analyse disease trends for at least the diseases of highest priority in your district. Monitor the trends for cases, deaths, and case fatality rates to identify any unusual increases or disease patterns.
6. Data validation and quality analysis. Establish a data validation team at all levels. Meetings should be held periodically to review reports. All reports submitted must be checked for consistency with various sources.

An example of a product from an analysis plan for routine surveillance information is on the next page.

Example of data analysed for cholera in Country A, 2017				
Distribution by Time				
Onset week	Total	Outcome		Case fatality rate
		Alive	Deaths	
26	23	16	7	30
27	97	92	5	5
28	88	87	1	1
29	21	19	2	10
32	11	11	0	0
33	11	9	2	18
Total	251	234	17	7
Distribution by Place				
District	Total	Outcome		Case fatality rate
		Alive	Deaths	
District 1	1	1	0	0
District 2	92	86	6	7
District 3	158	147	11	7
Total	251	234	17	7
District		Population	Cases	Attack rate per 100,000
District 1		179888	92	51
District 2		78524	158	201
Distribution by Person				
Age Group	Total	Outcome		Case fatality rate
		Alive	Deaths	
0-4 years	37	35	2	5
5-9 years	55	50	5	9
10-14 years	30	28	2	7
15-19 years	23	23	0	0
20-24 years	28	27	1	4
25-29 years	26	24	2	8
30-34 years	12	11	1	8
35-39 years	8	6	2	25
40 + years	32	30	2	6
Total	251	234	17	7
Sex	Total	Outcome		Case fatality rate
		Alive	Deaths	
Female	122	114	8	7
Male	129	120	9	7
Total	251	234	17	7

Annex 3B: How to manually make a line graph

How to make a line graph	
1.	Decide what information you want to show on the graph.
2.	Write a title that describes what the graph will contain (for example, <i>Monthly totals for inpatient cases and deaths due to malaria with severe anaemia</i>).
3.	Decide on the range of numbers to show on the vertical axis. <ul style="list-style-type: none">• Start with 0 as the lowest number• Write numbers, going up until you reach a number higher than the number of cases• Chose an interval if the numbers you will show on the vertical axis are large.
4.	Label the vertical axis, explaining what the numbers represent.
5.	Label the horizontal axis and mark the time units on it. The horizontal axis is divided into equal units of time. Usually you will begin with the beginning of an outbreak, or the beginning of a calendar period, such as a week, month or year.
6.	Make each bar on the graph the same width.
7.	Mark the number of cases on the graph or histogram. For each unit of time on the horizontal axis, find the number of cases on the vertical axis. Fill in one square for each case, or for some number of cases in the column for the day on which the patient was seen. Show deaths by using a different pattern of lines, or a different colour. If you are making a line graph, instead of making a bar or filled-in squares, draw a cross or make a point where the horizontal and vertical lines cross. Connect the points on the graph to show the trend going up or down over time.

SECTION 4

INVESTIGATE SUSPECTED OUTBREAKS AND OTHER PUBLIC HEALTH EVENTS

SECTION 4: INVESTIGATE SUSPECTED OUTBREAKS AND OTHER PUBLIC HEALTH EVENTS

4.0 Investigate suspected outbreaks and other public health events

Aim: This section describes what needs to be done when conducting an outbreak investigation.

Definition: An outbreak is defined as an increase in the number of cases of a disease or a public health event above what is normally expected within that population, in a given area and over a particular period of time. Other definitions that relate to outbreaks are:

- **Endemic:** Constant presence of a disease at baseline level within a certain geographical location or population
- **Epidemic:** used interchangeably with outbreak however epidemics are usually larger in scope
- **Pandemic:** an epidemic spread over multiple countries and or continents
- **Cluster:** An aggregation of cases or health related condition in a given area over a particular period regardless of whether the number of cases is more than expected in relation to time, place or both.

When an outbreak or any public health event or condition is detected and reported, there are several steps which are required for an outbreak investigation (see **Figure 13**). These steps are usually listed in order, but their order of implementation is often non-sequential. Knowing these steps prepares one to conduct an investigation properly, using common sense and logic to determine when, how often, and to what extent the different steps should be implemented in a real investigation. These steps can also be used to investigate other public health problems in the district such as when an increase in chronic or non-communicable disease is detected.

The results of an investigation of an outbreak or other public health events leads to identification and assessment of person who have been exposed to an infectious disease or affected by an unusual public health event. The investigation provides relevant information to use for taking immediate action and improving longer-term disease prevention activities.

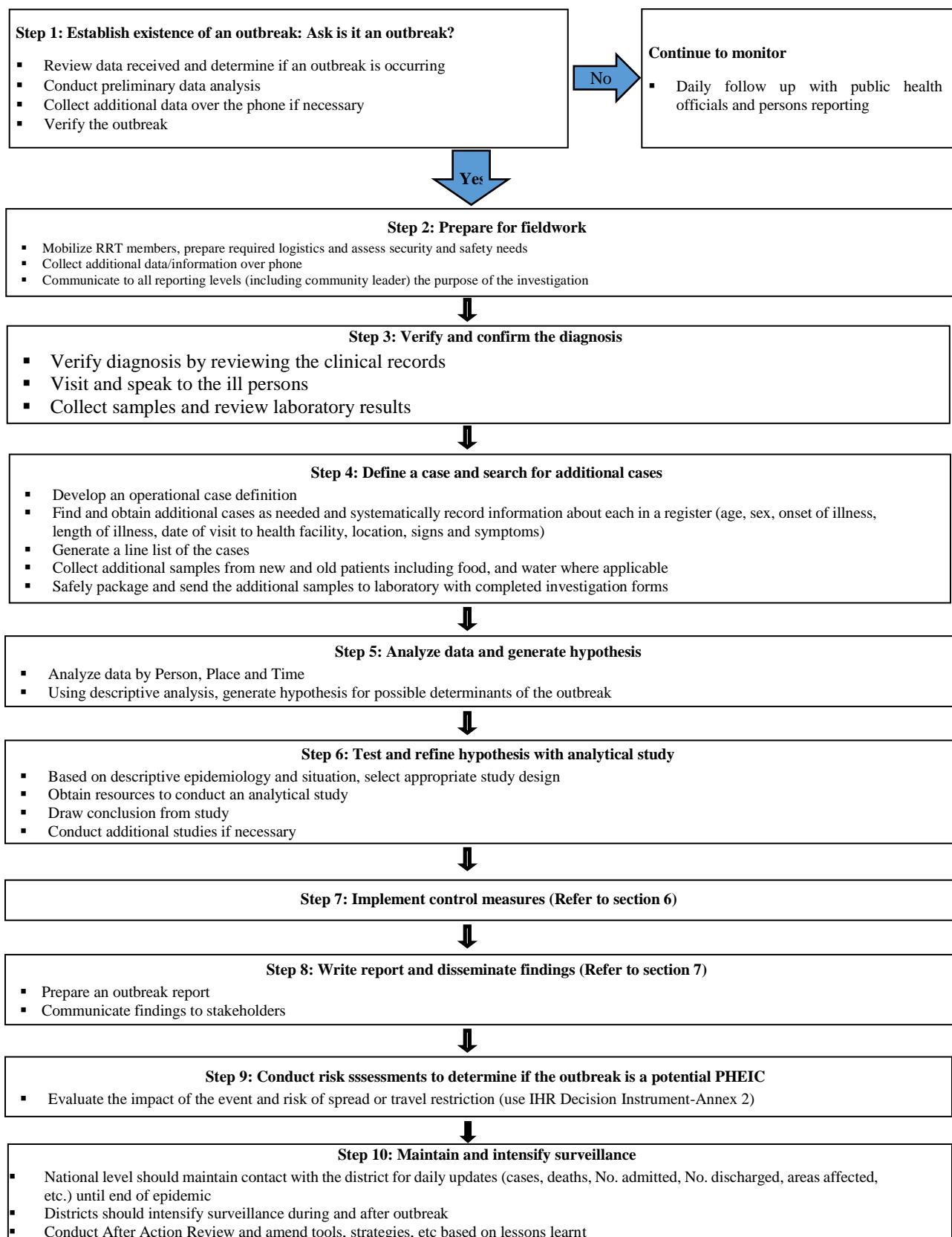
4.0.1 Purpose of an investigation

The purpose of an investigation is to:

- Verify the existence of an outbreak or the public health event.
- Identify and treat additional cases that have not been reported or recognized.
- Collect information and laboratory specimens for confirming the diagnosis.
- Identify the source of infection or cause of the outbreak.
- Describe the epidemiological situation by time, place and person
- Describe mode of transmission and risk factors in the affected populations

- Identify and select appropriate response interventions to control the outbreak or the public health event
 - Strengthen control and prevention activities to avoid future reoccurrence of the outbreak and other public health events.

Figure 13: Steps in outbreak investigation



4.0.2 Decision to investigate a reported outbreak or public health event

It is the overall mandate of the Ministry of Health to investigate and respond to outbreaks of national or international concern. In such situation, the Ministry of Health will constitute a national investigation team to work with the affected district in the investigation and response process.

The role of the district is to conduct initial outbreak investigations for any suspected outbreak either from the health facilities, community or rumors. The DHO should immediately constitute a District Rapid Response Team to investigate and send a preliminary report to MoH.

The district may be supported by the regional rapid response team to conduct the investigation.

The District should conduct an investigation when:

- An alert of a suspected outbreak of a notifiable disease is received (birds die off due to avian influenza, livestock deaths due to anthrax)
- An unusual increase is seen in the number of cases or deaths during routine analysis of public health surveillance data
- Alert or epidemic thresholds have been reached for specific priority diseases. The initial trigger for a new epidemic prone disease could be the laboratory
- Communities or social media report rumours of deaths or a large number of cases that are not being seen in the health facility
- A cluster of illnesses or deaths occurs for which the cause is not explained or is unusual (for example, an adult death due to bloody diarrhoea, cluster of illness among health care workers, cluster of animals (domestic and/or wildlife) deaths)

4.0.3 Verify the reported information

Investigating outbreaks requires human, logistic and financial resources. When a suspected outbreak or event is reported, promptly verify that the information is accurate and reflects conditions suggesting a true outbreak or event. This will help to ensure that resources are used effectively. To verify the information, consider the following factors:

- Source of information (for example, is the source of the rumour reliable? Is the report from a health facility or a community or electronic/print media?)
- Severity of the reported illness and use of standard case definition for reporting
- Number of reported cases and deaths
- The age, sex and occupation of reported cases or deaths
- Mode of transmission of suspected pathogen and risk for wider transmission
- Geographical and socio-cultural considerations
- Is it of national or international concern?

After taking the above factors into consideration, the situation may require a more urgent response than might otherwise have occurred. For example, reports of a suspected viral haemorrhagic fever case are treated with more urgency than reports of a less virulent disease because of the potential for high rates of death and rapid transmission.

4.0.4 Record reported outbreaks, public health events and alerts

Districts should track and keep a record of reported suspected outbreaks, events and rumours. The purpose for tracking reported outbreaks is to ensure that the report of each suspected outbreak or alert is followed by some public health action. Keeping this record will help to gather information for evaluating the timeliness and completeness of the outbreak investigation and response process. The district should use an outbreak and rumour log for recording and analysing long-term trends. Refer to **Annex 4A** for district log for suspected outbreaks and rumours.

All alerts should be recorded and entered into electronic event management systems (refer to section 9 for alert management using eIDSR).

4.1 Prepare to conduct an outbreak investigation

4.1.1 Mobilize National and District Rapid Response Team (NRRT/DRRT)

Before embarking on an outbreak investigation, consider necessary preparations. These include preparing the team with appropriate information, and data about the suspected disease so that everyone knows what to look for, and what precautions are needed. If the disease is known, the teams need to pay particular attention to symptoms, case definitions, modes of transmission, diagnostic tests, control measures, etc. If the disease is unknown or undiagnosed, then the team needs to take extra IPC precautions until a definitive diagnosis is ascertained.

The RRT is a technical, multi-disciplinary team that is available for quick mobilization and deployment to support the field response to a suspected or confirmed outbreak or event. (Note: periodically review and update the immunization status of personnel who take part in infectious diseases outbreak investigation and response activities.). Mobilize the RRTs and make arrangements to investigate the alerts. It is advisable to have a database of trained health workers who can rapidly be mobilized to fulfil the following functions;

- Coordination,
- Surveillance
- Laboratory confirmation
- Case management, mental and psychosocial support.
- Infection Prevention Control (IPC)
- Environmental health and sanitation
- Risk Communication and Community Engagement (RCCE) and social mobilization.
- Animal health (as applicable)
- Logistics

In resource constrained settings, experts that can fulfil more than one function may be co-opted into the RRT.

The composition of the RRT should have at least the following;

- Coordination – Team Lead
- A clinician – to oversee case management and Infection Prevention and Control (IPC)
- Public health nurse
- Surveillance expert/ Epidemiologist /Data manager
- Laboratory expert
- Environmental Health expert
- Animal health expert
- Social mobilization and risk communication expert
- Psychosocial Support (PSS) expert
- Logistic expert
- Others based on specific characteristics of the outbreak (e.g. expert in water sector–if cholera outbreak or if suspected poisoning from mines- expert on chemicals or radio-nuclear, or experts from foods and drugs authorities if foods and drugs are involved).

Section 5 will describe in detail the composition of other teams in responding to an outbreak and other public health events.

Develop terms of reference that define the objectives of the investigation and details of the expected deliverable per section of the RRT so that the essential information will be gathered for investigating the outbreak and implementing the most appropriate and relevant response. Identify all the relevant stakeholders for the investigation and response. The national and or the regional level **may** deploy to support the districts to investigate and respond to the outbreak/public health emergency.

The RRT should take note of the relevant standard guidelines and standard operating procedures/methods (SOPs) to the disease or condition being investigated. For example, SOPs for collecting the correct laboratory specimen, case management guidelines, case investigation forms, line-listing forms. Reference can be made to standard websites in scenarios where the RRT cannot access copies of such SOPs or requires further guidance. Such websites include www.who.int or www.cdc.gov and other such relevant sites.

4.1.2 Specify tasks for the RRT members

Inform RRT members the tasks expected of them during the investigation and the functions each will support. Specify tentative timelines for the assignment. Contribute to the positive motivation for doing the assignment. For example, make sure that the RRT understands the link between the investigation results and the selection of response activities for preventing additional cases and saving lives. Ensure that all medical and non-medical staff have access to and know how to use

the required Personal Protection Equipment (PPE) and universal precautions relevant for the possible cause of the suspected outbreak or event.

4.1.3 Define supervision and communication lines

Make a plan on how the teams will communicate during the investigation. Prepare a diagram showing who will report to whom and how information will move both within the investigation team and between the district and other levels, including the most local level. For example, define who will communicate with the Ministry of Health, other sectors, the media and the community. State the methods and frequency of communication during an outbreak to keep officials and other stakeholders informed. Methods may include daily updates (SitReps, line lists etc) by mobile phone, electronic mail or conference calls. Show on the diagram the lines of authority and the roles of each staff on the team. Define the role of non-medical workers and how they should be supervised.

A clear communication procedure is key for ensuring the regular sharing of critical information about identifying and responding to risks associated with the outbreak or event.

4.1.4 Decide where the investigation will take place

Review known information about the suspected illness, including its mode of transmission and risk factors. Use this information to define the geographical boundaries and target population for conducting the investigation. Begin the investigation in the most affected place.

Visit and review records in health facilities in the affected area to actively find cases. Involve the community and local health facility staff in planning and conducting the investigation. Listen to and seek out information about local customs, culture, and routines that could affect the success of the outbreak investigation.

4.1.5 Obtain the required authorizations

Observe the appropriate authorizations, clearances, ethical norms and permissions that are required to do the investigation. In addition to official authorizations, ensure mutual understanding with community and opinion leaders.

4.1.6 Finalize forms and methods for collecting information and specimens

Select those variables needed to identify, record and analyse the disease being investigated. **Annex 4E** provides a sample line list with key variables. Depending on staff responsibilities, review how to:

- Record case information on a line list for later use during time, place and person analysis

- Fill appropriate request forms, label laboratory samples properly and use a unique ID number for a given case
- Prepare (and update as needed) an epidemic curve
- Construct a spot map showing location of geographic variables such as location of cases and deaths
- Develop analysis tables for risk factors, age group, sex, immunization status and so on.

4.1.7 Arrange transportation and other logistics

Make travel arrangements for getting to and from the site of the investigation and for travelling during the investigation. Make sure transportation for moving specimens to the appropriate laboratories has been arranged in advance of the team's departure. Other logistics such as medical supplies, vaccines, PPEs should also be available.

4.1.8 Gather supplies for collecting laboratory specimens

Some districts may already have in place a rapid response kit that contains supplies and equipment for carrying out an investigation including laboratory supplies.

If a kit is not available in your district, look at the disease specific program guidelines and talk to laboratory specialists to find out the requirements for laboratory supplies for proper collection, storage, and transport of relevant specimens (refer to **Annex 4B**). Use of personal protective equipment (PPE) and disinfection materials is strongly recommended (refer to **Annex 4C**).

Refer to the disease specific guidelines in Section 11.0 for laboratory requirements.

4.2 Verify and confirm the outbreak or event

4.2.1 Review the clinical and exposure history

Examine the patient or patients' records to confirm that their signs and symptoms meet the case definition. Do not forget to use the minimum PPE. Ask the patient or a family member who can speak for the patient the following questions:

- Where do you live?
- When did the symptoms begin?
- Who else is sick in your home, school, workplace, village, and neighbourhood?
- To where have you travelled recently?
- Where have you been living recently prior to the onset of symptoms (residence at time of infection)?
- Were you visited by anyone recently?
- Who took care of you when you started feeling sick?

- Have you been in contact with sick or dead animals (both domestic and wildlife) recently (for zoonotic infections)?
- Have you been in contact with any sick or dead person?
- Has anybody died in the community you lived in recently?
- Did you participate in any burial ceremony (What role did you play?)
- For suspected Adverse Events Following Immunization (AEFI), what vaccines have you received recently?

4.2.2 Collect laboratory specimens and obtain laboratory results to confirm the diagnosis

Refer to the laboratory requirements in Section 11.0 to determine the diagnostic test and the specimen that is required if the disease can be confirmed by laboratory testing. The disease specific laboratory requirements also describe how to collect, store and transport the relevant specimen, and how many specimens to collect to confirm an outbreak for that particular disease. See **Annex 4H** for how to pack samples using a triple packaging technique.

Note that some diseases may require additional food or environmental samples to aid in diagnosis and ensure that these samples are also collected e.g., water samples for cholera outbreaks; food samples for food borne outbreaks.

Review laboratory results with the investigation team, clinicians, and laboratory persons at the health facility. Are the laboratory results consistent with the clinical findings? Seek additional assistance from national level program managers or technical experts if you have any questions about the laboratory results.

4.3 Define and search for additional cases

4.3.1 Define a case

After establishing that an outbreak is occurring, and verifying the correct diagnosis, a crucial step is to define what constitutes a case in this investigation. Refer to section 11.0 for a list of Standard Case Definitions for IDSR priority diseases in Uganda. Even in situations where a case definition might be available, in specific outbreaks, other details are necessary to be included in the case definitions and these include geographical location, attendance at an event or travel to a certain location. In some circumstances, the RRT might encounter a new disease not listed in the Section 11.0 and will need to develop an operational case definition. The common elements of a case definition include information on signs and symptoms, date of onset of signs and symptoms, laboratory results, and the essential elements of person, place, and time.

4.3.2 Isolate and manage cases

Use the case definition to identify (more) cases. Institute appropriate control measures to minimize the related morbidity and/or mortality. Such measures may include isolation of cases identified. Isolation is a critical step in limiting spread of disease and keeping healthcare facilities open and healthcare workers available and safe. Depending on the suspected disease, immediate isolation may be required to protect staff, patients and community members. Ensure the cases in isolation units have access to facilities like water, toilet, etc. As indicated by the case management guidelines, strengthen infection prevention and control in both isolation and treatment units. Provide the health facility with support and supplies.

N.B Use standard precaution with all patients in the health facility and in the community, especially during an outbreak of a disease transmitted by contact with contaminated supplies and body fluids.

4.3.3 Search for additional cases and contacts

Once the initial cases have been clinically confirmed and treatment has begun, actively search for additional cases should continue.

Search for suspected cases and deaths in the health facility records

In the health facilities where cases have been reported, search for additional suspected cases and deaths in the registers. Look for other patients who may have presented with the same or similar signs and symptoms as the disease or condition being investigated. The team should request health workers to search for similar cases in the neighbouring health facilities and in health facilities where the person could have sought prior health care. Special emphasis should also be taken to ensure that places like drug shops, worship centres and traditional shrines where the person could have sought alternative health care/cure are not left out.

Refer to **Annex 4D** at the end of this section for instructions on conducting a register review. Make sure to follow up any cases in the register, meeting the case definition, that have been allowed to go home.

Search for contact persons and suspected deaths in the community

Identify all areas of likely risk where the patients have lived, worked, eaten from or travelled to, attended parties, family outside the country, visiting wildlife protected areas (zoo and national parks), livestock farm, laboratory, mining or hunting sites. Also talk to other informants in the community such as herbalists, food handlers, school teachers, veterinarians, farmers, community leaders, etc.

The areas for the search may be influenced by the disease, its mode of transmission, and factors of risk related to time, place and person. Visit those places and talk to people who had, or were likely to have had, contact with the patient. Ask if they or anyone they know has had an illness or condition like the one being investigated. Find out if anyone else in the area around the case has been ill with signs or symptoms that meet the case definition. Find out if there were any recent deaths. If they say yes, find out the signs and symptoms of the person(s) that died. Enquire about the people that took care of these people when they were sick, and also the preparation of the dead before and during the burial ceremony. Collect information that will help to describe the magnitude and geographic extent of the outbreak.

Refer newly identified cases to the health facility for treatment. **See Annexes 4E and 4F** of this section for examples of forms for recording and following-up on contacts for additional cases.

4.3.4 Quarantine contacts of highly infectious diseases

Quarantine is recommended for highly infectious novel pathogens such as COVID-19. Quarantining contacts of cases is done in disease outbreaks which are highly contagious, transmitted through person to person with the aim of interrupting transmission and easy monitoring of the exposed persons. The duration of the quarantine is guided by the incubation period of the disease. During quarantine, monitoring contacts on symptom development is done on a daily basis and those that develop symptoms are isolated.

4.4 Develop a line list

For each case including the index obtained from either the health facility registers or searches from the community that fits the operational case definition, transfer the collected information on the case investigation form into the line list. Where possible include geo-mapping. A line list will keep track of pertinent basic data for cases and potential cases as they are identified (See **Annex 4E** for a sample line list). List any contacts on the contact listing form and ensure they are monitored daily for the required time for signs and symptoms of the disease (See **Annex 4F and 4G** for contact list and contact tracing forms)

Record information of all cases on a “case reporting form”. At least record the following:

- The patient’s name, address, and village or neighbourhood and locating information. If available, use your phone to record GPS coordinates for these cases. If a specific address is not available, record information that can be used to contact patients if additional information is needed or to notify the patient about laboratory and investigation results
- The patient’s age and sex. This information is used to describe the characteristics of the population affected by the disease
- The date of onset of symptoms and date the patient was first seen at the health facility
- The status of the patient whether dead or alive. If dead, record date of death.

- Relevant risk factor information such as immunization status if the disease being investigated is a vaccine-preventable disease; occupation if you suspect occupation is related to that particular outbreak.
- The name and designation of the person reporting the information.
Some diseases have their own more detailed case investigation form. Detailed forms outlining particular information for investigating specific diseases are in the Annexes at the end of Section 11.0.
- Complete the case investigation form for any new cases (**see Annex 2A**) and record the details on the line list (**Annex 4E**).

4.5 Analyse data about the outbreak

The methods for analysing outbreak data are similar to how the analysis of summary data is described in **Section 3**. Data about the outbreak is analysed and re-analysed many times during the course of an outbreak.

During the initial analysis, summarize the outbreak or events and look for clues about where the outbreak or event is occurring, where it is moving and the source of the outbreak. For single or point source outbreak, the exposure is usually from the same source or event such as a meal or a burial. Persons at risk of becoming ill could be young children, refugees, person living in rural areas, and so on

Present the data, taking into account time, place and person analysis (**refer to section 3**) in the following way:

- Make tables of the most relevant characteristics for cases (for example, comparing age group with vaccination status, sex ratio, comparing type of occupation in relation to cases etc
- Draw a histogram representing the course of the disease (an “Epi” curve).
- Plot the cases on a spot map
- Calculate Case Fatality Rates

In outbreak situation, apart from Case Fatality Rates, you may want to calculate **Attack Rates**. (See section 3, on how to calculate the Attack Rate).

4.5.1 Interpret results of the analysis

Review the analysis results while identifying potential risk factors about the outbreak or public health event.

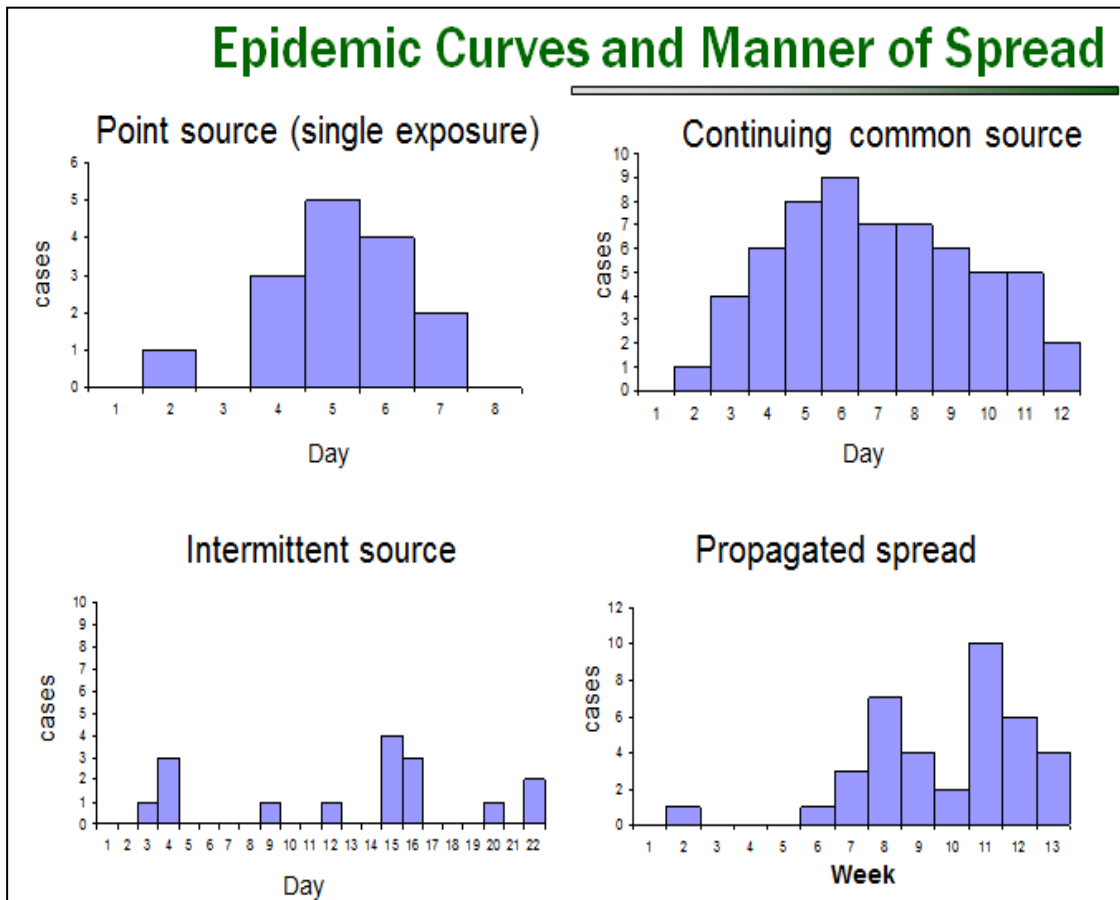
For example: What was the causal agent of the outbreak? What was the source of infection? What was the transmission pattern? What control measures have been implemented so far and their effect?

Interpret the time analysis results

Look at the histogram and observe the shape of the epidemic curve. Draw conclusions about when exposure to the agent that caused the illness occurred, the source of infection and related incubation period.

- If the shape of the curve suddenly increases to develop a steep rise, and then descends just as rapidly, exposure to the causal agent was probably over a brief period of time. There may be a common source type of infection
- If exposure to the common source was over a long period of time, the shape of the epidemic curve is more likely to be a plateau rather than a sharp peak if the illness resulted from person-to-person transmission, the curve will present as a series of progressively taller peaks separated by periods of incubation.
- Below are some of the examples of the shapes of epidemic curves and possible interpretation

Figure 14: Types of Epidemic Curves and the manner of spread



Interpret the place analysis results

Use the map to:

- Describe the geographic extent of the problem and identify high risk areas.
- Identify and describe any clusters or patterns of transmission or exposure. Depending on the organism that has contributed to this outbreak, specify the proximity of the cases to likely sources of infection.
- For mobile communities like nomads, migrants or missionaries, a map may describe the spot pattern related to the risk of transmission of disease by location, if they are defined as the “at-risk” or “high risk” population due to their movements.

Interpret the person analysis results

Information from this analysis describes more precisely the high-risk group(s) and will guide on the options/interventions for outbreak response. For instance, if yellow fever cases occurred in patients less than 15 years of age, then the immunization response might need to target children less than 15 years of age.

Below is an example of data analysis by person (age) which shows how the results could be used to plan for interventions.

Table 6: Example: Attack rate by age group during a Malaria outbreak in 3 sub-counties in Nwoya District, Uganda, February-May 2018

Age group (years)	Number of cases	Population	Attack rate (Per 1000)
< 5	926	13,402	69
5-18	1,809	21,533	84
> 18	1,144	25,039	46
Total	3,879	59,974	65

Source: Reproduced with permission of the publisher – Nsereko *et al*, 2020²⁵

The table shows highest rates of disease among persons aged 5-18 years.

To understand the spread of the disease you should draw a transmission chain /tree starting with the index case. The transmission tree assists in understanding the relative contributions of different settings to the spread of the disease in the given geographical area and hence regulates the infection transmission and the control measures. Reconstruction of a transmission chain or tree can be done provided the information is obtained from line list, and also a review of the timelines of dates of illness or contact with other cases, field investigations, and rapid risk assessment.

The transmission chain /tree is important as it assists in documenting the routes of transmission in a given geographical area and hence enables planned interventions. The chain /tree needs to be updated frequently and if a new cluster of cases starts in any part of the district try to ask questions to know if there is any linkage. See **Annex 4J** for an example of how to draw a transmission chain/ tree

4.5.2 Analyse data and generate hypothesis

Using descriptive analysis generate hypothesis of outbreak. From the observations gathered during the descriptive analysis, a hypothesis can be generated about the causes of observed patterns and the factors that increase risk for a given outbreak. E.g., in **Table 6**, above, one might hypothesize that persons aged 5-18 years were more likely to fall ill and one might want to determine if age is associated with illness. To test a hypothesis, one must use an analytical epidemiology process to answer questions of how and why the population was affected.

Test and refine hypothesis with analytical study

- Based on descriptive epidemiology and situation, select appropriate study design

- Obtain resources to conduct and analyse the study
- Draw conclusion from the study and as needed, and refine the hypothesis

In doing analytical studies, there are various study designs which can be used. These include case control studies, cohort studies or experimental studies. An example of an analytical study (case control) to test hypothesis can be found in **Annex 4I**.

4.6 Report writing and dissemination of findings

All reports (preliminary, interim and final) should always be disseminated even if no conclusive risk factors have been identified for a given outbreak. Prepare Situation Reports (SitReps) of the given outbreak and share with relevant stakeholders. **Section 7** describes various channels of communication during outbreak. If risk factors are already known, formulate conclusions and recommendations about the outbreak such as:

- Type of outbreak or public health event
- The population affected and at risk
- Possible causes of the outbreak/ public health event, laboratory results, source of infection, mode of transmission, attack rates, case fatality rates and possible risk factors
- Measures already initiated to contain the outbreak

For controlling the situation, further investigation/studies may be recommended. The RRT should then immediately prepare an outbreak investigation report. This detailed report should be disseminated immediately to all stakeholders including the health facility where the outbreak was detected, district, region, MoH and other relevant sectors and also WHO where applicable.

4.7 Implement prevention and control measures

Once an outbreak is identified, control measures are important for interrupting disease transmission and or limiting exposure to the source of infection. If a pathogen or other suspected source of the outbreak is identified, control measures should target specific agents, sources, or reservoirs of infection. Section 11.0 gives a description of some of the control measures for each priority diseases and references for further reading.

The objectives of outbreak control measures are:

- Control the source of infection
- Control of further transmission
- Prevention of future outbreaks

NOTE:

- Control measures should be implemented at the first available point in the investigation and should occur concurrently with other investigation steps. Often, non-specific control measures can be put into place regardless of the type of disease or source
- Ensure multi-sectoral engagement throughout response i.e., from community level to other non-health stakeholders who might be key for the particular outbreaks. If you want to enforce by-law, you might need assistance from law enforcement agencies such as the Uganda Police Force
- At some point, during the outbreak setting, public health response might include also testing new potential countermeasures including vaccines and therapeutics Thus, the conduct of biomedical research can be an important and discrete component of the response. Public health efforts must always remain at the forefront of the overall outbreak response. The research must be conducted in a scientifically and ethically sound manner to reach definitive conclusions about efficacy and safety as expeditiously as possible. It is the role of the national level to liaise with the Ethical Review Committees/Boards and the Uganda National Council of Science and Technology (UNCST) for approval.

4.8 Conduct an assessment to determine if the event is a potential Public Health Emergency of International Concern (PHEIC)

Risk assessment should be initiated as soon as possible by the designated National IHR Focal Point to address the following questions:

- Is the public health impact of the event serious?
- Is the event unusual or unexpected?
- Is there a significant risk of international spread?
- Is there a significant risk of international travel or trade restrictions?

The National Task Force may be called upon to participate in the risk assessment at the end of which the decision will be made on whether the event is potential PHEIC hence warranting its notification to WHO (see IHR decision instrument, Annex 2A)

4.8.1 Maintain and intensify surveillance

The national and regional levels should maintain contact with the district for daily updates (cases, deaths, number admitted, number discharged, areas affected, etc.) until end of the epidemic.

Ensure that the same IDSR mechanism is used to enhance surveillance of events, and that the system is flexible enough to allow adaptation of additional variables to be collected using the existing system. This will avoid parallel reporting which can lead to confusion on the progress of the outbreak. Consider the following;

- Periodically, report on progress of response, and prepare daily situation reports which can be used to evaluate the response
- Update the line list, conduct data analysis by time, person and place
- Continue contact tracing listing and quarantine where applicable
- Monitor effectiveness of the outbreak response activities

During investigation, it is important also to intensify surveillance with neighbouring districts to ensure the outbreak does not spill to another district. It is important to share information and also plan for joint surveillance and response activities. Neighbouring countries or districts may also initiate the establishment of the cross-border or inter-district disease surveillance and response committees so that there is sharing of surveillance data, epidemiological and other related information during the outbreak.

4.9 Conducting regular risk assessment after the outbreak has been confirmed

As soon as the outbreak is confirmed, it is important to conduct regular risk assessment at each stage of the outbreak. The assessment is needed so as to aid in focusing control measures. The risk assessment should include;

- Evaluating the susceptibility of the population and potential for spread of the event both in the affected as well as neighbouring areas
- Evaluating the risk of further transmission, morbidity and mortality. For this, factors that can be taken on board include population characteristics such as size, density, movement, setting, under five mortality rates, period of the year (considering potential for seasonal outbreak) and plans for any festivals or other social events that will result in increased opportunities for spread; access to health services, etc.

A risk assessment should be repeated as new information becomes available. It may also be repeated on a regular timetable. For some events, different risk assessment teams may be required to work collaboratively to assemble the information for a composite picture of the risk (e.g. clinical severity, transmission dynamics, and control measures). At the conclusion of the event, all the risk assessments should be formally reviewed. The systematic analysis of well-documented risk assessments identifies where improvements can be made in the management of acute public health events in future.

The RRT should ensure that the initial Risk Assessment report is completed within 72 hours of identifying and reporting the threat (72 hours after submission of the first RRT report).

For further reading, refer to ^{1,3,26-31}

Annexes to SECTION 4

- Annex 4A:** District log of suspected outbreaks and rumours
- Annex 4B:** Checklist of laboratory supplies for use in an outbreak investigation
- Annex 4C:** Recommended list of personal protective equipment
- Annex 4D:** How to conduct a register review
- Annex 4E:** Sample line list
- Annex 4F:** Contact listing sheet

- Annex 4G:** Contact tracing form (follow-up)

- Annex 4H:** Triple Packaging of samples during an Outbreak

- Annex 4I:** Example of an Analytical study to test hypothesis

- Annex 4J:** How to create a transmission tree

Annex 4A: District log of suspected outbreaks and alerts

Record verbal or written information from health facilities or communities or social media about suspected outbreaks, alerts, or reports of unexplained events. Record the steps taken and any response activities carried out.

Condition or Disease or Event (1)	Source of suspected outbreak or rumour (newspaper, telephone etc) (2)	Number of cases initially reported (3)	Number of deaths initially reported (4)	Location (Health Centre) (5)	Date district was notified (6)	Date suspected outbreak was investigated by the district (7)	Result of District investigation (Confirmed, Ruled Out, or Unknown) (8)	Date Outbreak Began (9)	Date onset index case (10)	Date crossed threshold or first cluster (11)	Date a case was first seen at a health facility (12)	Date specific intervention began (13)	Type of Concrete Intervention that was begun (14)	Date District Notified National Level of the Outbreak (15)	Date District received national response (16)	Comment (include if sample taken and results) (17)	Name and signature

Annex 4B: Checklist of laboratory supplies for use in an outbreak investigation

<p>For using standard safety precautions when collecting and handling all specimens:</p> <p>_____ Pieces of bar soap for hand-washing</p> <p>_____ bleach for decontamination</p> <p>_____ Supply of PPEs (gloves, mask, gowns, etc.)</p> <p>_____ Triple package and refrigerant for sample transportation,</p> <p>_____ Safety boxes for collecting and disposing of contaminated supplies</p> <p>_____ Equipment (Biosafety cabinet)</p>	
<p>For collecting laboratory specimens:</p>	
<p>Blood</p> <p>_____ Sterile needles, different sizes</p> <p>_____ Sterile syringes</p> <p>_____ Vacutainers</p> <p>_____ Test tube for serum</p> <p>_____ Antiseptic skin disinfectant</p> <p>_____ Tourniquets</p> <p>_____ Transport tubes with screw-on tops</p> <p>_____ Transport media (Cary-Blair, Trans-Isolate, VTM)</p> <p>Blood films (malaria)</p> <p>_____ Sterile or disposable lancet _____ Glass slides and cover slips _____ Slide box</p> <p>Respiratory specimens</p> <p>Swabs _____</p> <p>_____ Viral transport medium</p>	<p>Cerebrospinal fluid (CSF)</p> <p>_____ Local anaesthetic</p> <p>_____ Needle and syringe for anaesthetic</p> <p>_____ Antiseptic skin disinfectant</p> <p>_____ Sterile screw-top tubes, Cryotube, dry tube, sterile gloves, surgical mask, sterile gauze, adhesive bandage, lumbar puncture needle,</p> <p>_____ Microscope slides in a box</p> <p>_____ Trans-Isolate transport medium</p> <p>_____ Latex kit</p> <p>_____ Gram stain</p> <p>_____ May Grunewald Giemsa Kit</p> <p>Stool</p> <p>_____ Stool containers</p> <p>_____ Rectal swabs</p> <p>_____ Cary-Blair transport medium</p> <p>Plague</p> <p>_____ Gram stain kit</p> <p>_____ Rapid diagnostic test (dipsticks AgF1) _____ Cary-Blair transport</p>

If health facility has a centrifuge:

- _____ Sterile pipette and bulb
- _____ Sterile glass or plastic tube, or bottle with a screw-on top

For packaging and transporting samples:

- _____ Cold box with frozen ice packs or vacuum flask
- _____ Cotton wool for cushioning sample to avoid breakage
- _____ Labels for addressing items to lab
- _____ Labels for marking “store in a refrigerator” on outside of the shipping box
- _____ Case forms and line lists to act as specimen transmittal form

Reagents and supplies for testing

- _____ Reagents
- _____ Media (MacConkey, Blood agar,
- _____ others

Appropriate personal protection (PPE) (for all EPR diseases such as VHF, suspected avian influenza, etc.)

In some events which present with fever, it might be worthy carrying malaria rapid diagnostic kits (mRDT) if found not available in a nearby health facility

Annex 4C: Recommended list of Personal Protective Equipment (PPE)

The following equipment should be available for the personal protection of all staff investigating a suspected case with highly infectious disease e.g., viral haemorrhagic fever, avian influenza etc. (See reference for the guidelines to use and select PPE at the end of the section). The equipment should be held at regional or district level. If the PPE kits are inadequate, preposition of the PPE should be done in high risk regions or districts which are likely to report these specific or which have been identified to be at risk through risk assessment.

Composition of one set of PPEs	WHO Deployment Kit
1 surgical gown	100 surgical gowns
1 coverall	100 coveralls
1 head cover	100 head cover
2 pairs of goggles	50 pair of goggles
1 pair of rubber gloves	100 pairs
1 mask N95	200 pieces
1 boot cover*	0
1 box 50 pairs of examination gloves	800 pairs of examination gloves
1 plastic apron re-usable	20 pieces
1 pair of gum boots	20 Gum boots
1 hand sprayer	2 hand sprayers of 1.5 litres each
1 Back sprayer	1 back sprayer of 10-12 litres
Specimen containers	
Scotch of tapes	3 rolls
Anti-fog for goggles	3 bottles
Chlorine	
N.B: chlorine and gum boots can be purchased locally; biohazard bags for PPE/Waste management must be purchased	
* Not essential	

Annex 4D: How to conduct a register review

I. Background

The purpose of a register review is to collect information on cases admitted to the health facility during a specific period. Explain that the information will be used to determine what caused the outbreak or increase in number of cases. The register should be used for;

- Any inpatient facility with **more than 10 hospital beds**. Give priority to government health facilities.
- Large reference or teaching hospitals with paediatric wards because they receive referrals from other health facilities.
- Small hospitals or health facilities that serve remote areas and high-risk populations. For example, nomadic groups, refugees, or areas without regularly scheduled health services.

II. Meet with the health facility staff and explain the purpose of the review.

Explain to the health facility's senior staff the purpose of the review. The information will assist the district and health facility in determining the most appropriate action for limiting the outbreak and preventing future cases from occurring. Emphasize that the activity is an information-gathering exercise, and is not a review of health worker performance.

III. Arrange to conduct the review.

Arrange a time to conduct the review when staff who will assist with the review are present and available to help or to answer questions.

IV. Identify sources of information.

During the visit, depending on the priority disease or condition or events being investigated, check inpatient registers for the paediatric and infectious disease wards. The inpatient register for the paediatric ward is a good source because it lists all children admitted to the ward. Annual summary reports are not always accurate, and outpatient registers often include only a provisional diagnosis.

Review the system and procedures health workers use to record information in the registers about diagnoses. Make sure that the information needed for investigating any suspected case is available. At a minimum, the register should include:

- the patient's name and location
- the signs and symptoms
- date of onset of symptoms and outcome (for example, date of death, if relevant)
- immunization status, if appropriate to this disease.

If the health facility does not keep at least the minimum information, talk with senior staff about how to strengthen the record keeping so that the minimum information is collected.

V. Conduct the record review at the scheduled date and time.

Go to the selected wards as scheduled. During the visit, look in the health facility registers for cases and deaths that may be suspected cases of a priority disease. These should be cases or deaths that meet the standard case definition for suspected cases. Find out whether the suspected case was investigated and reported according to the national guidelines.

VI. Line-list the suspected cases that are found.

Record information about the suspected cases. This information will be used during case investigation activities.

VII. Provide feedback to the health facility staff.

Meet with the health facility supervisor and discuss the findings of the activity. Use the opportunity to review any features of case management for the illness that may help health workers in the facility. Reinforce the importance of immediate reporting and case investigation as tools for prevention of priority diseases and conditions. Use opportunity to emphasize on the need for IPC and minimum PPE

VIII. Report any suspected cases to the next level.

Report the suspected cases according to local procedures. Investigate the case further to determine the factors that placed the patient at risk for the disease or condition. Develop an appropriate case response.

Annex 4E: Sample Line List

No	Name of Patient	District or County	Ward	Localit y	Age	Sex M/F	Occupation	Date of Onset	Date seen at HF	Diarrhoea Yes/No	Vomiting Yes/No	Severe Dehydration Yes/No	Specimen	Results	Hospitalized Yes/No	Place of Admissi on	Trea given
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	

Annex 4F: Contacts listing sheet

Contact's¹ Recording Sheet filled in by

Case name..... Case number (if assigned)

Case's Village/neighbourhood Chief or Community leader... ..

District/TownProvince/Region

Date of symptom onset.....Hospitalized.... / Found in the community.... If hospitalized, Hospital Date of Admission:

Surname	Other Name	Relationship with the case	Health worker (Y/N), if yes which facility ?	Age (yrs)	Sex (M/F)	Phone number	Head of Household	Village/neighbourhood	Chief or Community leader	District/Town	Type of Contact (1, 2 or 3, list all)	Date of last contact	Last date for follow-up	1st Visit	Outcome

Contacts are defined as:

- 1 - sleeping in the same household with a suspected
- 2 - direct physical contacts with the case (dead or alive)
- 3 - has touched his / her linens or body fluids
- 4 - has eaten or touched a sick or dead animal

Annex 4G: Contact tracing form (follow-up)

Contact Tracing Form – by Village Team Volunteer’s name

Village Chief or Community leader

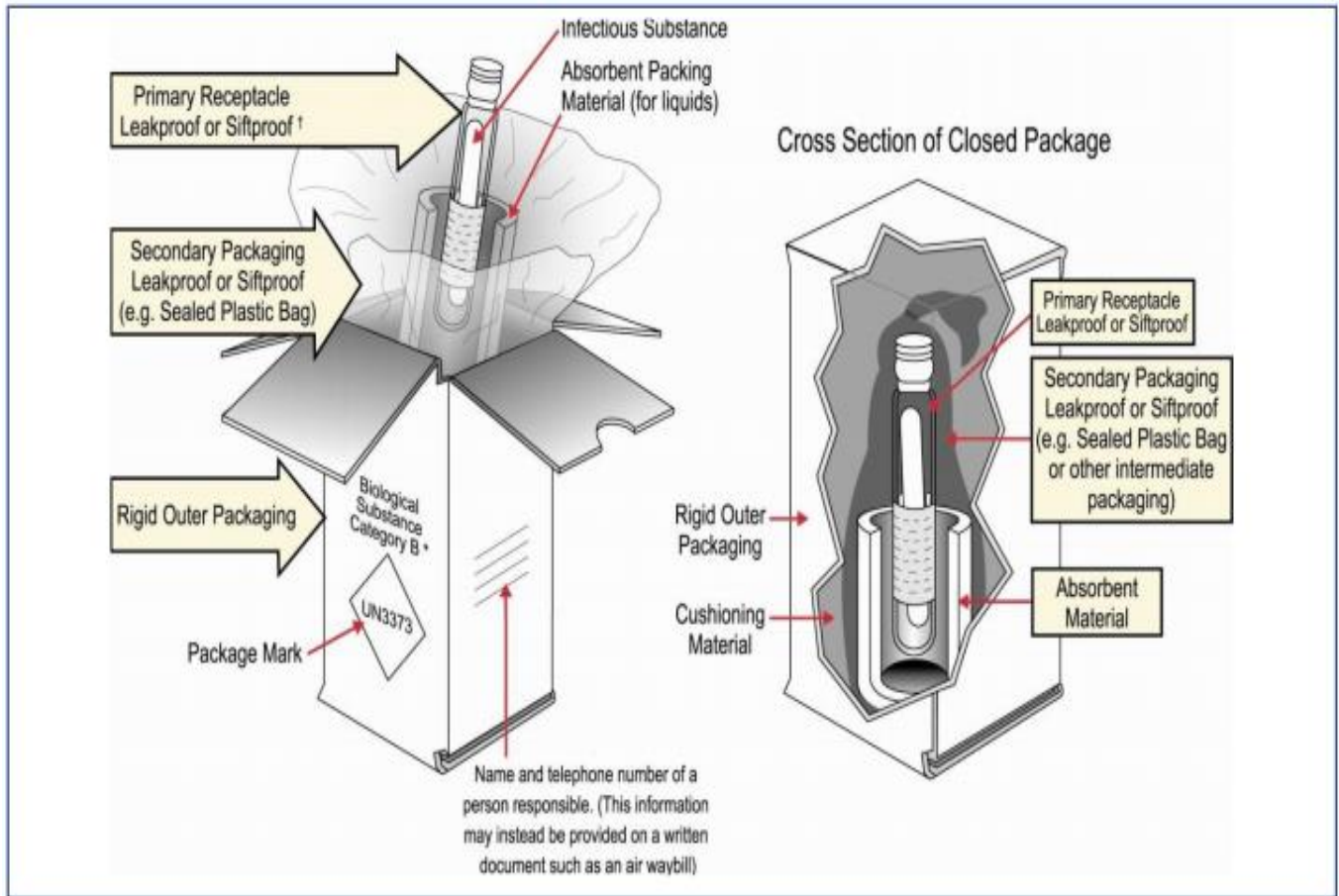
District/Town Province/Region.....

CN	Family Name	First Name	Age	Sex	Date last Contact	Day of Follow-up																				
						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

Record “O” if the contact has not developed fever or bleeding

Record “X” if the contact has died or developed fever and/or bleeding (complete Case Investigation Form and, if alive, refer to the hospital)

Annex 4H: Types of Triple Packaging of samples during an Outbreak



Source : https://www.health.go.ug/covid/wp-content/uploads/2020/04/Laboratory-Manual-for-COVID-19_-Final1-1.pdf

Annex 4I: Example of an analytical study to test hypothesis

Case control study to determine potential exposures to cholera in Kasese, Uganda in May 2015²⁴. The adjusted matched analysis indicates that persons who drank un-boiled /untreated water (Odds ratio (OR) = 4.8; 95% Confidence Interval (C.I) = [1.3; 18]) were at greater odds of having cholera.

Exposure	Num. of participants		% exposed		OR ^a _{M-H} (95% CI)
	Cases (n = 49)	Controls (n = 201)	Cases	Controls	
Drinking unboiled/untreated water	46	153	94	76	4.8 (1.3–18)
Source of drinking water: River or Stream	17	64	34	32	1.3 (0.57–2.8)
Eating fish	48	187	98	93	3.4 (0.48–24)
Market where fish was bought					
Customs market	12	70	25	35	0.39 (0.13–1.2)
Mpondwe market	15	56	30	28	1.2 (0.43–3.5)
Musyenene market	6	9	13	5	4.2 (0.69–25)
Sex (males)	23	111	47	55	0.66 (0.33–1.3)
Education (≤Primary School)	10	20	20	10	2.3 (0.97–5.6)

^aAdjusted for age group and village, using the Mantel-Hanszel method

Excerpt obtained from: <https://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-017-4589-9#Tab3>

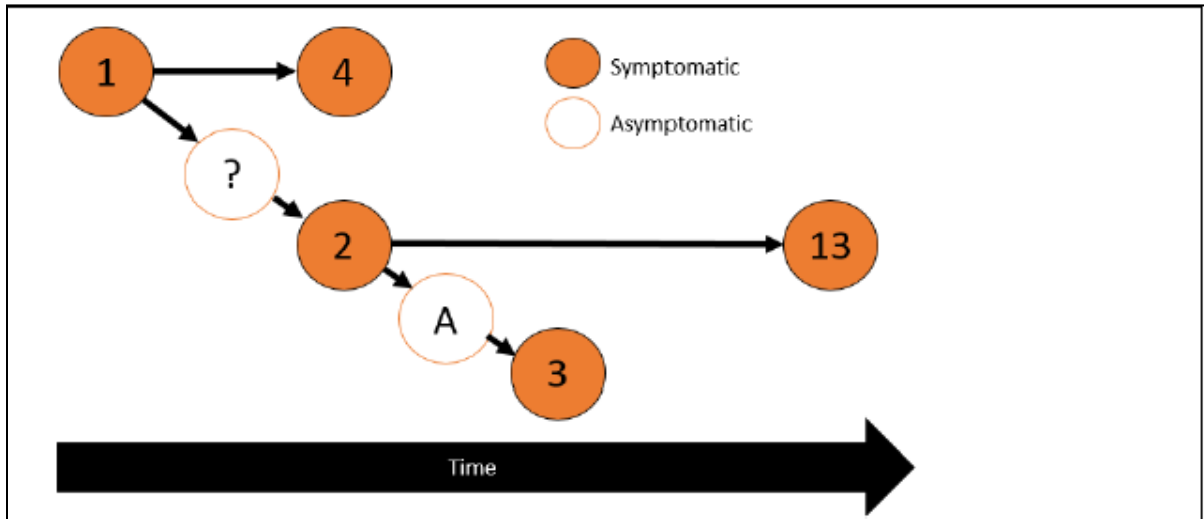
Annex 4J: Example of creating a transmission tree

Consider the following scenario which describes an outbreak of a respiratory illness, where the investigation team had information on 13 cases.

- (i) The first case was a 25-year-old university student with onset of symptoms on 21 March 2012. He was admitted to Kagadi hospital on 4 April 2012 after a week of coughing, fever, and shortness of breath. The patient was diagnosed with pneumonia and pericarditis, and he was soon transferred to the coronary care unit (CCU). As his condition worsened, he was transferred to Hoima Regional Referral Hospital (RRH) for further treatment; he was intubated in ICU the next day and died on 25 April 2012. Investigators were told that during his illness, the patient was in close contact with his mother (who did not report illness) and two healthcare workers (cases 2 & 3). His illness was later laboratory-confirmed as the novel coronavirus.
- (ii) The second case was a 30-year-old male nurse in the CCU at Kagadi hospital. His symptoms started about 29 March 2012. He did not travel or have contact with animals in the 10 days prior to his illness, though he was in close proximity to the first case in the CCU. On 8 April, case 2 was admitted to the CCU at Kagadi with shortness of breath and pneumonia and was later discharged with no sequelae from Islamic hospital on 23 April. The patient was in close contact with two household members, including his mother (case 13) and a man that did not get sick (who was also the brother of case 3).
- (iii) Case 3 was a 40-year-old female nurse in the ICU at Zarqa hospital whose illness was laboratory-confirmed after her death. Her symptoms began on 2 April 2012, and she was admitted to Kagadi hospital ICU after developing pneumonia 7 days later. She was later transferred to ICU at Mubende RRH where she died on 19 April. During her illness, she was in close contact with 4 household members, including another brother who fell ill 10-days post exposure (case 9), and three others that were not affected. One month prior to her illness, her sister visited from Saudi Arabia.
- (iv) Case 4 was a 65-year-old male doctor whose symptoms of fever and fatigue started 2 April 2012 and developed into pneumonia. The doctor opted to stay home during his illness and soon recovered. He did not travel or have contact with animals in the 10-days prior to his illness. His household members did not report any illness.

- (v) Cases 5 through 13 occurred in the second phase of the outbreak, with the onset of symptoms occurring between 11-26, April 2012. All except case 13, who was the mother of case 2, had direct contact with one or both laboratory-confirmed cases. None of the healthcare workers travelled or had contact with animals. The healthcare workers reported that they only used gloves when treating patients to avoid stigmatizing them.

Basing on this information, and a line list, one sketch a transmission tree as follows:



Footnote: Extract from "Applied Public Health Case Study Scenarios for Training Public Health Professionals. Case studies developed under CDC/AFENET agreement". Transforming Public Health Surveillance. (pages: In press). Location: Elsevier

SECTION 5

PREPARE TO RESPOND TO OUTBREAKS AND OTHER PUBLIC HEALTH EVENTS

SECTION 5: PREPARE TO RESPOND TO OUTBREAKS AND OTHER PUBLIC HEALTH EVENTS

5.0 Prepare to respond to outbreaks and other public health events

This section will detail preparing a national preparedness plan, implementation of activities in the plan including the roles and responsibilities for the district, regional and national response levels and stockpiling.

A public health emergency or event requires immediate response as stipulated in the IHR (2005) core capacity requirements. Detection, response and management of an outbreak is an essential and primary role of the district. The regional and national levels may provide support in form of human and logistical requirements once the outbreak escalates and the district requires external support.

Rapid and effective response to a public health emergency such as a suspected outbreak or other public health event not only call for an immediate response but is also one of the core capacities required by IHR 2005. Also, being prepared to detect and respond to such an event is an essential role of the district, regional and national levels.

Public health emergency preparedness and response structures should be composed of:

- Permanent functional Public Health Emergency Operations Centre (PHEOC) a command and control centre;
- Functional national and district task force (NTFs and DTFs)
- NTF and DTF pillars
- Rapid Response Teams (RRTs)

Preparations for public health events include:

- Establishment of the Incident Management Team (IMT)
- Testing functionality of the Public Health Emergency Operating Centres (PHEOC) as a command-and-control centre for coordination of public health emergencies or events at national level, and where applicable at regional levels.
- Development of policies, plans and procedures of operation; mapping available resources; stock piling, and conducting simulation exercises at various levels to test systems.
- Identifying and training key members of National Task Force (NTF) and Rapid Response Teams (RRT)
- Preparing outbreak preparedness and response plan. The plan should include the layout of the coordinating structure, the mapping of risks and updated regularly based on prevailing

risk. The plan is overarching and should be complemented by a PHEOC plan and an event or Incident Action plans (IAP). The PHEOC plan guides the operations of the command and coordination center, outlining standard operating procedures of how each functional area operate and work together; and the IAP is a plan developed to address specific emergency event based on risk analysis and is always annexed to the Outbreak preparedness and response plan.

- Conduct simulation exercises e.g., table top or drills to test systems. If these steps are carried out in advance of an event, the health system will be able to function promptly, effectively, and efficiently to reduce significantly attributable deaths or disabilities.

5.1 The Public Health Emergency Operations Centre (Command and Control Centre)

Whereas the Office of the Prime Minister (OPM) is responsible for the coordination of all disasters in the country, Public Health emergencies have been delegated to Ministry of Health. Uganda established PHEOC that acts as a command-and-control centre to enhance coordination and oversee public health emergency preparedness and response activities. The PHEOC feeds into the National Emergency Coordination and Operation Centre (NECOC) to manage escalated events of national magnitude, and acts as a hub for coordination of information and resources to support incident or event management that involve health consequences and public health threats.

The PHEOC has developed the following essential elements to support preparation and response to emergencies:

- (i) Plans, manuals and procedures for operations
- (ii) Telecommunication technology and infrastructure to enable timely communication
- (iii) Information system to support informed decision making
- (iv) Trained human resource.

5.1.1 Importance and Operations of the PHEOC

The PHEOC monitors events; facilitates and improves communication between public health and emergency management personnel, and facilitates coordination with multiple response partners. It is also for effective coordination of response to Public Health Events, resulting in minimising the impact of the event in the community. A PHEOC is a requirement of International Health Regulations (IHR 2005) and acts as a hub for preparedness activities

Operations of the PHEOC

- The PHEOC uses the Incident Management System (IMS) during public health emergencies, as a standardized approach to manage and coordinate the response by providing a common hierarchy for response by staff.

- In the context of IDSR, the IMS is represented by:
 - ii. Functional NTF
 - iii. IMT and
 - iv. RRT)
 - v. All response structures should be established at national, regional/provincial and district levels.
- During public health emergencies, the PHEOC is activated, and the PHEMC assemble, the PHEOC then functions as a centre for decision-making, and coordination of information and resources for strategic management of the public health events and emergencies.
- When inactive, the PHEOC, reduces in size, respective members under various Public Health Emergency Management Subcommittees return to their respective working stations.

The PHEOC hosts the National Task Force (NTF) and coordinates decision making, information and resources for strategic management of public health events and emergencies.

During activation of the PHEOC, the NTF also activates the Incident Management System (IMS) for that event/ emergency. The operational structure of PHEOC can also be scaled up, which is essential for maintaining its effectiveness and it can be modular (i.e., can be partially or fully activated) according to situational needs. At the end of the event, the PHEOC is inactivated; reduces in size (de-escalation), members under various subcommittees / pillars return to their respective work stations.

When inactive, the PHEOC usually liaises with respective sections or departments to continue with maintaining plans and procedures, conducting trainings and simulation exercises, IBS and EBS activities, as well as maintaining systematic database of the resources available, important phone numbers, names and addresses of important government and non-government officials, international bodies and NGOs.

5.1.2 Steps in establishing PHEOC

- Develop legislation or an executive directive i.e., a legal framework that provides legal mandate for the health ministry or public health agency to establish and manage a PHEOC.
- This mandate should outline roles and responsibilities, coordination mechanisms with Directorate of Disaster Preparedness and Emergency response, Office of the Prime Minister and a funding mechanism for the operations of the PHEOC.
- It is highly recommended that the PHEOC is positioned at the highest level where there is already an organ mandating the coordination for public health emergencies.
 - Example; In some countries, the PHEOC is placed at the Chief Medical Officer, the Director for Health or National public health Institutes (NPHIs) and is answerable to the Minister for Health.
- PHEOC should be established at least at the national level to act as a command-and-control centre to enhance coordination.

- If resources allow, regions and districts should have PHEOC, with basic facilities that support direct coordination of preparedness and response to public health emergencies and facilitate real time communication and information between various stakeholders at their levels, but also facilitate sharing with the national level PHEOC.

5.1.3 Functions of the PHEOC

- Centre for decision-making, and coordination of information and resources for strategic management of public health events and emergencies.
- Monitor events using various sources of data.
- Facilitate and improve communication between public health and emergency management stakeholders.
- Facilitate coordination with multiple response partners.
- Maintaining plans and procedures.
- Conduct trainings and simulation exercises
- Carry out routine and event-based surveillance activities.
- Maintain systematic database of resources available, important phone numbers, names and addresses of important government and non-government officials, international bodies and NGOs.
- Serve as a resource center for preparedness and response activities.
- PHEOC should be operational 24 hours

5.1.4 The Incident Management System (IMS)

The IMS is a standardized approach used to manage and coordinate the response by providing a common hierarchy for response by staff. The IMS outlines the specific roles and responsibilities of responders during an event, while providing a common framework for government, the private sector, and non-governmental organizations to work seamlessly together. It can be staffed with additional teams of subject matter experts, analysts, logisticians, and support staff depending on the situation at hand.

Most importantly, IMS should be functional at all levels of the health system delivery. It is important once the IMS is activated during public health emergencies, the National task force regularly meet (at least daily or weekly) to facilitate coordination, communication and information sharing and put in place containment measures and at the same time facilitate deployment of the Rapid Response Team (RRT).

Where feasible, PHEOC will be established at regional level with basic facilities that support direct coordination of preparedness and response to public health emergencies and facilitate real time communication and information between various stakeholders at their levels, but also ensuring there is a mechanism of sharing information with the national level PHEOC.

At district level, there is a similar coordination structure or mechanism in place that mirrors the National Task Force i.e. the District Task Force (DTF) and the associated subcommittees

5.2 Establishing National and District Task Forces

National and district task forces, once established work together to plan and monitor the implementation of preparedness and response plans. The role of the task force is to develop and oversee the implementation of emergency preparedness strategies, action plans, and procedures.

5.2.1 The National Task Force (NTF)

The NTF chaired by the Director General Health Services provides oversight for emergency operations, preparedness and response interventions. The composition of the NTF is multi-sectoral and multi-disciplinary drawing on members from Ministry of Health affiliated institutions, other MDAs, health development and implementing partners.

Functions of the National Task Force

- Develop a national emergency preparedness and response plan to manage all potential emergencies including disease outbreaks and detection of other emerging public health events or hazards; and clearly stipulate surge capacity to respond to public health emergency at district or national level.
- Map resources available both human and material; experts, logistics including distribution, finance etc.
- Periodically review and update the plan in response to any changes in technical, managerial or epidemiological situation or any other risk identified.
- Liaise with NECOC to ensure a multi-sectoral preparedness and response.
- Ensure coordination and integration of surveillance and response activities across all levels
- Establish a community communications plan for sharing information with communities before, during, and after any public health emergency.
- Coordinate community risk mapping activities within the district and ensure all reporting sites are aware of the use of thresholds for reporting acute outbreaks or events.
- Identify and mobilize resources for emergency prevention and control including procurement of response and communication supplies. There should also be a mechanism to monitor the use of the resources before, during and after the emergency event.
- Ensure emergency material stockpiles within the district/regional/national are monitored, procured and updated regularly.
- Coordinate training of community, health facility, and district/regional/national personnel in emergency preparedness and response.
- Ensure that there is periodic organization of emergency response simulation activities at the national, regional, district and community levels.

- Coordinate the post-emergency evaluation and plan to disseminate findings with the affected communities.
- Ensure provision of efficient administrative and financial management support including human resource; cash flow by estimating, tracking and approving response-related expenditure; monitors and coordinates funding from all sources
- Ensure the PHEOC communication technology and information system is ready to support any type of emergency.
- During public health emergencies, the NTF will oversee the activation of the PHEOC and at district level, they will activate a similar coordination structure. There will also be an activation of the IMS structure i.e., formation of subcommittees/ pillars and the deployment of the Rapid Response teams.
- During non-public health emergencies periods, regular meetings should be held to strengthen preparedness capacity (e.g., training health care workers (HCWs))

Meetings of the NTF

When there is **no outbreak or any other public health event**, the NTF should meet regularly (monthly or quarterly) in order to:

- Review the emergency preparedness and response plans
- Exchange information on risk monitoring with other relevant sectors. In some events, human cases can be the first indication of a threat to others sectors.
- Review disease trends based on routine surveillance and update on preparedness steps.
- Review the level of preparedness at the beginning of each epidemic season.
- Monitor and maintain stocks of equipment for event investigation and response.
- Share conclusions and recommendations of these meetings with respective committees.
- Organize trainings and simulation exercises/drills to test the effectiveness and efficiency of the EPR plans.

During an emergency or outbreak response, the NTF should:

- Hold meeting 6 hours within establishment of an outbreak or event.
- Conduct situational analysis and grade the level of the event
- Activate the PHEOC and similar coordinating structures at district level and deploy RRT to conduct preliminary investigation and respond to the event.
- Activate the subcommittees
- Assess the need for, and request support from higher level surge teams.
- Meet at least daily at the beginning of an outbreak or event and weekly as the response continues.
- Regularly review the outbreak response and take action to improve outbreak control actions as needed.
- Document and communicate outbreak response actions to the next higher level
- Conduct an after-action review to evaluate the response and inform future responses.

5.2.2 The District Task Force (DTF)

Identification of District Task Force Members

The DTF comprises multi-sectoral representatives from the public, non-governmental organizations (NGO) and private sectors to match the functions listed above. For example, in the DTF, participants from the public sector may include:

Resident District Commissioner	Regional Police Commander
Chief Administrative Officer (CAO)	Officer In charge of Prisons
District police commander	Director of Public Health and Environment (In cities)
Local Council (V) Chairperson	District environmental officer
District Health Officer	District health Inspector
Medical Officers	District Laboratory Focal Person
District Veterinary Officer	District community development officer
District education officer	Influential political, cultural & religious leaders
District water officer	Faith Based Organizations
District engineer	Existing University representatives
Wildlife officer	
Immigration officer	
District Health Educator	
District Internal Security Officer	

NB: *At national levels, an equivalent of the above should be used in order to ensure a more comprehensive multi-sectoral structure. Consider at National level, to include directors from other key relevant ministries, heads of agencies, National Health Research Institutes (Human and Animal). The members from the IHR National Focal Point should always be part of the National Team Composition.*

From non-governmental organizations with health care activities in the area, include representatives from:

- Community health programs and faith-based health facilities
- Red Cross, Red Crescent or similar agencies working in the area
- Local NGOs
- Civil society organizations
- UN organizations

From the private sector, involve participation from:

- A representative from private health facilities
- A representative from private laboratories
- Pharmacists or chemists
- Representatives of business community
- Research and training institutions
- Professional associations

NB: *The DTF should be chaired by the Resident District Commissioner (RDC)*

5.3 Establishing NTF and DTF Subcommittees

The Task Force subcommittees are formed by the NTF and DTF to oversee the day-to-day management of the public health emergencies at national and district level. They consist of technical and non-technical teams. Their role is to oversee daily management of the event/incident and feed the NTF for decision making.

They are subdivided into teams depending on their functions. See **Table 7** below:

Table 7: Functions of Public Health Emergency Management Subcommittees

Sub committee	Members (Experts, Organizations)	Description of tasks
Coordination sub- committee .	<p>Overall Chair: <u>National:</u> DGHS / Incident Manager</p> <p><u>District:</u> RDC</p>	<ul style="list-style-type: none"> • Coordinate all aspects of the operations response, planning and management including: Selecting participating organizations and assigning responsibilities • Design, implement and evaluate control interventions • Co-ordination of NTF/DTF subcommittees and overall liaison with partners • Daily communication through situation report about the evolution of the outbreak • Managing information for public and news media • Operational support including mobilization and management of resources • Responsible for staff wellbeing and security • Enhance linkages with Community Based Surveillance Village Health Teams to ensure flow of data for early detection of public health events

Sub committee	Members (Experts, Organizations)	Description of tasks
Finance and Administration	<p>Chair: PS at National level</p> <p>District level: Chief Administrative Officer</p> <p>Members: The composition may include:</p> <ul style="list-style-type: none"> • Experienced Health Administrators, • Finance/Accounts Officers, • Budget Officers and • Logisticians. • Technical Staff (e.g., DHO or Medical Officer in Charge, Laboratorians) 	<ul style="list-style-type: none"> • Tracks expenditure, makes payments, and provides administrative services • Ensures appropriate cash flow management, tracking material and human resources • Budgeting and Accounting • Monitoring and maintenance of records.
Partner Coordination	<p>Chair: DGHS</p> <p>Members:</p> <ul style="list-style-type: none"> • Liaison officer 	<ul style="list-style-type: none"> • Partner mapping • Identify partner financial and technical resources
Planning	<p>Chair: An appointed Government official at the rank of Planning Officer or similar posts)</p> <p>Members:</p> <ul style="list-style-type: none"> • Chairs of the all subcommittees • Appointed members from EPR committee 	<ul style="list-style-type: none"> • Evaluate the situation (information gathering and analysis), • Assessment of the options for dealing with the event • Keeping track of resources.

Technical Operations Subcommittees: Chaired by Operations Lead (Coordinates all the activities of the Response

Sub committee	Members (Experts, Organizations)	Description of tasks
Case management and infection prevention & control	<p>Chair: Physician or physician assistant from Ministry of Health, or the district, regional or referral hospital</p> <p>Example of members at the district level:</p> <ul style="list-style-type: none"> • Physicians • Nurses • Clinical Medical Officers • Paramedical Staff 	<ul style="list-style-type: none"> • Ensure or make available guidelines and SOPs for case management and infection prevention and control in all health facilities • Strengthen isolation facilities and reinforce infection prevention and control measures • Conduct risk assessment of health care workers • Ensure appropriate medical care is being provided to patients

Sub committee	Members (Experts, Organizations)	Description of tasks
	<ul style="list-style-type: none"> • District Environment Officer 	<ul style="list-style-type: none"> • Provide ambulance services for collection of suspected cases from the community and lower health facilities using the defined referral system • Collect data from all treatment facilities (if available) and submit to the surveillance sub-committee • Ensure appropriate disinfection of all units handling patients including CTUs, ambulances, wards, homes and environments with suspected/ probable/ confirmed cases/ deaths of an infectious disease • Conduct medically supervised safe and dignified burials of bodies from isolation facilities and community deaths • Training and refreshers training of health workers in the isolation facility and other health facilities • Prepare and submit reports to the NTF/DTF • Ensure logistics such as medication, PPEs, disinfectants, IPC materials etc are secured for use
Surveillance, POE and Laboratory	<p><u>Chair:</u> <u>National:</u> Commissioner Health Services, Department of Integrated Epidemiology Surveillance and Public Health Emergencies</p> <p><u>District:</u> Surveillance Officer</p> <p><u>Co-chair:</u> Laboratory Focal Person</p> <p><u>Example of members at the district level:</u></p> <ul style="list-style-type: none"> • DSFP • DLFP and Laboratory Team • Records Officer • Biostatistician • Lower Health Facility Surveillance Focal Persons • Health In-charges at POE 	<ul style="list-style-type: none"> • Ensure or make available all surveillance guidelines and data capture tools in the health facilities and communities • Develop, adapt, update and ensure the use of the standard case definition • Conduct active case finding, case investigation, contact tracing and follow-up • Verification of suspected cases/ alerts/ rumors in the community • Ensure proper filling of case investigation, contact tracing and follow-up forms • Ensure proper collection, packaging, transport and testing of specimens from suspect/ probable cases/ deaths • Communicate test results to clinical service providers • Conduct routine public health data management and provide regular epidemiological analysis and reports

Sub committee	Members (Experts, Organizations)	Description of tasks
	<ul style="list-style-type: none"> • Immigration Officers • POE Security Officers • District veterinary Officer • National Drug Authority Representative • Customs Officers • Community Representatives • Private Sector Representatives • Environmental Officer • Health Inspectors • Local Partners • Cross-border partners 	<ul style="list-style-type: none"> • Conduct trainings on disease surveillance • Maintain a close linkage with burial, infection control and social mobilization groups • Prepare and submit reports to the NTF/DTF
<p>Risk Communication, Social Mobilization and Community Engagement</p>	<p><u>Chair</u></p> <p><u>National:</u> Commissioner Health services, Department of Health promotion and Communication</p> <p><u>District:</u> District Health Educator</p> <p>Example of members at the district level:</p> <ul style="list-style-type: none"> • Heath Educators • Social Workers • Counselors • District Political leaders • District Health Officer • Cultural Leaders • Religious Leaders • District Communication Officer • Inter Religious Council Representative • District Education Officer • District community development officer • District Partners 	<ul style="list-style-type: none"> • Provide risk communications materials and plans • Conduct rapid assessment to establish community knowledge, attitudes, practices and behavior on prevailing public health risks/events • Organize sensitization and mobilization of the communities • Serve as focal point for information to be released to the press and public • Liaise with the different subcommittees, local leadership and NGOs involved in activities on mobilizing communities • Relay concerns of the communities to the Task Force • Prepare and submit reports to the NTF/DTF

Sub committee	Members (Experts, Organizations)	Description of tasks
Psychosocial support	<p>Chair: National: Senior medical officer, Mental health</p> <p>District: Psychosocial Coordinator</p> <p>Example of District Members:</p> <ul style="list-style-type: none"> • Counselors • Mental Health clinicians • Clinical Psychologists • Social workers • Technical assistance from the Ministry of Health • Partners supporting psychosocial services 	<ul style="list-style-type: none"> • Provide psychological and social support to suspected/probable/confirmed cases; affected families and communities • Provide palliative care to the terminally ill • Provide wellness care and psychological support to the response team • Prepare bereaved families/ communities for burials • Prepare communities for reintegration of convalescent cases/ patients who have recovered • Prepare and submit reports to the NTF/DTF
Water, Sanitation and Hygiene (WASH)	<p>Chair: National: Commissioner Health services, Department of Environmental Health</p> <p>District: Health Inspector or Water engineer</p> <p>Members at District Level:</p> <ul style="list-style-type: none"> • Environmental or Health Inspector • District Engineer • Health Inspectors • Technical assistance from the Ministry of Health • District Disaster Management Team • Partners supporting WASH e.g., UNICEF • Representative of the Water Department • District Water Engineer • Vector Control Officers • Laboratory Technicians • Private Sector 	<ul style="list-style-type: none"> • Conduct environmental health risk assessment for the outbreak • Ensure provision of clean water • Improved water management at household and community level • Plan for sanitation improvement campaigns • Plan for improved hygiene practices including hand-washing, food hygiene and sanitation • Support investigations of food and water borne diseases • Prepare and submit reports to the NTF/DTF
Vaccination and Therapeutics	<p>Chair: National: Assistant Commissioner Health services, Uganda National Extended Program for Immunization (UNEPI)</p>	<ul style="list-style-type: none"> • Identify high risk groups during the outbreak that should be targeted for vaccination • Compute the targeted population for vaccination campaigns

Sub committee	Members (Experts, Organizations)	Description of tasks
	<p><u>District:</u> Child survival, EPI focal point, or Cold Chain Members</p> <p>Members at the District:</p> <ul style="list-style-type: none"> • ADHO (MCH) • Health facility in-charges • Reproductive and Child health coordinators • DSFP • Surveillance focal person • Partners supporting vaccination e.g., WHO, UNICEF • Pharmacists/Dispensers • Academia • Scientific and local research organization • Community and District Leaders • Political Leaders • Religious Leaders • Cultural Leaders • Technical assistance from the Ministry of Health 	<ul style="list-style-type: none"> • Conduct macro- and micro-planning for all vaccination logistics including cold chain facilities, vaccine delivery and distribution, human resource needs, waste handling, social mobilization etc. • Conduct vaccination campaigns and post vaccination campaign validation exercise • Ensure vaccine safety through cold chain, monitor and report AEFIs • Work with the Risk Communication, Social Mobilization and Community Engagement sub-committee to package appropriate messages relating to vaccines or therapeutic trials • Data capture during vaccination into the system • Prepare and submit reports to the NTF/DTF
Logistics	<p><u>Chair:</u></p> <p><u>National:</u> Commissioner Health services, Pharmacy Department</p> <p><u>District:</u> Pharmacist/ Logistics Officer</p> <p>Members at District level:</p> <ul style="list-style-type: none"> • Supplies/ Stores assistants • Pharmacists or dispensers • Technical assistance from the Ministry of Health • Partners supporting logistics management • Records officer 	<ul style="list-style-type: none"> • Provide budgetary estimates for epidemic preparedness & response • Authorize procurement of equipment and supplies • Maintain adequate stocks of supplies and equipment • Arrange for transport and communication systems • Liaison with other agencies for logistic support • Provide accountability for all the resources used during epidemic preparedness & response • Prepare and submit reports to the NTF/DTF

Sub committee	Members (Experts, Organizations)	Description of tasks
Ecological/anthropological studies	<p>Chair: <u>National:</u> ACHS (Veterinary Public Health)</p> <p>Members:</p> <ul style="list-style-type: none"> • Vector Control Program • Academia <p><u>District:</u> District Veterinary Officer</p> <p><u>Co-Chair District Level:</u> District Environment officer/District Entomologist</p> <p>Members:</p> <ul style="list-style-type: none"> • Veterinary/ animal health workers • Wildlife wardens • Medical/social anthropologists • Technical officers from Ministry of Health • Partners supporting ecological studies e.g., CDC, PREDICT 	<ul style="list-style-type: none"> • Conduct ecological studies to identify possible sources of zoonotic infections • Identify potential reservoirs of zoonotic pathogens • Establish social, cultural and economic activities that predispose communities to infectious/zoonotic agents • Provide technical guidance on handling to zoonoses • Prepare and submit reports to the NTF/DTF

5.4 Establishing Rapid Response Teams at all levels

A Rapid Response Team (RRT) is a technical, multi-sectoral, multi-disciplinary team that is readily available to be quickly mobilized and deployed to investigate and respond to emergencies and public health events. The RRT should be established at the district, and national levels.

Composition, roles and responsibilities of the RRT

The RRT is expected to:

- Investigate reported outbreaks, verify diagnosis and other public health emergencies including laboratory testing
- Collect samples from new patients and old ones where necessary (human, animals, food, water)
- Conduct Risk Assessment and mapping to determine if the outbreak is a potential PHEIC
- Make a follow up by visiting and interviewing exposed individuals, establish an operational case definition and work with community to find additional cases
- Assist in generating a line list of the cases, and perform descriptive analysis of data (Person, Place and Time) to generate hypothesis including planning for a further analytical study
- Propose appropriate strategies and control measures including risk communications activities.
- Prepare daily situation reports and detailed investigation reports to share with NTF.
- Coordinate rapid response actions with national and local authorities, partners and other agencies.
- Initiate the implementation of the proposed control measures including capacity building.
- Conduct ongoing monitoring and evaluation of effectiveness of control measures through continuous epidemiological analysis of the event.
- Contribute to ongoing preparedness assessments and the final evaluation of any outbreak response.
- Support training and capacity building
- Meet daily during outbreaks, and quarterly when there is no outbreak.
- Participate in training simulation exercises, Hot Wash, and After-Action Reviews.

5.5 Risk assessment and mapping for outbreaks and other public health events

Risk assessment and mapping is used to identify vulnerabilities during preparedness to identify at-risk areas or populations, rank preparedness activities, and also to engage key policy and operational partners. The exercise should consider the identification and mapping across all levels. This process should be ongoing and updated periodically. This is useful when considering supplies, transport and other resource issues necessary for the response.

The WHO Strategic Tool for Prioritizing Risks (STAR) is used to assess a wide range of hazards including the health consequences of natural or human-induced emergencies, the health events covered under IHR (zoonosis, chemical, radio-nuclear, food safety) and also events occurring in neighbouring countries or regions. Refer to the Strategic Tool for Addressing Risk (STAR), WHO, DRAFT Version 3.3.1 (2017/07/27).

5.6 Resource Mapping

In preparing for outbreaks, conduct resource mapping to identify the available resources in every geographical area; promptly mobilize and distribute resources including material and human resources from all sectors, the district, development partners and NGOs.

5.7 Prepare an Emergency Preparedness and Response plan

Develop and update multi-hazard emergency preparedness and response plans for national, and district levels. The purpose of this plan is to strengthen the ability of the national and district levels to respond promptly to an outbreak public health event.

The plan should:

- Be based on risk assessments done in a multi-sectoral approach, and should specify the resources available for emergency preparedness and response.
- Take into consideration diseases with epidemic potential in the country, region, district, and neighbouring countries.
- Take into account all other events (All hazard approach) and cover the IHR core capacity requirements of ANNEX 1 A. Core capacity requirement for surveillance and response (IHR 2005).
- Take into account Point of Entry activities for strengthening surveillance and response.

- Lay out concept of operations (CONOPS) including clear lines of accountability, decision making authorities and processes, procedures for activation /deactivation, call for assistance etc.
- Consider medical counter measures (legal policy for donations).
- Describe the surge capacity to respond to public health emergencies of national, regional, and district concern.
- Provide estimates of the population at risk for epidemic-prone diseases and other public health emergencies.
- Clearly indicate for each suspected outbreak which reference laboratory will be used for confirmation.
- Provide estimates of needed quantities of medicines, vaccines, supplies, laboratory reagents, and consumables for each epidemic-prone disease likely to occur.
- Identify training needs, and develop a training plan for all staff RRTs.
- Describe the procedures and plans to relocate or mobilize resources to support response.
- The plan should be tested before implementation and periodically through simulation exercises

This plan lays out concept of operations (CONOPS) including clear lines of accountability, decision making authorities and processes, procedures for activation /deactivation, call for assistance etc.

NB: *The plan should be updated and tested through periodic simulation exercises before implementation. The plan should also include how to institutionalize health facility and community resilience building, and preventive interventions based on risk assessment and mapping.*

Table 8: Elements/Sections of Emergency Preparedness and Response Plan

<p>Key sections of the emergency preparedness and response plan should include:</p> <ol style="list-style-type: none"> 1. Country profile and context 2. Risk Mapping 3. Situation analysis 4. Designated coordination structures, including committees 5. Matrix of key stakeholders and partners supporting health activities [humans, animals (domestic, livestock and wildlife), environment, etc.) and roles and responsibilities 6. Epidemiology and surveillance activities, including health information management
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7. Steps for carrying out a risk communication strategy including social mobilization
8. Operational actions according to expected phases of the epidemic
Laboratory specimen collection, handling, transportation, processing and information management
9. Case management, including treatments (anti-viral, antimicrobial, decontamination, disinfection or others as indicated), infection prevention and control, isolation facilities, management of a mass casualty event
10. Pre- and post-exposure prophylaxis treatment
11. Immunization strategies
12. Rapid containment activities and additional methods if rapid containment fails
13. Psychosocial support for all affected, including community members and responders
14. Risk communication and social mobilization
15. Capacity building including required training, sensitization meetings and simulation
16. Logistics including supply lists
17. Environment, water and sanitation
18. Decontamination of patients and environment, including management of dead bodies
19. Monitoring of the outbreak or event
20. Resource mobilization and procedures to relocate or mobilize resources to support response
21. Monitoring and Evaluation for the plan
22. Costed budget

5.8 Set up stockpiles of medicines, vaccines, reagents and supplies

Outbreaks and other public health emergencies require the rapid mobilization of resources such as vaccines, medicines and laboratory supplies. Map out resources available so as to get the status of the stockpile with respect to pharmaceuticals, Personal Protective Equipment (PPEs) and other equipment to establish and preposition stockpiles of materials before an emergency occurs. Map commodities at global, national, regional and district level which can be tapped into during an outbreak. Deploy and preposition tracer commodities at regional nodes.

Ensure that, there are quick mechanisms of deploying supplies from central level to the subnational levels. Regularly and carefully monitor the contingency stock in order to avoid shortages and expiry of medicines, vaccines, reagents and supplies. Use the Electronic Emergency Logistics Management Information System (eELMIS) to order, acquire, and monitor usage of emergency commodities.

A suggested list of contingency medicines and supplies is available in Annex 5A at the end of this section.

5.8.1 Conduct stock management for outbreak response

Maintain a reliable supply of supplies and materials for responding to an outbreak or public health event. Use an inventory checklist such as the one in Annex 5B to assess which supplies are already available for use during a response activity. If the supplies are already available, determine if they can be set aside for use during a response. If they are not available, establish if they can be purchased or requested through the Permanent Secretary and DGHS of the Ministry of Health.

Periodically, for example, every 4 months, make sure the supplies are dry, clean, not expired, not deteriorated and ready to be used and mechanisms to assess them are readily available.

At a minimum, carry out the following tasks (relevant to each level) to forecast necessary supplies, inventory of what is available, and plan to procure essential items for use in response.

- i. List all required items for carrying out surveillance, laboratory and response necessary for detecting and responding to priority diseases, conditions and events. Consider:
 - Availability of case definition posters, registers, line lists, templates, reporting forms, case investigation forms, laboratory investigation forms, situation report template as well as required reporting forms/referral forms.
 - Availability of laboratory, and diagnostic reagents and supplies, as well as test kits etc.
 - Specimen collection, storage and transport kits including Triple Package containers.
 - Availability of various guidelines for surveillance and response of specific diseases including laboratory SOPs
 - Availability of case management guidelines, medicines, supplies and other field intervention materials, including PPEs
- ii. Make an inventory and note the quantity of each item that is available.

- iii. Complete and regularly update a stock balance sheet for each item.
- iv. Observe expiry dates and practice best logistical practices for packing, shipping, storing and disposing of supplies and materials.
- v. Establish a critical or minimum quantity for each item that would need to be on hand for an investigation or response activity. Consider logistic and epidemiologic factors in establishing minimum quantities.
- vi. Monitor the stock balances against the critical quantity established.
- vii. Report regularly on the IDSR stock situation. See Annex 5C for an example of a stock item transaction and balance sheet.

5.8.2 Update human resource available for response as well as other logistics support for response of public health events at all levels

- Update roster of public health emergency rapid response teams and experts annually
- Map laboratories that have sufficient quality control standards and meet the required standards to ensure reliable results, including availability of SOPs which defines biosafety procedures for collecting, packaging, labelling, shipping, manipulating and discarding samples.
- Map also the specimen referral/transportation network including schedules, and if not create the mechanism to ensure prompt referral of specimen is done once an outbreak is suspected
- Map and update isolation wards for the management of patients with highly infectious diseases including contact details, location, bed capacity, level of expertise, and type of patients/diseases that can be treated
- Develop a patient referral system for highly infectious diseases, including transportation mechanisms
- Take stock of risk communication SOPs at the different levels

For further reading, refer to ³²⁻³⁶

Annexes to SECTION 5

Annex 5A: Essential stock items for responding to outbreaks

Annex 5B: Stock situation report

Annex 5C: IDSR stock item transaction and balance sheet

Annex 5D: Assignments for the committee to develop the Epidemic Preparedness and Response plan

Annex 5A: Essential stock items for responding to outbreaks

Essential Stock items for Responding to Outbreaks				
Medicines	Disinfectants, Insecticides and Rodenticides	Supplies	Vaccines	Equipment
Benzyl Penicillin	Disinfectants	Auto-disable syringes	Meningitis vaccines AC, ACW135/ A, C, Y, W135, Meningococcal Conjugate Vaccine (MACV), Meningitis vaccines Conjugated	PPE
Ceftriaxone			Cholera vaccines	Body Bags
Ciprofloxacin	2% Chlorine		Tetanus antitoxin	Buckets
Diazepam	Bleach	Bed nets	Yellow fever vaccines	Camping kits
Doxycycline	Calcium hypochlorite	Personal Protective Equipment (see Annex 4C)	Rabies vaccine and immunoglobulin	Candles
Medicines for supportive care	Cresol	Laboratory supplies (see Annex 4B)	Other vaccines e.g., Flu vaccine	Computer
Erythromycin	Sodium hypochlorite			Containers
Nalidixic acid	Pesticides	Nasogastric tubes 2.7 mm OD, 38 cm		Cook-ware
Oily chloramphenicol	Cypermethrin	Nasogastric tubes 5.3 mm OD, 50 cm		Diesel
Oral rehydration salts	Malathion	Needles and syringes		Front lamp
Paracetamol	Permethrin	Intravenous giving sets different sizes)		GPS Receiver
Penicillin V	Rodenticides	Tea spoons		Kerosene lamp
Rehydration fluids:	Brodifacom	Sprayers (pump and fogger)		Lab: see annex 4b
Ribavirin	Bromadione			Lamps
Ringer lactate				Maps
Streptomycin				Paraffin and Sprayers
Tetracycline				Phones
Trimethoprim-sulfamethoxazole				Plastic sheets
Oseltamivir				Power generator
				Radio

NB: Detailed laboratory list also available in Annex 4B

Annex 5B: Stock situation report

Surveillance and Emergency Preparedness and Response: Stock Situation Report
Year:
Report day (day/mm/yyyy): Reporting period: _____
Reporting site name:
District: _____
Country:

Item Description	Opening Stock	Quantity received	Total Stock	Quantity issued	Stock Balance	Observations, decisions and recommendations
Title, Name and function of Responsible Officer:						

Annex 5C: IDSR stock item transaction and balance sheet

IDSR Stock Item Transaction and Balance Sheet																	
Laboratory or Warehouse Name	Item Description (Name)	Presentation (Unit of purchase)	Expiry date	Manufacturer	Batch number	Location in store	Airway bill	Allotment number	Shipment & operations cost (USD)	Transaction Date (Day/Month/Year)	Quantity received	Donor or Supplier	Quantity issued	Destination or Beneficiary	Stock Balance	Signature (Name and function)	Observations/Remarks
																	Inventory
Use one sheet by stock item, and update the sheet every time any transaction takes place																	

Annex 5D: Assignments for the committee to develop the EPR plan

<i>Task</i>	<i>Assigned member(s) from the committee</i>
Designated coordination structures, including committees	
Organizational framework of key stakeholders and partners supporting health activities (human, animal, environment, etc.) and roles and responsibilities	
Epidemiology and surveillance activities, including health information management	
Define roles and responsibilities of members during an outbreak	
Develop the risk mapping	
Steps for carrying out a risk communication strategy including social mobilization	
Operational actions according to expected phases of the epidemic	
Laboratory specimen collection, handling, transportation, processing and information management	
Case management, including treatments (anti-viral, antimicrobial, decontamination, disinfection or others as indicated), infection control, isolation facilities, management of a mass casualty event	
Pre- and post-exposure prophylaxis treatment	
Immunization strategies	
Rapid containment activities and additional methods if rapid containment fails	
Psychosocial support for all affected, including community members and responders	
Risk communication and social mobilization	
Capacity building including required training, sensitization meetings and simulation	
Logistics including supply lists	
Environment, water and sanitation	
Decontamination of patients and environment, including management of dead bodies	
Monitoring of the outbreak or event	
Resource mobilization and procedures to relocate or mobilize resources to support response	

Annex 5E: Tool for assessment of surveillance and response at the district level

Districts can use the assessment tool developed by WHO/AFRO to assess their national surveillance, epidemic preparedness and response systems and to identify where improvements are needed. The assessment provides results that can be used to solve problems with resources, the quality and timeliness of surveillance data, and how the information is used. The national strategic plan could also be used as reference while preparing a district specific action plan.

The integrated disease surveillance and response (IDSR) is not proposing establishment of a new system, but is providing guidance on how to prepare to conduct surveillance and response activities. However, if the district has the resources and skills to conduct an assessment of the district to document the situation of surveillance and response activities within the district or wishes to update the district profile, it may use the checklist below after adapting it to the local context. This tool could help to identify where districts can identify activities to improve their performance and capacity for disease surveillance and response.

Case and event identification:

1. Determine availability and knowledge of standard case definitions for reporting suspected priority diseases and conditions including events of public health concern.
2. Define the **sources of information** about health events in the district, including points of contact the community has with health services. For example, list the following sources on a list of district reporting sites:
 - a. Health facilities and hospitals
 - b. Point of Entry
 - c. Community health workers
 - d. Birth attendants
 - e. Traditional healers
 - f. Rural community leaders who have knowledge of health events in the community (for example, the village elders, traditional healer, school teacher, leaders of faith-based communities, etc.)
 - g. Public health officers
 - h. Private sector practitioners
 - i. Public safety officers such as fire, rescue or police departments
 - j. Animal health and veterinary structures and services
 - k. Industry, food safety and environmental health laboratories
 - l. Mass media, web sites and health news search applications
 - m. Others including NGOs

Identify surveillance focal points for each source of information. Identify and specify the

opportunities for community involvement in surveillance of health events.

Reporting

3. Specify the priority events, diseases and conditions for surveillance within the district and those directed by national policy. List diseases that are:
 - a. Epidemic-prone
 - b. Diseases targeted for eradication and elimination
 - c. Other diseases of public health importance including non-communicable diseases
4. For each priority event, disease or condition, review the minimum data element that health facilities and other sources should report. State when it should be reported, to whom and how. State the information that should be reported from in-patient sources and outpatient sources. For example, a minimum requirement would be to report all cases and deaths for the selected diseases and conditions
 - a. State the diseases or conditions that require immediate reporting and communicate the list to health facilities in the district.
 - b. Define the means for reporting data to the district (by phone, by form, by voice). If there is electronic reporting, do all facilities have access to computers and modems?
 - c. Define how often the required data should be reported.
5. Define the data management tools available in the district and how they should be used in an integrated system
 - a. Case-based surveillance reporting forms
 - b. Lab-specimen-based surveillance reporting forms
 - c. Line lists for use in outbreaks
 - d. Tables for recording summary totals
 - e. Routine weekly reporting forms
 - f. Routine monthly reporting forms
 - g. Routine quarterly reporting forms
 - h. Graphs for time analysis of data
 - i. Maps for place analysis of data
 - j. Charts for person analysis of data
6. Periodically update the availability of relevant supplies at each reporting site for conducting surveillance. (Note: If a reporting site has the capacity for electronic reporting, there should be an electronic format that is compatible with the methods used at the district, region and national levels. (If electronic reporting is not available,

ensure that the focal points who are required to manage data have a reliable supply of data collection forms, paper, coloured pencils, graph paper, and log books).

Data analysis

7. Define the data management requirement for each reporting site. For example, develop and disseminate the procedures including deadlines so that reporting sites know that they must report each reporting period (e.g., month).
 - a. Tally, compile and report summary totals
 - b. Check data quality and eventually clean them
 - c. Analyse data: produce weekly/monthly/Quarterly/Annual summaries in tables, graphs or maps
 - d. Provide some interpretation to the next higher level.
 - e. Submit data to the next level (SMS, e-mail, fax/case-based forms, and line-list).
 - f. File and secure back-up copies of the data
 - g. Provide feedback to the community and to all relevant Reporting Sites
8. Decide if current forms address the priorities of integrated disease surveillance and response. For example, do current forms provide the information necessary for detecting problems and signalling a response to the priority integrated disease surveillance diseases?
9. Gather and present relevant data about your district that can be used to advocate for additional resources for improving surveillance and response activities. (Example: Health workers are able to document an increase in malaria cases; they know that an effective response is available with insecticide-treated bed nets. The district surveillance officer used data to show the expected reduction in malaria cases if some of the community's bed net cost could be supported by local businesses).

Investigation and confirmation of suspected cases, outbreaks or events:

10. Describe the laboratory referral network for confirming priority diseases and conditions in the district. For example, list the following:
 - a. Public, private or NGO district facilities with reliable laboratory services for confirming priority diseases.
 - b. Prevention, control or special surveillance activities in the district with laboratory access (for example, any HIV sentinel surveillance sites in the district)

Preparation for response and Response to outbreaks and other public health events

Update the policies of the district rapid epidemic response team so that assessing preparedness is a routine agenda item of the team. Specify and disseminate schedules for:

- c. Meeting to routinely assess preparedness for response and discuss current

problems or activities

d. Outbreak response meetings

11. For each priority event, disease or condition selected, state the available public response activity.
12. For each disease or condition that the district can respond to, specify the target, alert threshold or analysis results that would trigger an action.

Communication and Feedback

13. Define methods for informing and supporting health workers in the implementation of integrated disease surveillance. For example:
 - a. List the current opportunities for training health workers in surveillance, response or data management in the district.
 - b. Coordinate training opportunities between disease programs that take advantage of overlapping skills between programs such as supervision, report writing, budgeting, data analysis, and using data to set priorities.
 - c. Define the training needs for each category of health workers for either initial training in surveillance and response skills or refresher training in how to integrate surveillance activities.
14. Describe how communication about surveillance and response takes place between the district and the surveillance focal points. Include methods such as monthly meetings, newsletters, telephone calls and so on. Update the description periodically.
15. Review and update feedback procedures and methods between the district, health facilities and community as well as between the district and higher levels. Specify the feedback methods and update as necessary:
 - a. Bulletins summarizing data reported by health facilities to the district
 - b. Periodic meetings to discuss public health problems and recent activities
 - c. Supervisory visits
16. Describe the communication links between the community and health facilities with the epidemic management committee that can be activated during an outbreak and for routine activities.

Evaluation and improvement of the surveillance system

17. Decide if additional indicators will be evaluated and plan how to monitor and evaluate timeliness and completeness of reporting.
18. State three or more objectives you would like to achieve for improving surveillance in

your district over the next year.

SECTION 6

RESPOND TO OUTBREAKS AND OTHER PUBLIC HEALTH EVENTS

SECTION 6: RESPOND TO OUTBREAKS AND OTHER PUBLIC HEALTH EVENTS

6.0 Respond to outbreaks and other public health events

The goal of disease surveillance and response is to use data for public health response or action. This section describes steps for declaring an outbreak and activating the response structures, conducting a public health response and provides general directions for immediate response actions for leading causes of illness, death and disability. Please consult relevant WHO guidelines which are at the end of this section, for responding to chemical, biological and radio-nuclear events.

When an outbreak, acute public health event or condition is detected, an investigation should take place to determine the cause of the outbreak as described in section 4. The results of the investigation should guide the response. Successful responses are carried out with community involvement and often include community education and behaviour change components.

Effective coordination of response activities is critical, as many actors/stakeholders will be involved. It is essential that all actors/stakeholders be identified in advance including their areas of support, roles and responsibilities to enable a smooth response during an epidemic or other public health event. The NTF through the activation of the PHEOC, will ensure effective coordination, command and control of response activities across different sectors including communities (as discussed in Section 5).

6.1 Declaring an Outbreak and Activating the Response Structures

Once an epidemic threshold of a priority disease is reached, the PHEOC is informed and the national coordination mechanism is activated depending on the event. At the national level, the NTF and the IHR NFP will assess whether the event is a potential Public Health Event of International Concern (PHEIC) using the IHR (2005) decision instrument. The IHR NFP will liaise with the Director General Health Services (DGHS) to notify the WHO IHR AFRO Office. The PHEOC informs the relevant parties including the affected and neighbouring districts about the outbreak, so that there are coordinated response efforts.

6.2 Mobilize Rapid Response Teams (RRT) for Immediate Action

The RRT (already identified during preparedness activities) are mobilized for response activities. Refer to Section 5 of these guidelines for recommendations on the composition of the RRT and their roles and responsibilities.

6.3 Convene the District Task Force (DTF)

Once an outbreak or event is confirmed, the DTF convenes a meeting to assess and implement the response. The following further steps should take place;

- Develop a District Rapid Response plan
- Request outbreak or event response funds
- Assign clear responsibilities for specific response activities to guide the DRRT
- Provide orientation or training along with adequate relevant supplies for the DRRT and affected health facilities or communities
- Review existing resources as defined in the response plan and determine what additional resources are required
- Request emergency stock of Infection Prevention and Control supplies, required medicines/vaccines and other medical supplies such as specimen containers
- Provide laboratory or diagnostic support for confirmation of pathogens responsible for the epidemic. If the district does not have the capacity to safely collect, package and ship the specimen, contact the relevant reference laboratory for assistance
- Mobilize logistical support (travel of RRT, accommodation, communication, other essential equipment)
- If supplies are not available locally:
 - Request the PHEOC at national or regional level for additional supplies
 - Collaborate with other implementing partners, non-governmental organizations or private pharmacies/laboratories in your area
 - Identify practical low-cost substitutes
- Ensure clear lines of communication and appoint a spokesperson

6.4 Select and Implement Appropriate Public Health Response Activities

Review investigation results and data analysis interpretation provided by RRT to select appropriate response activities to contain the confirmed outbreak or public health event. Regardless of the specific causes of the outbreak or event, the success of the response relies on implementing intervention strategies. Refer to Section 11 and national disease specific guidelines to select response activities. The selected activities for responding to outbreaks or public health events include the following:

6.4.1 Build the Capacity of Response Staff

Conduct pre-deployment orientation and capacity building for response staff. It is essential that members of the RRT are aware of and have access to appropriate PPE and IPC supplies. If there are vaccination requirements for responding to the particular disease or condition, ensure that members of RRT are vaccinated.

To reinforce the skills of response staff: Give clear and concise directions to health workers and other staff taking part in the response.

Also, select topics for orientation or training. Emphasize case management and infection prevention and control for the specific disease according to disease specific recommendations. Select other training topics depending on the risk of exposure to the specific public health hazard, for example; Case management protocols for cases, Enhancing standard precautions (use of clean water, hand-washing and safe disposal of sharps), Barrier nursing and use of protective clothing, Isolation precautions, Treatment protocols such as delivering oral rehydration salts (ORS) and using intravenous fluids, Disinfecting surfaces, clothing and equipment, Safe disposal of bodies and dignified burials, Safe disposal of animal carcasses, client-patient interactions and counselling skills, orientation on how health worker would interact with Village Health Teams (VHTs) and other community leaders, Mental Health and Psychosocial Support and Staff Welfare

Conduct orientation and training: Orient the DTF, DRRT, and other health and non-health personnel on outbreak management based on the current outbreak. Provide on-the-job training and closely mentor the health workers, and monitor participant performance and review skills as needed

6.4.2 Strengthen Case Management and Infection Prevention and Control (IPC) measures

- Take steps to support improved clinical practices in the district. Review the recommendations in Annex 6A and Section 11.0 for treating cases of different diseases during an outbreak.
- Train and equip health workers at the district level to undertake the following measures:
 - Ensure that clinicians receive results of laboratory confirmation where necessary
 - Ensure health workers record all patients in a standardized line list
 - In an epidemic involving a large number of cases, ask the Health Facility In-charge to identify and designate an area that can be used to accommodate a large number of patients at their health facility
- Provide Standard Operating Procedures (SOP) that includes IPC guidelines
- Implement IPC and risk mitigation measures (See Annex 6G)
- Ensure the necessary treatment guidelines, medicines and supplies are available
- Review the standard operating procedures for patient referral
- Ensure that there is a protocol to link cases and affected staff to psychosocial support teams
- Ensure that there is a protocol for management of responders that may get infected and affected by the outbreak

6.4.3 Enhance Surveillance During the Response

The following activities constitute enhanced surveillance;

- Search for additional cases and refer them to the health facility or treatment centres. Where institutional isolation is not feasible, isolate and manage the patient at home and ensure they have access to consistent/adequate food, water, and non-food items (i.e., soap, chlorine, firewood, medicines, sanitary pads, etc.)
- Ensure timely provision of laboratory information to the team
- Update the line list, analyse data by time (epi-curve), person (age and sex) and place (mapping of cases)
- Report regularly and update on the progress of the epidemic
- Actively trace and follow up contacts (See Section 4 on contact tracing)
- Monitor the effectiveness of the outbreak response activities

6.4.4 Enhance Surveillance with Neighbouring and Cross Border Districts

During response, it is important to work closely with neighbouring districts/countries to ensure the outbreak does not spill to another district/country. Share information in real time and plan for joint surveillance and response activities through;

- Establishing cross-border disease surveillance and response committees that provide a platform for sharing surveillance data, epidemiological and other related information during the outbreak. The committee should draw membership from neighbouring districts, whose membership is as described in the DTF (See Section 5).
- The committee can also co-opt other members depending on the disease profile and the disease outbreak/public health emergency they are handling.

6.4.5 Engage Community During Response

Community Based Surveillance focal persons also known as VHTs (See Definition in Introduction section, Annex D) are usually the first responders and take steps to make the situation as safe as possible for the community. Some of the immediate actions they can do include the following;

- Engage and inform community leaders on the situation and mitigation actions
- Provide first aid and call or send for medical help
- Keep people away from the ‘risk’ area
- Isolate anyone with a potentially infectious disease paying particular attention to cultural sensitivities
- Quarantine for animals, market closures, etc.
- Provide community education including specific actions the community can take to protect themselves

- Engage in IPC and hygiene promotion in coordination with any efforts at strengthening the availability of materials/infrastructure for IPC and hygiene
- Identify locally effective channels for delivery of the information to the community
- Organize door-to-door campaigns utilizing trusted individuals to reach every household within the catchment area to promote the prevention of the spread of the public health event
- Promote self-reporting and health-seeking behaviour among people who have had contact with a suspect case or a public health event

It is important to engage community members as stakeholders and problem solvers, not as merely beneficiaries.

6.4.6 Inform and Educate the Community

Effective risk communication is an essential element of managing public health events. It is a cross cutting activity that can impact other technical areas of the response such as WASH, vaccination, community surveillance, etc. It is also essential to create trust between first responders and the community. When the public is at risk of a real or potential health threat, treatment options may be limited, direct interventions may take time to organize, and resources may be few. Communicating advice and guidance, therefore, may be the most important public health tool in managing a risk.

NB: For details on informing and educating the community, see section 7 of this guideline. Sample community education messages are in Annex 7C.

6.4.7 Conduct Mass Vaccination Campaigns

Collaborate with the Vaccines and Immunization Division of the Ministry of Health to conduct a mass vaccination campaign, if recommended. Develop or update a micro plan for the mass vaccination campaign as soon as possible. Speed is essential in an emergency vaccination because time is needed to obtain and distribute vaccines, and develop immunity to the disease.

- Determine the target population for the activity based on the case and outbreak investigation results (refer to VID guidelines for specific recommendations about delivery of the indicated vaccines).
- A worksheet called “Planning a mass vaccination campaign” is in Annex 6C at the end of this section.
- A worksheet called “estimating vaccine supplies for vaccination activities” is in Annex 6D at the end of this section. Annex 6E describes recommended vaccination practices during vaccination campaigns.

6.4.8 Improve Access to Clean and Safe Water

Community sources of drinking water can be the vehicle for disease outbreaks such as Cholera, Typhoid, *Shigella* and Hepatitis A and E. Ensure the community has an adequate supply of clean and safe water for drinking and other uses. The daily water needs per person during non-outbreak situations are shown below. Water needs are much higher during an outbreak situation, especially outbreaks of diarrheal diseases.

Table 9: Water Basic quantity needs calculations

Daily water needs per person*		
	<i>Non-outbreak situation</i>	<i>During outbreak of diarrhoeal disease</i>
<i>Home use</i>	20 litres per day	50 litres
<i>Health care setting</i>	40 to 60 litres per day	50 litres in wards 100 litres in surgery 10 litres in kitchen

**Refugee Health: An Approach to Emergency Situations, Médecins sans Frontiers, 1997 MacMillan

Safe sources of drinking water include:

- Piped chlorinated water
- Chlorination at point-of-use to ensure safe drinking water (See Annex 6B on preparing disinfectant solutions from ordinary household products)
- Protected water sources (for example, closed wells with a cover, rain water collected in a clean container)
- Boiled water from any source.

If no local safe water sources are available during an emergency, water supply may need to be brought from outside.

To make sure that families have *safe and clean drinking water at home* (even if the source is safe) provide:

- Community education on how to keep home drinking water safe. Refer to Annex 7C for sample community messages and references to specific prevention guidelines for preparing safe water at home.

- Containers that prevent contamination of water. For example, provide containers with narrow mouths so that people cannot contaminate the water by putting their hands into the container.
- Sites for waste disposal including faeces should at least be 30 metres or more away from sources of water.

6.4.9 Ensure Safe Disposal of Infectious Waste

To ensure that human excreta are disposed safely to avoid secondary infections due to contact with contaminated substances:

- Assign teams to inspect local areas for human and animal waste disposal. Safe practices include disposing of faeces, animal waste or carcasses in a latrine or burying them in the ground more than 30 metres from water supply.
- If unsafe practices are found such as open defecation, provide information to the community about safe disposal of the waste. Construct latrines appropriate for local conditions with the cooperation of the community
- Conduct effective community education on sanitation practices.

6.4.10 Improve Food Handling Practices

Make sure that people in the home, schools, restaurants, at food vending settings, in factories and other congregate settings handle food safely. Refer to the nationally established standards and controls for the handling and processing of food.

To ensure food hygiene:

- Conduct community education on food hygiene practices for the general public and those in the food industry.
- Visit restaurants, food vendors, food packaging factories, and so on to inspect food-handling practices. Look for safe practices such as proper hand-washing facilities, cleanliness and adherence to national standards.
- Close restaurants, vending areas or factories if inspection results show unsafe food handling practices.
- Strengthen national controls for food safety as necessary.

6.4.11 Reduce Exposures to Infectious or Environmental Hazards

As indicated by the outbreak or event, take action to reduce exposure to hazards or factors contributing to the outbreak or event. This may involve chemical, physical or biological agents (See Annex 6H). Technical requirements for reducing exposure will be determined according to national policy and through collaboration with those who have experience in these areas. For

example, occupational or industrial exposure to heavy metals (for example, lead) will require coordination with multiple ministries and partners. Community education and behaviour change interventions can be supportive in engaging the community to effect changes that will limit exposure to infectious or environmental hazards.

For vector-borne diseases, engage the service of experts such as an entomologist and animal health experts in designing appropriate interventions that will reduce exposure to the offending vectors. For diseases carried by rodents, encourage prevention of these diseases *by* reducing exposure to these animals.

6.4.12 Ensure Safe and Dignified Burial and Handling of Dead Bodies

Dead body management forms a critical role in combating the spread of infectious diseases both as a part of case detection and surveillance as well as managing potentially infectious material. It is essential to dispose of bodies in a safe and dignified manner by trained personnel due to the infectiousness of a priority disease while respecting the social and cultural sensitivities. The disinfection or decontamination of homes and hospital wards (where corpses of persons who died of an infectious disease) should be implemented. Deaths that are considered high risk may be treated as a form of surveillance and case detection for VHF or possibly other conditions when relevant testing capabilities are available.

Safe burials can be conducted in the community at approved burial sites at the discretion of the families. The NTF/DTF may develop a safe and dignified burial contingency plan when an infectious disease outbreak occurs and such plan will be reviewed periodically to address the evolution of the outbreak.

6.4.13 Ensure Appropriate and Adequate Logistics and Supplies

A dedicated logistic team is needed during an outbreak response. Throughout the outbreak, monitor the effectiveness of the logistics system and delivery of essential supplies and materials. Carry out logistics planning to make sure transport is used in the most efficient ways. Monitor the reliability of communication between teams during the outbreak and if additional support is needed (for example, airtime for mobile phones), take action to provide teams with what is needed to carry out the response actions.

Monitoring the implementation of the outbreak or event is key for outbreak control. The monitoring results will be important for including in the response report to supervisory levels, community leaders and for future advocacy. For example, make sure there is ongoing monitoring of;

- Disease trends in order to assess the effectiveness of the response measures, extent of the outbreak and risk factors
- Effectiveness of the response measures; case fatality rate, incidence rate etc.
- Implementation of the response; program coverage, meetings of the NTF/DTF etc.
- Availability and use of adequate resources, supplies and equipment
- Community acceptability of response efforts
- Regular reporting on stocks of supplies provided during emergencies

6.5 Provide Regular Situation Reports on the Outbreak and Events

Periodically, report on the progress of the outbreak response (refer to Annex 6F). Provide information developed by the DTF to the affected communities and health facilities. In the situation reports (Sitreps), provide information such as;

- Details on the response activities. Include dates, places, and individuals involved in each activity. Also include the epicurve, spot map, table of person analyses, and the line list of cases
- Any changes that were made since the last report
- Effectiveness of the response: case fatality rate, incidence rate etc.
- Implementation of the response by the NTF/DTF etc.
- Operational challenges and gaps
- Recommended changes to improve outbreak response in the future such as a vaccination strategy or a transporting procedure for laboratory specimens to allow specimens to quickly reach the reference laboratory in good condition.

The situation reports will be an important reference for evaluating the response and developing a final report. Steps for monitoring and evaluating a response are in Section 8.

6.6 Document the Response

During an outbreak and also at the end, the NTF/DTF should;

- Collect all the documents including minutes of the meeting, activity, process, outbreak report, evaluation report and other relevant documents.
- Document the dates for the key outbreak response milestones (Annex 6I)
- Prepare a coversheet listing of all the above documents.
- Document lessons learned and recommended improvements and update the National Emergency Preparedness and Response (EPR) Plan, event/disease specific plan and other relevant SOPs and Tools in line with these, where appropriate (After Action Review - AAR).

This will become an essential source of data for evaluating the response. Refer to Section 8, on how to monitor, evaluate, supervise and provide feedback on IDSR activities.

For further reading, refer to ^{13,19,28,29,37–40}

Annexes to SECTION 6

Annex 6A: Treat cases during an outbreak

Annex 6B: Preparing disinfectant solutions from ordinary household products

Annex 6C: Planning an emergency immunization campaign

Annex 6D: Estimating vaccine supplies for immunization activities

Annex 6E: Recommended immunization practices

Annex 6F: Outbreak communication

Annex 6G: Key IPC Measures

- Donning and Doffing
- Guide for Hand washing
- Guide for CTC Cholera establishment

Annex 6H: Response to chemical and radio-nuclear events

Annex 6I: Documenting key outbreak response milestones

Annex 6A: Treat Cases During an Outbreak

Use appropriate drugs and treatments for managing cases during an outbreak. Below are treatment recommendations for use in an outbreak situation for:

1. Cholera
2. Dysentery
3. Measles
4. Bacterial meningitis.

1. Treat cholera in an outbreak situation

Source: *WHO guidelines for management of the patient with cholera, WHO/CDD/SER/91.15*

1. Assess the patient for signs of dehydration. See assessment guide below.
2. Give fluids according to the appropriate treatment plan (see next page).
3. Collect a stool specimen from the first 5 suspected cholera patients seen.
4. Give an oral antibiotic to patients with severe dehydration.

Assess the patient for signs of dehydration	
<input type="checkbox"/> Look at patient's general condition: Is the patient lethargic, restless and irritable or unconscious? <input type="checkbox"/> Are the patient's eyes sunken? <input type="checkbox"/> Offer the patient fluid. Is the patient: not able to drink, or drinking poorly, drinking eagerly, thirsty? <input type="checkbox"/> Pinch the skin of the abdomen. Does it go back very slowly (longer than 2 seconds?) or slowly?	
Decide if the patient has severe, some or no signs of dehydration and give extra fluid according to the treatment plan	
If two of the following signs are present: <ul style="list-style-type: none"> • lethargic or unconscious • sunken eyes • not able to drink or drinking poorly • skin pinch goes back very slowly 	SEVERE DEHYDRATION* Give fluid for severe dehydration (Plan C)
*In adults and children older than 5 years, other signs for severe dehydration are "absent radial pulse" and "low blood pressure".	
If two of the following signs are present: <ul style="list-style-type: none"> • restless, irritable • sunken eyes • drinks eagerly, thirsty • skin pinch goes back slowly 	SOME DEHYDRATION Give fluid according to "for some dehydration" (Plan B)
If there are not enough signs to classify as some or severe dehydration	NO DEHYDRATION Give fluid and food to treat diarrhea at home. (Plan A)

Give antibiotics recommended for treatment of severely dehydrated cholera patients		
Antibiotic	Children	Adults
Doxycycline one single dose	-	300 mg
Tetracycline 4 times per day for 3 days	12.5 mg per kg	500 mg
Trimethoprim-sulfamethoxazole (TMP-SMX) 2 times a day for 3 days	TMP 5 mg per kg and SMX 25 mg per kg ²	TMP 160 mg and SMX 800 mg
Furazolidone 4 times per day for 3 days	1.25 mg per kg	100 mg ³
Erythromycin⁴ <u>adults</u> : 4 times per day for 3 days <u>children</u> : 3 times per day for 3 days	10 mg per kg	250 mg

- If the patient vomits while taking fluid, wait 10 minutes. Then allow the patient to resume feeding, but more slowly.
- Continue monitoring the patient and replacing fluid until the diarrhea stops.
- When the patient is ready to leave the facility, counsel the patient on treating diarrhea at home.
- Refer to IMCI guidelines for treating children under 5 years of age and to national guidelines for further information on treating acute watery diarrhea and confirmed cholera.
- Tetracycline should be avoided in children under 8 years of age and pregnant women.

Plan A: Treat diarrhea at home

If patients showed no signs of dehydration when they were first assessed, they may be treated at home. Give a 2-day supply of ORS and explain how to take the ORS solution according to the following schedule: Advise the mother to give extra fluid; give zinc supplements and continue feeding.

²TMP-SMX is WHO's antibiotic of choice for children. Tetracycline is equally effective. However, in some countries, it is not available for paediatric use.

³Furazolidone is WHO's antibiotic of choice for pregnant women.

Age	Amount of solution after each loose stool	Provide enough ORS packets for preparing:
Up to 2 years	50 to 100 ml after each loose stool	500 ml per day
2 years up to 10 years	100 to 200 ml after each loose stool	1000 ml per day
10 years or more	As much as the patient wants	2000 ml per day

Plan B: Treat some dehydration with ORS

In the clinic, give the recommended amount of ORS over a 4-hour period. Determine the amount according to the patient's weight. Use the patient's age only when the weight is not known.

☐ Determine the amount of ORS to give during the first 4 hours						
AGE or WEICHT	Up to 4 months	4 months up to 12 months	12 months up to 2 years	2 years up to 5 years	5 years up to 14 years	15 years and more
Weight in kg	< 6 kg	6 - < 10 kg	10 - < 12 kg	12 - < 19 kg	19 - 30 kg	30 kg and more
Give this amount of ORS	200 - 400 ml	400 - 700 ml	700- 900 ml	900 -400 ml	1400-2200 ml	2200-4000 ml

- If the patient wants more ORS than shown, give more.
- For infants below 6 months who are not breast-fed, also give 100-200 ml of clean water during this period.
- Give frequent small sips from a cup.
- If the patient vomits, wait 10 minutes. Then continue giving fluids, but more slowly.
- For infants who are breast-feeding, continue breast-feeding whenever the infant wants.
- Assess patients every 1-2 hours to make sure they are taking ORS adequately and to monitor fluid loss. Completely reassess the patient's dehydration status after 4 hours, and follow the appropriate treatment plan for the patient's dehydration classification.

Plan C: Treat severe dehydration quickly

1. Start intravenous fluids immediately. If the patient is a child and can drink, give ORS by mouth while the drip is set up. Give 100 ml per kg of Ringer's Lactate Solution divided as follows:

For giving IV fluids:		
	<i>First:</i>	<i>Then:</i>
For adults (and patients 1 year and older), give 100 ml per kg IV within 3 hours as follows:	First, give 30 ml/kg as rapidly as possible within 30 minutes	Then, give 70 ml the per kg during next 2 ½ hours
For patients less than 1 year , give 100 ml per kg IV in 6 hours as follows:	First, give 30 ml per kg in the first hour*	Then, give 70 ml per kg in the next 5 hours

* Repeat once if radial pulse is still very weak or not detectable after the first 30 ml per kg is given.

2. Reassess the patient after the first 30 ml per kg, and then every 1 to 2 hours. If hydration status is not improving, give the IV drip more rapidly.
3. Also give ORS (about 5 ml per kg per hour) as soon as the patient can drink. This is usually after 3 to 4 hours for infants and after 1 to 2 hours for patients older than one year.
4. Reassess the patient after 6 hours (for infants) or 3 hours (for one year and older). Classify dehydration. Then choose the appropriate plan (Plan A, Plan B, Plan C) to continue treatment.
5. Give antibiotics recommended for treatment of severely dehydrated cholera patients. See the schedule on the next page.
6. Give patients information about home care before they leave the health facility.
 - If the patient vomits while taking ORS, wait 10 minutes and then continue giving fluids more slowly.
 - Continue breast-feeding of infants and young children.
 - Return for treatment if the patient develops any of the following:
 - increased number of watery stools
 - eating or drinking poorly
 - marked thirst
 - repeated vomiting
 - fever
 - blood in the stool

2. Give an appropriate oral antibiotic for outbreaks of bloody diarrhea due to *Shigella dysenteriae* type 1.

Source: WHO Guidelines for the control of epidemics due to *S. dysenteriae* type 1. WHO Geneva. 1995

	NALIDIXIC ACID Give four times daily for 5 days	CIPROFLOXACIN Give two times daily for 5 days	COTRIMOXAZOLE (trimethoprim + sulphamethoxazole) Give two times daily for 5 days		
WEIGHT	TABLET 250 mg	TABLET 250 mg	ADULT TABLET 80 mg trimethoprim + 400 mg sulphamethoxazole	PEDIATRIC TABLET 20 mg trimethoprim + 100 mg sulphamethoxazole	SYRUP 40 mg trimethoprim + 200 mg sulphamethoxazole per 5 ml
<i>Children's dose</i>					
3 - 5 kg	¼	¼	¼	2	5.0 ml
6 - 9 kg	½	½	½	2	5.0 ml
10 - 14 kg	1	1	1	3	7.5 ml
15 - 19 kg	1	1	1	3	7.5 ml
20-29 kg	2	2	1	6	15 ml
<i>Adult dose</i>	TABLET 250 mg	TABLET 250 mg	TABLET 160 mg TMP + 800 mg SMX		
	4 tablets	4 tablets	2 tablets		

3. Give vitamin A to children with measles

- Give the first dose in the health facility or clinic.
- Give the mother one dose to give at home the next day.

Source: *WHO guidelines for epidemic preparedness and response to measles outbreaks, WHO/CDS/CSR/ISR/99.1*

AGE	Vitamin A Capsules		
	200 000 IU	100 000 IU	50 000 IU
Up to 6 months		½ capsule	1 capsule
6 months up to 12 months	½ capsule	1 capsule	2 capsules
12 months up to 5 years	1 capsule	2 capsules	4 capsules

4. Give appropriate antibiotic for bacterial meningitis cases during an outbreak

Source: *Control of epidemic-prone meningococcal disease, WHO practical guidelines, 2nd edition 1998, WHO/EMC/BAC/98.3*

1. Admit patient to a health facility for diagnosis and treatment.
2. Start an antibiotic immediately. Intra-muscular injectable oily chloramphenicol is best choice during an epidemic. It is very effective and a single dose is usually effective. If injectable treatment is not possible, give oral amoxicillin or cotrimoxazole or treat with an antimicrobial recommended by national treatment guidelines for meningitis.
3. Patient isolation is not necessary. Provide good supportive care and simplify case management.

Give a single dose of oily chloramphenicol

AGE	INTRAMUSCULAR OILY CHLORAMPHENICOL 100 mg per kg in a single dose, If the patient has not improved, give a second dose 24 to 48 hours later.	
	Dose in grams	Dose in millilitres
Adult: age 15 years and older	3.0 g	12 ml
Child: 10 to 14 years	2.5 g	10 ml
6 to 9 years	2.0 g	8 ml
3 to 5 years	1.5 g	6 ml
1 to 2 years	1.0 g	4 ml
2 to 11 months	0.5 g	2 ml
1 to 8 weeks	0.25 g	1 ml

Other recommended antibiotics to treat meningitis

Agent	Route	Dose for adults	Dose for children	Duration of treatment
Penicillin G	IV	3-4 MU daily, every 4-6 hours	400 000 Units/ kg	4 days
Ampicillin or Amoxicillin	IV	2-3 g daily every 6 hours	250 mg per kg	4 days
Moxicillin	Oral	2-3 g every 6 hours	250 mg per kg	4 days
Chloramphenicol	IV	1 g every 8-12 hours	100 mg per kg	4 days
Cefotaxime	IV	2 g every 6 hours	250 mg per kg	4 days
Ceftriaxone	IV	1-2 g over 12-24 hours	50-80 mg per kg	4 days
Ceftriaxone	IM	1-2 g single dose	50-80 mg per kg	1-2 days

Annex 6B: Preparing Disinfectant Solutions from Ordinary Household Products

During a response to an outbreak of any disease transmitted through direct contact with infectious body fluids (blood, urine, stool, semen, and sputum for example), an inexpensive system can be set up using ordinary household bleach.

The following table describes how to make 1:10 and 1:100 chlorine solutions from household bleach and other chlorine products.

Use this chlorine product	To make a 1:10 solution for disinfecting:	To make a 1:100 solution for disinfecting:
	<ul style="list-style-type: none"> -- <i>Excreta</i> -- <i>Cadavers</i> -- <i>Spills of infectious body Fluids</i> 	<ul style="list-style-type: none"> -- <i>Gloved hands</i> -- <i>Bare hands and skin</i> -- <i>Floors</i> -- <i>Clothing</i> -- <i>Equipment</i> -- <i>Bedding</i>
Household bleach 5% active chlorine	1 litre bleach per 10 litres of water	100 ml per 10 litres of water, or 6.5 Document the Response
Calcium hypochlorite powder or granules 70% (HTH)	7 grams or $\frac{1}{2}$ tablespoon per 1 litre of water	7 grams or $\frac{1}{2}$ tablespoon per 10 litres of water
Household bleach 30% active chlorine	16 grams or 1 tablespoon per 1 litre of water	16 grams or 1 tablespoon per 10 litres of water

To disinfect clothing:

- Promptly and thoroughly disinfect patient's personal articles and immediate environment using one of the following disinfectants:
 - Chlorinated lime powder
 - 1% chlorine solution
 - 1% to 2% phenol solution
- Promptly and thoroughly disinfect patient's clothing:
 - Wash clothes with soap and water
 - Boil or soak in disinfectant solution
 - Sun dry
 - Wash utensils with boiling water or disinfectant solution

-- Do not wash contaminated articles in rivers or ponds that might be sources of drinking water, or near wells

Using Market/Shelf liquid bleach to prepare the desired % of chlorine

$\frac{\% \text{ Chlorine in bleach } ((\text{Market/Shelf}) \text{ minus } 1)}{\% \text{ Chlorine desired}} = \text{Parts of water for each part of bleach}$

Example: To make a 2% chlorine solution from 5% bleach,

$\frac{5}{2} \text{ minus } 1 = (2.5) \text{ minus } 1 = 1.5$ parts water for each part of bleach

Thus, to make 2% chlorine solution add 1 part bleach to 1.5 parts water

Annex 6C: Planning an emergency immunization activity

1. Review with health workers the need to plan vaccination campaigns and specify the target population for the immunization activity
2. Estimate the necessary amounts of vaccine, diluent, and immunization supplies such as sterile syringes and sterile needles, cold boxes, vaccine carriers and safety boxes
 - i. Coordinate with UNEPI, WHO country office and UNICEF offices to arrange for provision of necessary vaccines and supplies
 - ii. A list of pre-qualified WHO vaccines is available at: http://www.who.int/immunization_standards/vaccine_quality/PQ_vaccine_list_en/en/. If a country has already an ICC, agree on the type of vaccine to be given, who to give and the methodology to be used
 - iii. Contact the national level to request for vaccines. If a national reserve stock is not available, UNEPI program manager will request for an emergency supply from WHO.
3. Choose the immunization sites and inform the communities.
 - i. Coordinate with the District EPI Focal Person and or DSFP to identify sites for conducting the immunization activity.
 - ii. Identify the facilities that can participate in the activity
 - iii. Identify a mobile immunization team, if needed.
 - iv. Determine if there are any hard-to-reach areas, e.g. a transient workers' camp. Identify a mobile immunization team to reach these areas.
 - v. Contact the facilities and schedule the immunization dates.
 - vi. Make sure there is enough capacity to store extra amounts of the vaccine during storage and transportation to the immunization site.
4. Conduct a comprehensive micro planning for the campaign. A micro plan is the operational plan for a campaign at the national or district level. Ensure the plan has at least the following:
 - i. Estimate of the number of vaccination teams required and their composition including roles and responsibility of team members, as well as number of supervisors and monitors
 - ii. List of supervisors and their contact numbers
 - iii. Travel plan for teams and supervisors including transportation requirements
 - iv. Map the coordination with other partners and regions/districts local partners like NGOs, faith-based and civic organizations etc.
 - v. Maps of the targeted area
 - vi. Cold chain requirements and maintenance
 - vii. Plan for distribution of logistics
 - viii. Plans for disposal of waste from campaign
 - ix. Social mobilization plan with community leaders mapped and engaged
 - x. Training schedule
 - xi. Budgetary estimates for the various campaign components including training and planning prior to implementation and waste disposal following implementation

5. Select immunization teams. For every 100 to 150 people expected at the immunization site, the following staff is required:
 - i. One to two vaccinators to give immunizations
 - ii. One recorder to record on immunization cards
 - iii. Community health workers (VHTs) if already exist or an identified community volunteer to verify age and immunization status.
6. Work with your District EPI/ team to conduct refresher training for vaccinators on recommended immunization practices. Ensure instructions are given for the use of safe injection techniques.
7. Mobilize the community. Inform the public about the emergency immunization activity while ensuring that;
 - i. There is a clear communication plan that includes easy to understand information about:
 - i. the need for the campaign
 - ii. There is a clearly defined target group for the campaign
 - iii. There is a clear understanding of the dates of the campaign
 - iv. The communication plan has mechanisms for rapidly identifying and addressing rumours that may arise during the campaign
 - v. There is a single point of contact well versed in risk communications and the local culture
 - vi. There is a clear plan for monitoring any adverse events
8. Arrange staff transportation to the immunization site.
 - i. Plan their transportation to and from the site
 - ii. Schedule vehicles and plan for fuel and other costs
 - iii. Estimate *per diem* costs and make necessary arrangements for lodging if the site is away from the health worker's usual station.
9. Monitor the overall campaign process and the number of doses of vaccine given.
 - i. Collect daily summary sheets from teams
 - ii. Calculate the quantity of remaining stocks and supplies necessary for the next day
 - iii. Estimated number of individuals vaccinated should be followed daily and tracked against target population
 - iv. Follow up visit plans should be made for missed individuals based on tally/summary sheet information
 - v. Document any missing houses/individuals who should be followed up on subsequent days
 - vi. Review the teams available at sight and if necessary, allocate/deploy the teams to other sites basing on the workload
 - vii. Conduct brief feedback sessions at the end of each day with vaccination teams and make necessary mid-course corrections

NB: A rapid guide to common SIA problems and potential quick fixes is available at:

<http://www.polioeradication.org/Portals/0/Document/Resources/PolioEradicators/1c.QuickFixesforSIA20100914.pdf>

Annex 6D: Estimating vaccine supplies for immunization activities

Outbreak: _____ **Date confirmed:** _____

Target population:

Children age 0 – 5 years

Children age 9 months up to 14 years

Children and adults age 0 up to 30 years

Women of childbearing age 15 years up to 45 years

All adults and children in the general population

1. Calculate the size of the target population. If the activity only targets a proportion of the general population, estimate the size of the target population. Multiply the general population times the percentage of children or adults in the target population. If you do not know the exact age distribution rates in your area, use recommended estimates such as the following:

- children age 0 up to 5 years 20%
- children age 9 months up to 14 years 45%
- children and adults age 1 up to 30 years 70%
- women of childbearing age 15-45 years 20%

2. Find out how many doses each person should receive. Record the number below as “number of doses recommended.”

3. Allow for wastage. Use a wastage factor of 20%. Multiply the size of the target population (see step 1) times the number of doses times 1.20.

$$\frac{\text{Size of target population}}{\text{Number of recommended doses}} \times \text{wastage} \times 1.20 = \text{Number of doses to order including wastage}$$

NB: It is recommended that the wastage factor of 20% should be used only at the national level to estimate vaccine requirement during an outbreak. At the sub-national and district levels use 15% wastage factor and health facility level use wastage factor of 10%.

4. Allow for a contingency stock. Use a reserve factor of 25%. Multiply the estimated number of doses including wastage times 1.25 to obtain the total estimated number of doses.

$$\frac{\text{Number of doses estimated doses including wastage}}{\text{Contingency factor}} \times 1.25 = \text{Total number of}$$

NB: It is recommended that the contingency stock is kept only at the national level. However, if a sub national level has adequate capacity for vaccines storage, then this level can also keep contingency stock

- To obtain the total number of vials of vaccine to order, divide the total number of estimated doses by the number of doses that are contained in the vial. (This is usually printed on the label and may be one dose, two doses, five doses, ten doses or twenty doses).

$$\frac{(\quad)}{(\quad)} \div (\quad) = \frac{\quad}{\quad}$$

Total number of estimated doses
Doses per vial
Total number of vials required

- If the vaccine requires a diluent, multiply the number of milliliters of diluent per vial times the total number of vials required.

$$\frac{\quad}{\quad} \times \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

Diluent required per vial
Total number of vial
Total diluent to order

- Estimate the number of sterile needles and syringes that will be needed to carry out the activity. If single-use needle and syringes are used, order the same amount as for the estimated number of doses in Step 4.
- In addition, estimate the number of dilution syringes necessary for preparing the vaccine. ***Source: Field Guide for Supplementary Activities Aimed at Achieving Polio Eradication, World Health Organization, Geneva 1997. District guidelines for yellow fever surveillance, Division of Emerging and other communicable disease surveillance and control, World Health Organization, Geneva 1998.***
- Estimate the number of safety boxes required

Annex 6E: Recommended Immunization Practices

Work with your EPI team to give refresher training to the vaccinator teams that will conduct the emergency immunization activity. As a minimum, make sure vaccinator teams know how to:

1. Reconstitute the vaccine correctly:
 - Determine the appropriate quantity of diluent to reconstitute the freeze-dried vaccine.
 - Use a sterile syringe and sterile needle for each dose.
 - Using the dilution syringe, draw up and expel the diluent several times in the vial that contains the vaccine so as to mix the reconstituted vaccine well.
2. Wrap the vial in silver foil or cover it with a dark cloth. This will protect the vial from sunlight.
3. In a field situation, protect the vaccine and diluent from contamination. Cover the open top of the vial with foil to keep out dirt and flies.
4. Place reconstituted vaccine vials and opened liquid vaccine vials immediately stand them on chilled ice, or stand them on an ice pack. Keep the ice and vaccines in the shade.
5. Follow multi dose vial policy as applicable e.g., for measles and polio.
6. Record the dose on an immunization card for each person immunized.
7. Collect data for monitoring the activity. For example, record the number of doses given on a tally sheet so that coverage from the campaign can be calculated.
8. Remind health workers about the risk of getting blood-borne diseases from an accidental needle stick. Review safe practices for handling and disposing of sharp instruments and needles using a sharps box.
9. Arrange for safe disposal of used injection materials at the end of the activity. They can be burned or buried in a pit according to medical waste disposal guidelines.

Annex 6F: Outbreak Communication

Introduction

Following confirmation and verification of the event, the primary health and the district level authorities should liaise with the national level authorities to communicate and receive guidance on common positions to be delivered to the media.

From first announcement throughout the outbreak, communication from the district level should follow the directions and the key messages developed at national level in consultation with the field team, in order to ensure consistency and speaking with one voice. Even though communication should be centrally coordinated by the national level, media would approach local and district public health response level to obtain first-hand information from direct sources. In addition, the DHO should support the communication and provide scientific expertise as evidence for intervention.

Actions at the district level

- Identify a spokesperson at district level (political or technical)
- Liaise regularly with the national level to provide them with first-hand information (received at the community local level, the media, local stakeholders)
- Be regularly in contact with the national level to receive updated messages including guide and answers for frequently asked questions to feed the local media
- Be available for interviews by local media upon request to provide accurate, transparent and updated information following directions from national level in simple clear key messages
- Organize press briefings to provide regular information to local media, following directions from national level
- Develop good relationships with local media to partnership for delivery of accurate, transparent, timely messages to the population
- Use Information Education and Communication materials developed at the national level with clear consistent messages to provide guidance to the population
- Identify local powerful channels for the delivery of information to the population
- Meet regularly with local stakeholders to disseminate correct message of prevention and surveillance to the population
- Organize preventive house-to-house campaigns to reach the remote rural areas and promote prevention and surveillance, following directions from national level

Annex 6G: Guide to Infection Prevention and Control Measures

Hand Washing

Purpose: To protect the patient, staff and care givers from cross infection

Responsibility: Clinicians, Environmental health practitioner, care giver

Steps in hand washing

- The hands are washed thoroughly for a minimum of 10-15 seconds with soap (plain or antimicrobial) and running water (tap or run to waste method)
- Remove jewellery (rings, bracelets) and watches before washing hands, ensure that the nails are clipped short (do not wear artificial nails), roll the sleeves up to the elbow.
- Wet the hands and wrists, keeping hands and wrists lower than the elbows (permit the water to flow to the fingertips, avoiding arm contamination).
- Apply soap (plain or antimicrobial or ash) and lather thoroughly.
- Use firm, circular motions to wash the hands and arms up to the wrists, covering all areas including palms, back of the hands, fingers, between fingers and lateral side of the fifth finger, knuckles, and wrists.
- Rub for minimum of 10-15 seconds.
- Repeat the process if the hands are very soiled. Clean under the fingernails.
- Rinse hands thoroughly, keeping the hands lower than the forearms. If running water is not available, use a bucket and pitcher.
- Do not dip your hands into a bowl to rinse, as this re-contaminates them. Collect used water in a basin and discard in a sink, drain or toilet.
- Dry hands thoroughly with disposable paper towel or napkins, clean dry towel, or air dry them. Discard the towel if used, in an appropriate container without touching the bin lids with hand. Use a paper towel, clean towel or your elbow/foot to turn off the faucet to prevent re-contamination.

Different types of antiseptic disinfection:

Using antiseptics, hand rubs gels or alcohol swabs for hand antiseptis

- Apply the product to the palm of one hand. The volume needed to apply varies by product.
- Rub hands together, covering all surfaces of hands and fingers, until hands are dry
- Do not rinse.

NB: When there is visible soiling of hands, they should first be washed with soap and water before using waterless hand rubs gels or alcohol swabs. In situations where soap is not available, ash can be used for washing hands

Hand Hygiene Techniques

This is a process, which mechanically removes soil and debris from skin and reduces the number of transient microorganisms. Hand washing with plain soap and clean water is as effective in cleaning hands and removing transient microorganisms as washing with antimicrobial soaps and causes less skin irritation.

Steps:

- Thoroughly wet hands.
- Apply a hand-washing agent (liquid soap); an antiseptic agent is not necessary.
- Vigorously rub all areas of hands and fingers for 10–15 seconds (tip: 10 average breaths), paying close attention to fingernails and between fingers.
- Rinse hands thoroughly with clean running water from a tap or bucket.
- Dry hands with paper towel or a clean, dry towel or air-dry them.
- Use a paper towel or clean, dry towel when turning off water if there is no foot control or automatic shut off.



Source: World Health Organization (WHO) 2005.

NB:

- If bar soap is used, provide small bars and soap racks that drain.
- Use running water and avoid dipping hands into a basin containing standing water; even with the addition of an antiseptic agent, microorganisms can survive and multiply in these solutions.
- Do not add soap to a partially empty liquid soap dispenser. This practice of “topping off” dispensers may lead to bacterial contamination of the soap.
- When soap dispensers are reused, they should be thoroughly cleaned before filling.
- When no running water is available, use a bucket with a tap that can be turned off to lather hands and turned on again for rinsing, or use a bucket and pitcher.



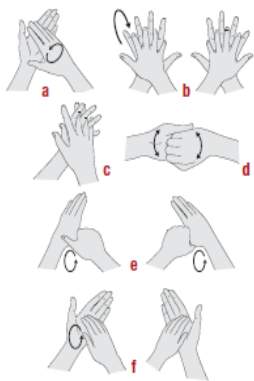
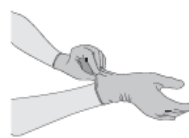






- Used water should be collected in a basin and discarded in a latrine if a drain is not available.

Guidance to Donning and Doffing of PPE

Steps to put on WHO PPE using coverall (16 steps)


1. Remove all personal items (jewellery, watches, cell phones, pens, etc.)
2. Put on the scrub suit and rubber boots* in the changing room.
3. Move to the clean area at the entrance of the isolation unit
4. Gather PPE beforehand. Select the right size coverall
5. Putting on PPE under the guidance and supervision of a buddy
6. Perform hand hygiene.
7. Put on inner gloves (examination, nitrile)
8. Put on coverall
9. Thumb (or middle finger) hole in the coverall sleeve or thumb loop
10. Put on face mask
11. Put on face protection (either face shield or goggles)
12. Put on head covering: Surgical bonnet or hood
13. Put on disposable waterproof apron
14. Put on outer gloves (examination, nitrile) over cuff
15. Self-check in mirror
16. Check buddy and write name/ occupation/ time of entry

Steps to put on personal protective equipment (PPE) including coverall

<p>1 Remove all personal items (jewellery, watches, cell phones, pens, etc.)</p> 	<p>2 Put on scrub suit and rubber boots¹ in the changing room.</p> 	<p>3 Move to the clean area at the entrance of the isolation unit.</p> <p>4 By visual inspection, ensure that all sizes of the PPE set are correct and the quality is appropriate.</p> <p>5 Undertake the procedure of putting on PPE under the guidance and supervision of a trained observer (colleague).</p>	<p>6 Perform hand hygiene.</p> 
<p>7 Put on gloves (examination, nitrile gloves).</p> 	<p>8 Put on coverall.²</p> 		
<p>9 Put on face mask.</p> 	<p>10 Put on face shield OR goggles.</p> <p style="text-align: center;">OR</p> 	<p>11 Put on head and neck covering surgical bonnet covering neck and sides of the head (preferable with face shield) OR hood.</p> <p style="text-align: center;">OR</p> 	
<p>12 Put on disposable waterproof apron (if not available, use heavy duty, reusable waterproof apron).</p> 	<p>13 Put on second pair of (preferably long cuff)² gloves over the cuff.</p> 		

¹ If boots are not available, use closed shoes (slip-ons without shoelaces and fully covering the dorsum of the foot and ankles) and shoe covers (nonslip and preferably impermeable)

² Do not use adhesive tape to attach the gloves. If the gloves or the coverall sleeves are not long enough, make a thumb (or middle finger) hole in the coverall sleeve to ensure that your forearm is not exposed when making wide movements. Some coverall models have finger loops attached to sleeves.



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Steps to Doff WHO PPE using coverall (19 steps)

1. Always remove PPE under the guidance and supervision of a trained observer (colleague).
2. Enter decontamination area by walking through chlorine tray.
3. Perform hand hygiene on gloved hands (0.5% chlorine).
4. Remove apron taking care to avoid contaminating your hands by peeling it off.
5. Perform hand hygiene on gloved hands (0.5% chlorine).
6. Remove hood or bonnet taking care to avoid contaminating your face.
7. Perform hand hygiene on gloved hands (0.5% chlorine).
8. Remove coverall and outer pair of gloves.
9. Tilt head back to reach zipper, unzip completely without touching any skin or scrubs, remove coverall from top to bottom.
10. After freeing shoulders, remove the outer gloves while pulling the arms out of the sleeves.
11. With inner gloves roll the coverall, from the waist down and from the inside of the coverall, down to the top of the boots.
12. Use one boot to pull off coverall from another boot and vice versa, and then step away from the coverall and dispose of it safely.
13. Perform hand hygiene on gloved hands (0.5% chlorine)
14. Remove the goggles or face shield from behind the head (keep eyes closed).
15. Perform hand hygiene on gloved hands (0.5% chlorine)
16. Remove mask from behind the head (keep eyes closed).
17. Perform hand hygiene on gloved hands (0.5% chlorine).
18. Remove inner gloves with appropriate technique and dispose of safely.
19. Decontaminate boots appropriately and move to lower risk area one foot at a time and Perform hand hygiene (0.05% chlorine).

Steps to take off personal protective equipment (PPE) including gown

- 1 Always remove PPE under the guidance and supervision of a trained observer (colleague). Ensure that infectious waste containers are available in the doffing area for safe disposal of PPE. Separate containers should be available for reusable items.
- 2 Perform hand hygiene on gloved hands.¹
- 3 Remove apron leaning forward and taking care to avoid contaminating your hands. When removing disposable apron, tear it off at the neck and roll it down without touching the front area. Then untie the back and roll the apron forward.
- 4 Perform hand hygiene on gloved hands.
- 5 Remove outer pair of gloves and dispose of them safely. Use the technique shown in Step 17
- 6 Perform hand hygiene on gloved hands.
- 7 Remove head and neck covering taking care to avoid contaminating your face by starting from the bottom of the hood in the back and rolling from back to front and from inside to outside, and dispose of it safely.
- 8 Perform hand hygiene on gloved hands.
- 9 Remove the gown by untying the knot first, then pulling from back to front rolling it from inside to outside and dispose of it safely.
- 10 Perform hand hygiene on gloved hands.
- 11 Remove eye protection by pulling the string from behind the head and dispose of it safely.
- 12 Perform hand hygiene on gloved hands.
- 13 Remove the mask from behind the head by first untying the bottom string above the head and leaving it hanging in front; and then the top string next from behind head and dispose of it safely.
- 14 Perform hand hygiene on gloved hands.
- 15 Remove rubber boots without touching them (or overshoes if wearing shoes). If the same boots are to be used outside of the high-risk zone, keep them on but clean and decontaminate appropriately before leaving the doffing area.²
- 16 Perform hand hygiene on gloved hands.
- 17 Remove gloves carefully with appropriate technique and dispose of them safely.
- 18 Perform hand hygiene.

¹ While working in the patient care area, outer gloves should be changed between patients and prior to exiting (change after seeing the last patient)

² Appropriate decontamination of boots includes stepping into a tub/bath with 0.5% chlorine solution (and removing dirt with toilet brush if heavily soiled with mud and/or organic materials) and then wiping all sides with 0.5% chlorine solution. At least once a day boots should be decontaminated by soaking in a 0.5% chlorine solution for 30 min, then rinsed and dried.

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Setting up a Cholera Isolation Unit/Cholera Treatment Unit

a. Site management

There are different recommendations for different situations/circumstances:

In urban settings and refugee camps:

Establish CTU + several Oral Rehydration Points (ORPs)

Ideally, the CTU should be located inside the existing hospital premises but clearly separated and isolated from the other departments to avoid spread of infection to non-cholera patients. If the hospital premises are not suitable, another site must be found. In urban/camp settings, it is preferable to have one single CTU and several ORPs rather than setting up multiple CTUs, thereby increasing potential sources of infection. When affected areas are too far from the CTU, access can become a problem. Ambulances can be provided for referral, or a CTU may be established as an intermediate structure. Use of taxis/buses should be discouraged given the high contamination risk during the journey.

In rural settings:

Establish Cholera Treatment Units (CTU)

The CTU should be located inside the health facility, or close to it. If this is not possible, other existing structures may be used. CTUs may paralyse routine health services as adequate case management is labour-intensive and other health services may suffer from staff shortage. In areas that are far from any treatment facility, it may be possible to decentralize the CTU to the level of the affected villages.

Oral rehydration Points (ORPs)

ORS points have two objectives: to treat patients, and to screen off and refer severely dehydrated patients to CTU(s). They reduce pressure on overburdened CTUs. They can be decentralized to the community level. The community health worker should receive quick training and regular supplies, to be able to achieve given objectives.

Design of a CTU

Selection criteria

When establishing a cholera treatment centres, the following should be considered when selecting a site:

- Proximity to the affected area.
- Easy accessibility for patients and supplies.
- Protected from winds (there should be wind breaks)
- Adequate space.
- Compatibility with adjacent existing structures and activities
- Availability of adequate potable/safe water supply within a minimum distance to avoid contamination.
- Good drainage from the site
- Provision of waste management facilities (clinical and general waste)
- Availability of sanitary facilities (temporary)
- Provision for extension of CTU (basing on estimation given by epidemiologist)

□ **Setting up a temporary Cholera Treatment Unit (CTU)**

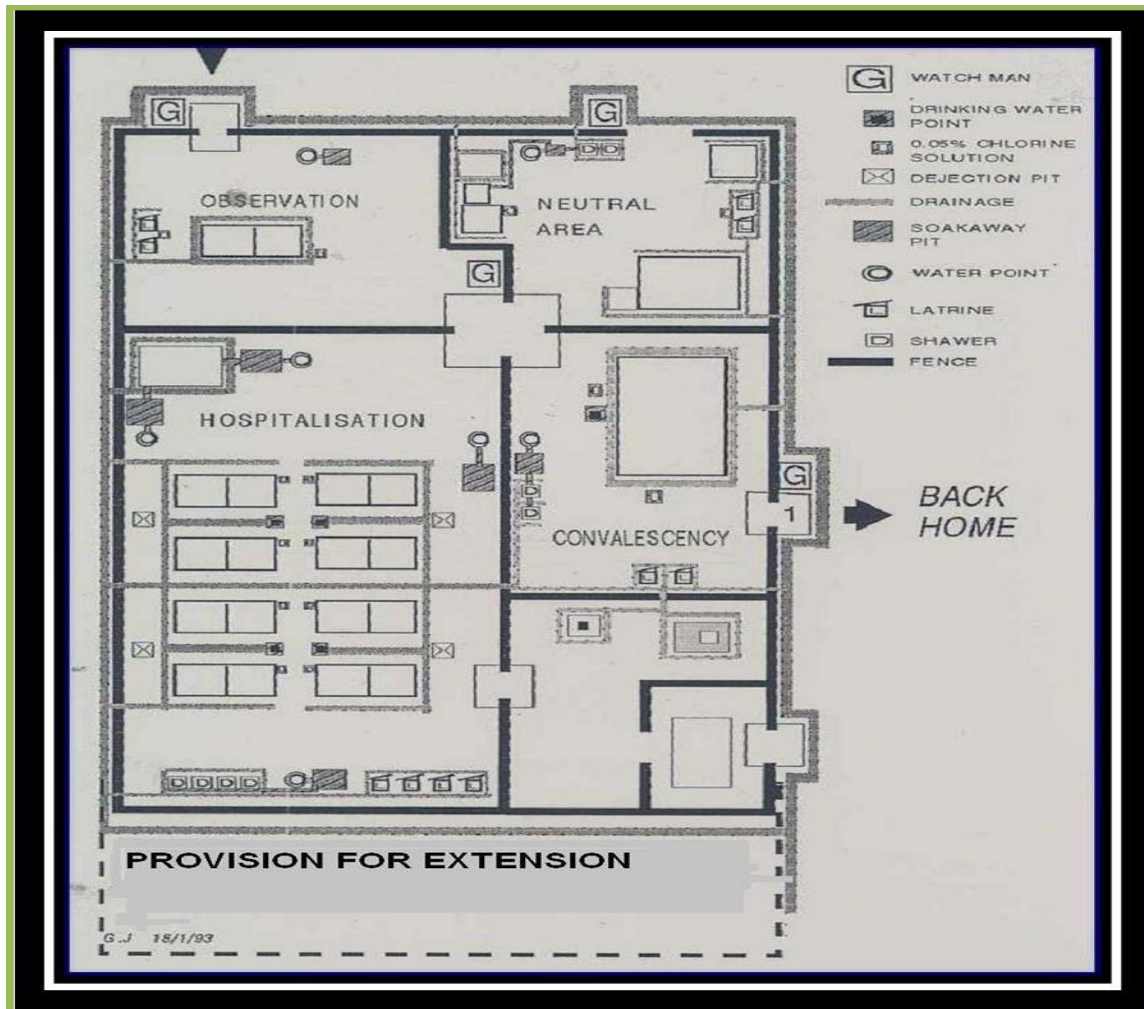
- In setting up a CTU, you can use an existing building or set up tents.
- It is important to consider safety of patients and ventilation as high temperatures contributes to dehydration of the patients.
- The cholera camp should operate 24 hours a day independently of the other health facilities and therefore the necessary staff has to be recruited.
- It should be supplied with the necessary medical material specifically for the centre.
- An enclosure or other form of acceptable screen should be provided around the cholera camp.
- The various workstations should be clearly labelled and directions provided.
- The CTU must be a “closed system” where contamination is introduced through patients, and must be destroyed inside the structure. Under no circumstances should any contamination come out (through patients, water, material, solid and liquid waste etc.).

□ **General rules for a good design:**

- Strict necessary movement for staff and patient
- Each zone is a “closed box”
- Systematic disinfection between zones
- Discipline and mutual control for the patient, attendant and staff on hygiene

Good infection control means anything coming out is free of contamination

The diagram below is a layout of Cholera Treatment Unit.



Triage and Observation

- Patients are examined by health workers for screening. If cholera, admit; otherwise send to normal dispensary.
- Patients are admitted with 1 attendant (caregiver) if necessary.
- Patients who are admitted are registered in the cholera line list.
- A foot bath should be provided at the entrance
- Toilets and water should be easily accessible for patients.
- Shower facilities should be provided for the patients.
- A disinfection area should be provided for the transporting vehicles and contaminated articles for the patients.
- Tables, chairs, water containers fitted with taps, refuse receptacles should be

provided in these areas.

- Provision of safe water
- Establish an ORP corner

Admissions area

- Patients with severe dehydration and/or uncontrollable vomiting must be hospitalized for immediate rehydration.
- Each patient lies on a Cholera bed with 1 bucket for stool collection underneath the hole in the bed and 1 bucket for vomit besides the bed. The following should be put in place or provided in the admissions area;
 - Separate rooms/tents for males and females where possible
 - Separate rooms for children, the old and pregnant women as risk of abortion increases with cholera
 - A foot bath and hand washing facilities (with disinfectant) at the entrance
 - Provision for disinfection of soiled linen and clothing
 - Patients should have access to toilets and washing facilities (with disinfectant) or showers (should be provided where possible)
 - Cholera beds with receiving buckets, buckets for those who vomit and water containers for patients
 - Tables and chairs for staff
- Refuse receptacles
- Patients should be screened by medical staff and categorized according to their status.

A Convalescence/Recovery Area

- The convalescence or recovery area is meant for oral rehydration after hospitalization when less surveillance is required. Patients can stay on mats or benches, as in the observation area.
- The patients who are no longer vomiting nor have diarrhoea and requiring less medical attention can be put in this ward.
- Separate rooms/tents should be provided for males and female.
-

Annex 6H: Response to Chemical and Radio-nuclear Events

Response to Radiological Events

If an accident is suspected;

- Prevent inadvertent ingestion of contamination (e.g., wear gloves, do not smoke or eat)
- Perform life saving measures and provide first aid for serious injuries immediately, before conducting radiological monitoring
- Keep people away from any potential source of exposure (at least 10 m from the public)
- Arrange to transport seriously injured people to local medical facility.
- Wrap them in a blanket to control the spread of contamination. Inform the Emergency Medical Services (EMS) and team the receiving medical facility that the person may be contaminated and that the risk to those treating such a patient is negligible but care should be taken to prevent inadvertent ingestion of contamination.
- Identify and register potentially exposed/contaminated individuals. Gather information that could be useful in reconstructing their dose to include medical symptoms and
 - description of events.
- Report to appropriate officials and obtain instructions.
- If not seriously injured, remain in the area until monitored.

Respond to Action Threshold:

If an accident is confirmed;

- Reassess and review with relevant departments and agencies medium to long term
- protective actions such as food chain restrictions.
- Provide the population with useful, timely truthful, consistent and appropriate
- information as to the likely health effects of the emergency by reference to existing
- knowledge.
- Arrange for detailed clinical and radiological review of affected persons.
- Promptly provide the public with the results of any medical examinations.
- Establish and maintain an appropriate disease surveillance programme.
- Establish a registry of persons to be tracked and to receive long-term follow-up.
- Base inclusion in the registry on objective criteria that indicate potential for an increase in the incidence of radiation induced cancer.
- Begin surveillance of any identified groups at risk, e.g., screening for thyroid disease in children in an area affected by radioactive iodine release.
- Assist Government authorities in planning a return to normal life for the population
- affected.

External contamination

- Use instrumental contamination monitoring. Use cotton swabs for skin, nostrils, ear canals, wounds or any contaminated object. Each swab should be placed in a labelled test tube for counting.

Internal contamination

- Use instrumental detection methods such as whole-body counting, gamma camera, thyroid counting. Radionuclides may be in the blood or excreted in the faeces or urine. Excreta should be placed in appropriate containers and blood samples in test tubes for counting.

Decontamination Procedures

- Materials: Lukewarm water, soap or ordinary detergent, soft brush, sponges, plastic sheets, tape, towels, sheets, iodine tablets or solution.
- Procedural priority: Remove all clothing and place in plastic bags. Carry out life saving measures first. Identify contaminated areas, mark clearly and cover until decontamination takes place. Start with decontamination of wounds when present, and move on to the most contaminated area of the body.

Local contamination:

- Cover uncontaminated area with plastic sheet and tape edges. Soak the contaminated area, gently scrub with soap, and rinse thoroughly. Repeat the cycle and observe changes in activity. One cycle should not last longer than about 2–3 min. Avoid vigorous scrubbing. A stable isotope solution may facilitate the process.
- For wounds, irrigate with normal saline solution repeatedly. Surgical debridement might be considered in some instances. Eyes and ears may be irrigated gently with isotonic saline solution.

Extensive contamination:

- Shower those not seriously injured. Bathing may be done on the operating table or stretcher for the seriously injured.
- Soak– scrub–rinse cycle should also be observed.

Inhalation: Irrigate nasopharynx and mouth.

Ingestion: Administer cathartics for insoluble materials. Administer diuretics by forcing fluids for soluble contaminants.

Prophylactic measures

- Cover areas still contaminated with plastic sheet and tape edges. Gloves can be used for hands.
- Repeat washing after allowing the skin to rest.

Treatment

- Erythema and dry desquamation can be treated symptomatically. Lotions or sprays containing hydrocortisone can be used to relieve the symptoms associated with severe erythema accompanied by oedema. To treat moist desquamation, daily dressings and bathing of the affected skin in antiseptic solutions is helpful. Antibiotic creams can also be used.
- For ulceration, isolation of the limb in a sterile environment or daily dressing and bathing of the ulcer in antiseptic solutions is recommended. Analgesics or stronger opioids may be necessary. In the event of suspected or verified secondary infection, topical or systemic antibiotic therapy should be considered.

- For necrosis, only surgical treatment is effective. Surgical toilet is indicated. Excision of deep necrosis followed by skin grafts or other kinds of grafting may be conducted when indicated.
- Indications for amputation include very severe lesions with destruction of underlying tissues, including vascular damage, intractable pain and lack of infection control.

Expected outcome

- Radionuclide activity is no longer detectable or is decreasing.

Response to Chemical Event/Attack

Components of rescue and medical services:

- Search and rescue teams
- Emergency medical teams used for day-to-day emergencies (Medical officers, nurses, first aiders, ambulance)
- Field medical services (field medical teams and posts)
- Medical emergency response plans and procedures
- Personnel and equipment to reinforce the resources available for day-to-day emergencies
- A transport service for medical evacuations
- Hospitals with casualty and surgical units

At the emergency site:

- Operate as close as possible (but within safe distance) to the emergency site.
 - Collaborate closely with different rescue teams (engineering, fire fighters, decontamination and human rescue groups).
 - Ensure all rescue workers don appropriate PPEs.
 - Assess the situation to determine that there is no eminent danger
 - Rescue teams should locate casualties and remove them from danger.
 - Rescue team should do primary medical assessment to identify and manage life threatening conditions.
- Assess:
- Airway
 - Breathing
 - Circulation
- Rescue team should provide First Aid and record details of first aid provided before forwarding casualties to field medical teams.
 - Field medical services post/s: Establish field medical post/s.
 - Field medical teams perform primary/secondary medical assessment.
 - Assign triage category to casualties based on the medical assessment.
 - Initiate appropriate treatment.
 - Prepare casualties for evacuation to hospital according to triage category.
 - Continue documentation of casualties.
 - Provide surveillance of casualties awaiting evacuation.
 - Liaise with casualty transport service.
 - Evacuate casualties to appropriate medical facilities according to priorities.
 - Ensure continuity of medical care for casualties along the whole length of the chain from the emergency site to the hospital.
 - Provide information to receiving medical facilities as necessary.
 - Treat minor injuries not requiring hospitalization.

Hospital services:

- Prepare for casualty reception.
- Do a medical assessment to identify and manage life-threatening conditions.
- Assign triage category based on assessments.
- Provide appropriate treatment according to triage priorities and available hospital resources.
- Continue medical documentation of casualties.
- Undertake surgical procedures where necessary.
- Provide post-operative care and release casualties.

Recognizing and Diagnosing Health Effects of Chemicals in Chemical Events

Agent /Type	Agent Name	Any unique Characteristics	Initial Effects
Nerve	Cylohexyl serin Sarin (GB) Soman (GD) Tabun (GA) VX	Miosis (pinpoint pupils) Copious secretions Muscle twitching/fasciculation	Miosis (pinpoint pupils) Blurred/dim vision Headache Nausea, Vomiting Diarrhoea Copious secretions Sweating Muscle twitching/fasciculation Breathing difficulty Seizures
Asphyxiant/Blood-Arsine	Cyanogen chloride Hydrogen cyanide	Possible cherry red skin Possible cyanosis	Possible frostbite Confusion Nausea Patient may gasp for air similar to asphyxiation but more abrupt onset Seizure prior to death
Choking/Pulmonary damaging	Chlorine Hydrogen chloride Nitrogen oxide Phosgene	Chlorine is a greenish yellow has with pungent odour Phosgene gas smells like very newly mown hay or grass Possible frostbite	Eye and skin irritation Airway irritation Dyspnoea, cough Sore throat Chest tightness
Blistering/Vesicant	Mustard/Sulfur Mustard (HD, H) Mustard(gas) Nitrogen mustard Lewisite (L)	immediately decontaminate skin; flush eyes with water or normal saline for 10-15 minutes if breathing difficulty, give oxygen any supportive care	Possible pulmonary oedema <i>Mustard has an asymptomatic latent period</i> There is no antidote or treatment for mustard Lewisite has immediate burning pain, blisters later Specific antidote British Anti Lewisite (BAL) may decrease systemic effects of Lewisite
incapacating/behaviour-altering	Agent 15/BZ	May appear as mass drug intoxication with ecastic behavior, distinct hallucinations and confusion Hyperthermia Mydriasis (dilated pupils)	May cause death Dry mouth and skin Initial tachycardia Altered consciousness, delusions, denial of illness, belligerence Hyperthermia Ataxia (lack of coordination) Hallucinations Mydriasis (dilated pupils)

Decontamination and Treatment

Agent Type	Decontamination	First Aid Access ABCs	Other patient consideration
Nerve	Remove clothing immediately Gently wash skin with soap and water Do not abrade skin For eyes For eyes, flush with plenty of water or normal saline	Atropine before other measures Pralidoxime (2PAM) chloride	Onset of symptoms from dermal contact with liquid forms may be delayed Repeated antidote administration may be necessary
Asphyxiant/Blood Arsenic	Remove clothing immediately - if no frostbite Gently wash skin with soap and water	Rapid treatment with oxygen For cyanide, use antidotes (sodium nitrite and then sodium thiosulfate)	Arsenic and cyanogen chloride may cause delayed pulmonary oedema
Choking/Pulmonary damaging	Remove clothing immediately if no frostbite Gently wash skin with soap and water Do not abrade the skin For eyes, flush with plenty of water or normal saline	Fresh air Forced rest Semi upright If signs of respiratory distress are present, oxygen with or without positive airway pressure may be needed Other supportive therapy as needed	May cause delayed pulmonary oedema , even following a symptom free period that varies in duration with the amount
Blistering/Vesicant	Immediate decontamination is essential to minimize damage Remove clothing immediately Gently wash skin with soap and water Do not abrade skin For eyes, flush with plenty of water or normal saline	Immediate decontaminate skin] flush eyes with water or normal saline for 10-15 minutes	Possible pulmonary oedema Mustard has an asymptomatic latent period, there is no antidote for mustard Lewisite has immediate burning pain, blisters later Specific antidote British Anti Lewisite (BAL) may decrease systemic effects of Lewisite Phosgene oxine causes immediate pain
Incapacitating/ behaviour-altering	Remove clothing immediately Gently wash skin with water or soap and water Do not abrade skin	Remove heavy clothing Evaluate mental status Use restraints as needed Monitor core temperature carefully Supportive care	Hyperthermia and self-injury are targets risks Hard to detect because it is an odorless and non-irritating substance Possible serious arrhythmias Specific antidote (physostigmine) may be available

Antidote Recommendations Following Exposure to Cyanide

Patient	Mild (Conscious)	Severe (Unconscious)	Other treatment
Child	Antidotes may not be necessary	Sodium nitrite: 12-0.33ml/kg, not to exceed 10ml of 3% solution. Slow IV no less than 5 minutes, or slower if hypotension develops Sodium thiosulfate: 1.65ml/kg of 25% solution IV over 10-20 minutes	For sodium nitrite-induced orthostatic hypotension, normal saline infusion and supine position are recommended If still apnoeic after antidote administration, consider sodium bicarbonate for severe acidosis
Adult	Antidote may not be necessary	Sodium nitrite: 10-20ml of 3% solution slow IV over no less than 5 minutes, or slower if hypotension develops and Sodium thiosulfate: 50ml of 25% solution IV over 10-20 minutes	

Note:

- 1) Victims whose clothing or skin is contaminated with hydrogen cyanide liquid or solution can secondarily contaminate response personnel by direct contact or through off-gassing vapours.
- 2) Avoid dermal contact with cyanide contaminated victims or with gastric contents of victims who may have ingested cyanide-containing materials.
- 3) Victims exposed only to hydrogen cyanide gas do not pose contamination risks to rescuers. If the patient is a victim of recent smoke inhalation (may have high carboxyhaemoglobin levels), administer only sodium thiosulfate.
- 4) If sodium nitrite is unavailable, administer amyl nitrite by inhalation from crushable ampoules.
- 5) Available in Pasadena Cyanide Antidote Kit, formerly Lilly Cyanide Kit.

Annex 6I: Documenting Key Outbreak Response Milestones

Outbreak Timeliness Metrics		
Outbreak Milestones	Definition	Date
Predict Date	Date when the occurrence of the outbreak was predicted, where applicable	
Prevent Date	Date when initial preventive and preparedness measure were implemented	
Outbreak Start	Date of symptom onset in the primary case or earliest epidemiologically-linked case	
Outbreak Detection	Date when the primary case first came into contact with the health system or when the outbreak or disease-related event is first recorded by any source or in any system or	
Outbreak Notification	Date the outbreak is first reported to the next level	
Outbreak Verification	Earliest date of outbreak verification through a reliable verification mechanism	
Laboratory Confirmation	Earliest date of laboratory confirmation for the initial case	
Outbreak Response	Earliest date of any public health intervention to control the outbreak	
Public Communication	Date of first official release of information to the public from the Ministry of Health	
Outbreak End	Date that outbreak is declared over by the Ministry of Health	

SECTION 7

RISK COMMUNICATION

SECTION 7: RISK COMMUNICATION

7.0 Risk Communication and Community Engagement

Risk communication and community engagement (RCCE) are essential elements of disaster and emergency preparedness and response and are the core capacities in the International Health Regulations 2005 (IHR 2005). Risk communication refers to the exchange of real-time information, advice and opinions between experts and people facing threats to their health, economic or social well-being⁴¹. Its ultimate purpose is that everyone at risk is able to take informed decisions to mitigate the effects of the threat (hazard) such as a disease outbreak and take protective and preventive action.

Risk communication uses a mix of two way and multi directional communication and community engagement strategies and tactics, including but not limited to, mass media communications, social media, dialogue meetings, mass awareness campaigns, health promotion, stakeholder engagement, social mobilization and community engagement.

The current 21st century has witnessed an exponential growth in travel, trade and migration, coupled with communication technology revolution providing massive access to a variety of means of communication and information. The public and communities have been exposed to a variety of dynamic, fast-changing, formal and informal media, social media and complex social networks that influence how risk is communicated, perceived and acted on. The latest evidence shows that the practice of risk communication is a complex task that is a core public health intervention in any response to disease outbreaks/epidemics, pandemics and other health emergencies⁴²

It is therefore important for risk communication to be conducted effectively, so as to promote public health goal of rapid outbreak containment, preventing avoidable death and disease with the least possible disruption to economies and society. During epidemics and pandemics, humanitarian crises and natural disasters, effective risk communication allows the people who are most at risk to understand and adopt protective behaviours. It allows authorities and experts to listen to and address people's concerns and needs so that the advice they provide is relevant, trusted and acceptable.

This section describes how to conduct risk communication **before, during and after** an outbreak. Effective communication provides those at risk with the knowledge to make informed decisions for protective action when linked to functioning service. It also provides decision makers with summary information especially if there was an outbreak response, allowing them to review how resources were applied to contain the event.

7.0.1 Importance of effective risk communication:

- Promotes rapid outbreak containment, preventing diseases and avoidable deaths and reduces the possible disruption to economies and society

- Allows people most at risk to understand and adopt protective behaviours during epidemics, pandemics, humanitarian crises and natural disasters
- It allows authorities and experts to listen to and address people’s concerns and needs so that the advice they provide is relevant, trusted and acceptable
- When the public is at risk of a real or potential health threat, direct interventions may take time to organize and resources may be few. Communicating advice and guidance, therefore, often stands as the first and most important public health tool in managing a risk
- Pro-active risk communication encourages the public and service providers to adopt protective behaviours when these are linked to functioning systems and services
- It facilitates heightened disease surveillance, reduces confusion, and minimizes miscommunication and falsehoods (and rumours) in relation to the cause, transmission of a disease and proven effective protective actions
- It allows for a better use of resources - all of which are necessary for an effective response

7.1 Risk Communication in the context of IDSR

Integrated Disease Surveillance and Response (IDSR) strategy is an approach for improving public health surveillance and response for priority diseases, conditions and events at community, health facility, district and national levels. Since the IDSR system has the potential of ensuring that there is a reliable supply of information to the national level to fulfil IHR requirements, risk communication should be integrated in **all the IDSR core functions** and activities.

The IDSR core functions and activities for each level of the health system are well illustrated in the Introduction section of this guideline. Effective risk communication is therefore needed to achieve the objectives for IDSR.

If risk communication is well planned and integrated in IDSR, it can improve decision making and adoption of recommended behaviours by communities and contribute to the prevention, control and response to priority diseases and other public health events. Such communication needs to be carefully planned and implemented as well as properly integrated with emergency management activities and operations at community, district, region and national levels to support all the relevant core IDSR functions and related activities at that level.

7.1.1 Benefits of Risk Communication

When risk communication is effectively carried out, it promotes the primary public health goal of rapid outbreak containment, preventing avoidable death and disease, and with the least possible disruption to economies and society.

The literature on the purposes of risk communication generally takes a management perspective. Accordingly, risk communication may serve to:

- Raise awareness;
- Encourage protective behavior;
- Inform to build up knowledge on hazards and risks;
- Inform to promote acceptance of risks and management measures;
- Inform on how to behave during events;
- Warn of and trigger action to impending and current events;
- Reassure the audience (to reduce anxiety or ‘manage’ outrage);
- Improve relationships (build trust, cooperation, networks);
- Enable mutual dialogue and understanding;
- Involve actors in decision making

7.1.2 Target audiences for risk communication

- Community members: All people at risk of acquiring disease or in need of health services within the context of the public health event including children.
- Health-care providers and first responders
- Private hospitals and clinic staff
- Surveillance Officers
- Laboratory staff
- Point of Entry staff
- Airlines staff
- Immigration officers
- Travelers
- Stakeholders (policy-makers, government ministries and MDAs, maternal and child health organizations, partners, community organizations, etc.)
- Media houses
- Learning institutions
- Workplaces
- Political, traditional and religious leaders
- Cultural institutions
- Security agencies
- Trade unions

7.1.3 Approaches for Risk Communication

The components of risk communication which are needed for effective emergency response include:

- a. Health education
- b. Social mobilization

- c. Community engagement
- d. Mass media (print and electronic)
- e. Social media
- f. Outbreak communication
- g. Crisis communication
- h. Messaging (Information Education and Communication (IEC) and Behaviour Change Communication (BCC))
- i. Rumour monitoring and managing
- j. Advocacy

7.2 Community engagement and its importance in public health emergency preparedness and response

Community engagement is the process of working collaboratively with and through people affiliated by geographic proximity, special interest, or similar situations to address issues affecting the wellbeing of those people⁴³

In conducting risk communication, community engagement is an important key. The emphasis during community engagement is on building relationship and trust.

7.2.1 Steps for community engagement

The steps for community engagement involve:

- Determining the goals of the community engagement
- Identifying the target audience
- Developing engagement strategies
- Identifying the activities
- Prioritizing those activities
- Creating an implementation plan
- Monitoring the progress

7.2.2 Importance of effective community engagement:

Effective community engagement helps you to:

- Know the community (problem and needs)
- Understand the existing health beliefs, attitudes and practices
- Listen to the community carefully
- Analyse community dynamics
- Involve the community in all aspects of the response right from the planning stages
- Provide feedback to the community

7.2.3 Effective community entry

Community entry is the process of entering community space with the intention of meeting the community members where they are most comfortable or where they can speak out their ideas, needs and aspirations. Community spaces are created according to culture, value and processes. Community entry is a prerequisite of any meaningful participatory process.

Some of the principles that guide community entry are: Respectful dialogue- be always ready to learn; Sensitivity to needs and Historical perspectives

The goals of community entry include:

- Contextual grounding– having a better understanding of the community
- Build trust and confidence
- Generate support
- Obtain genuine information

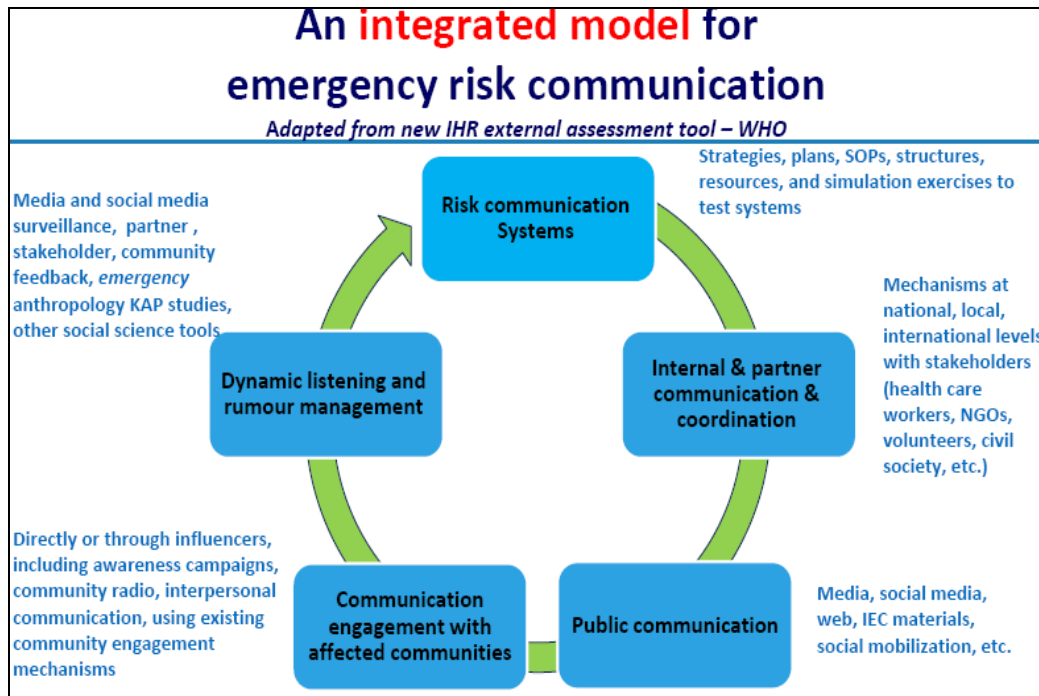
Critical actions in community entry:

- Identify the community by gathering information through formal and informal means
- Identify the leadership
- Talk to knowledgeable people
- Read available literature

7.3 Integrated Risk Communication Model

Since risk communication is a complex activity involving different audiences, having an integrated approach in risk communication is very crucial. The key components for integrated emergency risk communication are indicated in the figure below. This model allows for the successful design and implementation of an effective communication strategy. The model highlights the necessity of a collaborative approach between different target audiences across the board.

Figure 15: An integrated model for risk communication



7.4 Principles for Effective Risk Communication

There are 8 key principles for effective risk communication as outlined below:

i. Creating and Maintaining Trust

Building and maintaining trust is arguably the most important function of an effective communication during an outbreak or a public health event and should include:

- Timely, transparent information regarding the nature of the threat
- The response to the event and
- Actionable advice on protective actions people can take, linked to functioning services to increase self-efficacy

Trust is considered the most important requirement for effective risk communication.

According to the latest evidence, risk communication in health emergencies should include genuine participation of the population taking account three key elements:

- The understanding of that population's specific context, concerns, beliefs, practices and traditions so as to shape scientific and logistic information, explanations that address community concerns (social science intelligence)
- Provision of understandable and trusted advice that they are likely to follow to save lives and bring the outbreak under control in the shortest possible time, in their own languages adapted to their educational levels and preferences (i.e., oral or visual), on channels and through interlocutors of their choice, (translational communication)
- Meaningful community engagement and the participation of their trusted interlocutors/messengers (means of dissemination)

Trust is thus the currency for all public health interventions, and has, in an era of information overload, emerged as the critical element for effective risk communication (i.e., the expert advice is acted on by key stakeholders, the affected and at-risk populations).

Risk communication should therefore aim at building, maintaining and restoring the trust of the public in those charged with the responsibility of managing the risk.

The latest evidence from 21st century epidemics highlights that to build trust, risk communication interventions should;

- Be linked to functioning and accessible services
- Be transparent and timely
- Be easy to understand for target populations (i.e., in their preferred oral or visual forms; and in their own languages or dialects, targeted to their educational levels and cultural references)
- Acknowledge and communicate uncertainty (don't over reassure, don't speculate; but communicate frequently so that the evolution of an event and our understanding is transparent and not a cause of destroying trust)
- Link to self-efficacy (can people really do what you ask them, do they have the ability, equipment, services, education they need to adopt our advice?)
- Be disseminated using multiple platforms, methods and channels
- Identify, involve and collaborate with people that the community trusts in decision-making and not just in information dissemination. This ensures that interventions and the communication about them are contextually appropriate and community-owned.

ii. Timely announcements and transparency:

In most cases, public response to a health threat depends on the way the first and subsequent announcements are made. This necessitates announcing an event or threat as and when it emerges, even when the information is incomplete or changing fast. This in turn implies that communicating uncertainty is a cornerstone of risk communication. Communication by authorities, response managers or front-line personnel must include;

- Information about the uncertainties associated with the risk, event and interventions
- Indicate what is known and not known at a particular moment in time
- A commitment, and follow up to keep people frequently informed and updated with the changing, uncertain situation
- Multiple platforms, mechanisms and trusted interlocutors to ensure that consistent and coordinated information reaches stakeholders and the population

iii. Listening to, understanding and respecting public concerns

Understanding public perceptions, concerns, fears and expectations is as critical for risk communication as understanding the risky practices and behaviours that affect risk. The understanding of communities must start before an emergency, as well as during an emergency. There are many ways to better listen to community concerns and understand their contexts that influence if the advice

for corrective or preventive practices given to them will actually be accepted and acted upon. These include Knowledge, Attitude, Practice (KAP) surveys or mini-surveys; community walk-throughs, focus group discussions, key informant interviews, getting feedback from stakeholders, social media and media monitoring, etc. A serious attempt must be made to make health interventions and health advices, based on evidence gathered using these methods and other social science approaches.

iv. Advance Planning and using integrated approaches

Risk communication is most effective when it is integrated with emergency preparedness, risk analysis and response (risk management). This means that a risk communication plan must be prepared during the preparedness stage. Emergency risk communication planning must occur in advance and be a continuous process with a focus on preparedness and prevention as well as response. Planning should be sensitive to stakeholders' needs. It should be participatory, responsive to the context and incorporate feedback from affected groups.

v. Ensuring Equity:

All citizens have a right to appropriate information about health risks, including what needs to be done in response to threats to their health. Unfortunately, large segments of society are excluded from routine communication about threats to health. Risk communication must therefore ensure equitable sharing of information to the public and avoid exclusion of marginalized members of society from health action. This means paying attention to the reach of communication, using trusted channels and interlocutors, not using jargon or technical language, use of people's own languages and dialects, adapting messages to people's levels of understanding and education; and ensuring that the actions promoted are those that people can realistically change. Special attention should be paid to analysing power dynamics in communities and taking special measures to reach those hardest to reach (women, minorities, the very old and young, people with disabilities, the poor, migrants and refugees, etc.)

vi. Coordinate

Proactive internal communication and coordination with partners before, during and after an emergency is crucial to ensure effective, consistent and trustworthy risk communication that addresses both information and public concerns

vii. Be proactive in public communication

All public communication, including media outreach and via other preferred channels to the affected populations and stakeholders (even with incomplete info) prevents rumours, misinformation while demonstrating transparency and sincerity

viii. Build national capacity, support national ownership

Strengthening policies, plans, trained personnel, platforms, processes, etc. of key stakeholders, including government, NGOs, civil society, journalists and other key national and international players is key to preparedness for effective risk communication for health emergencies

7.5 Create an enabling environment for effective risk communication

- (i) Establish risk communication systems and structure at the community, district, regional and national levels.

If not present, then establishing multi-sectoral communication committees/ structures across all levels ToRs can be expanded depending on the pre-outbreak, outbreak and post outbreak phase in line with each function (See Annex 7B).

- (ii) Ensure the communication system has a link to the community leadership structure as they have a strong impact on the community.

A quick assessment of the framework for public health emergency risk communication can be made and this can include:

- Conduct a risk profile
- Identify risk communication needs
- Conduct risk communication stakeholders mapping at all levels and develop database
- Conduct resource mapping for risk communication plan

- (iii) Conduct mapping of languages and dialects;

Religions; preferred and trusted means/channels/ and interlocutors (sources) for communication; traditional practices that are relevant for the top priority health risks and use this intelligence to shape risk communication strategies and plans. If not available, then at district, regional level, identify a government spokesperson and ensure he/she is trained in procedures for public communication

- (iv) In addition to risk communication personnel, all frontline personnel should receive basic training in risk communication (surveillance, contact tracing, case management, social mobilization, community engagement, burial teams, health personnel, volunteers).
- (v) Develop a Risk Communication Plan for Public Health Emergencies at the district as well as regional and national level and ensure key stakeholders are oriented on the procedures for Risk Communication. A sample risk communication implementation plan is shown in
- (vi)
- (vii) **Table 10.**
- (viii) Develop a coordination platform and mechanisms for internal and partner communication for engaging key stakeholders including media outlets; community radio networks; including roles and responsibilities
- (ix) Have detailed budgets and advocate strongly for resources mobilization, and multi-sectoral collaboration to implement public health emergency and risk communication activities at all levels.
- (x) Create a system for dynamic Listening and Rumour Management

Table 10: Template of a risk communication implementation plan

Strategy	Broad Activities	Materials Needed	Implementers	Indicators	Budget	Timelines
Advocacy	Activity 1	Indicate materials needed to support implementation	Indicate level and implementation partners	Indicate the bench mark used to measure the activity	Indicate total cost of activity	Indicate date/period of activity
	Activity 2 etc.					
Social Mobilization	Activity 1	Indicate materials needed to support implementation	Indicate level and implementation partners	Indicate the bench mark used to measure the activity	Indicate total cost of activity	Indicate date/period of activity
	Activity 2 etc.					
Communication activities	Activity 1	Indicate materials needed to support implementation	Indicate level and implementation partners	Indicate the bench mark used to measure the activity	Indicate total cost of activity	Indicate date/period of activity

7.6 Communicating before, during and after the public health event

7.6.1 Pre-Outbreak/Routine Risk Communication

A big proportion of communication activities should be implemented in the pre-emergency phase for better preparedness. People managing communication activities should take advantage of the absence of an emergency to build the country's communication capacity and develop communication plans and tools to bring the nation to a high level of communication preparedness. The pre-emergency phase should also be used to develop the necessary communication messages and materials and promote practice of behaviours that can prevent the risk.

Before an outbreak, the following should take place:

- Constitute a Risk Communication Sub-Committee that consists of government and non-government stakeholders engaged in communication and community engagement. The Sub Committee should meet routinely to:
 - Review past emergency communication interventions to draw lessons learned, build on successful practices and avoid negative ones
 - Collect and analyse epidemiological and social data about periodic disasters and outbreaks; outbreak seasons of common diseases; expected at-risk communities/populations; as well as accessible and credible channels of communication
 - Review or develop the risk communication plan and required risk communication materials/logistics
 - Build capacity of all stakeholders in risk communication and identify/train a spokesperson to be ready when an outbreak occurs.

- discuss the implementation of risk communication activities and findings from the community level.
- Alert all relevant entities and notify them on their role/s in case the expected outbreak occurs.
- Ensure that messages and materials have been developed, pre-tested, approved, and are ready for production and dissemination.
- Ensure that all required training modules, guidelines and monitoring checklists are developed and updated.
- Develop and share standard operating procedures (SOPs) for social mobilization and community engagement and ensure integration of risk communication in the overall emergency response plan.
- Identify and prepare database of stakeholders and partners, such as groups or organizations that focus on youth or women; schools, religious institutions, CSO, theatre groups and other community groups that can disseminate messages at the grassroots level and involve them in preparedness activities
- Identify all the channels of communication available to spread the message and assess the reach and credibility of these channels.
- Produce a 'Response Kit' which includes key frequently asked questions, media briefs, training manual, micro-planning tools, monitoring checklists/tools, communication plan templates and key IEC messages/materials for rapid distribution. This kit is for the use of communication practitioners at all levels.
- Establish communication lines with media; journalists, radio/TV stations; train them and keep them continuously up-dated.
- Pre-arrange activities with theatre groups, musicians and traditional community entertainers.
- Identify and train community health workers, community leaders, religious leaders, influential people, women's groups, youth groups and other social mobilizers in SBCC and risk communication
- Identify mechanisms for communicating with hard-to-reach and vulnerable populations (older persons, persons with disabilities, children, the nomadic) and with people who are isolated, in order to ensure that they will have access to health protection information and assistance
- Define communication channels to be used to reach vulnerable groups.
- Disseminate messages that describe actions that the government is taking to protect the public and health care workers, promote awareness of the coming health threat and preventive behaviours and actions that individuals, families and communities can take to reduce the risk and this can be done through mass media e.g., local community radios, public health address, community drama groups, television, print media, social media (such as Facebook, WhatsApp, Twitter), and websites etc.
- Conduct community engagement activities and build trusted relationships between those in authority and communities through training, dialogue, consultations, capacity building. It is important to note that effective community engagement relies on having trusted relationships between those in authority and communities, so use every opportunity to strengthen these relationships in the pre-emergency phase.

- Use ongoing health education, health promotion and other means to create, test and build trust in the systems, panellists that can be used in emergencies for risk communication.
- Make arrangements for a call centre, which can be started immediately when the emergency occurs.
- Establish a media monitoring team to monitor the news and social media
- Maintain and update list of media houses
- Establish a pool of risk communicators to deploy during an emergency response
- Develop plans for routine monitoring of misinformation and rumours and set up a media monitoring system for keeping track of behaviours and practices related to the emergency

Communication methods for dissemination of public health information when there is no outbreak

- Conduct community sensitization and public awareness using community drama groups, public addresses, meetings, social media and local community radios
- Conduct ongoing health education

Note that:

- It is important to integrate to the extent possible, social science data that should be gathered too. Data on the context, socio-cultural information (including education, traditional practices, health seeking and health care giving behavior, and beliefs) relevant to priority hazards and epidemic prone disease should also be obtained. This will help epidemiological data to be contextualized and for real intelligence, be created basing on the risks and shape possible health interventions.
- It is important to organize periodic interactions with stakeholders who will be involved in risk communication for prevention and preparedness or in response should an event or emergency occur. This includes local, regional or national media, community radios, civil society and stakeholders from other sectors for example, involve the animal health sector where a zoonotic influenza is a priority threat.

7.6.2 Risk communication during outbreak response

During an outbreak response, and when the public is at risk of a real or potential health threat, treatment options may be limited, direct interventions may take time to organize and resources may be few.

Communicating advice and guidance, therefore, often stands as the most important public health tool in managing a risk. The focus of outbreak communication is to promote outbreak control and mitigate disruption to society by communicating with the public in ways that build, maintain or restore trust.

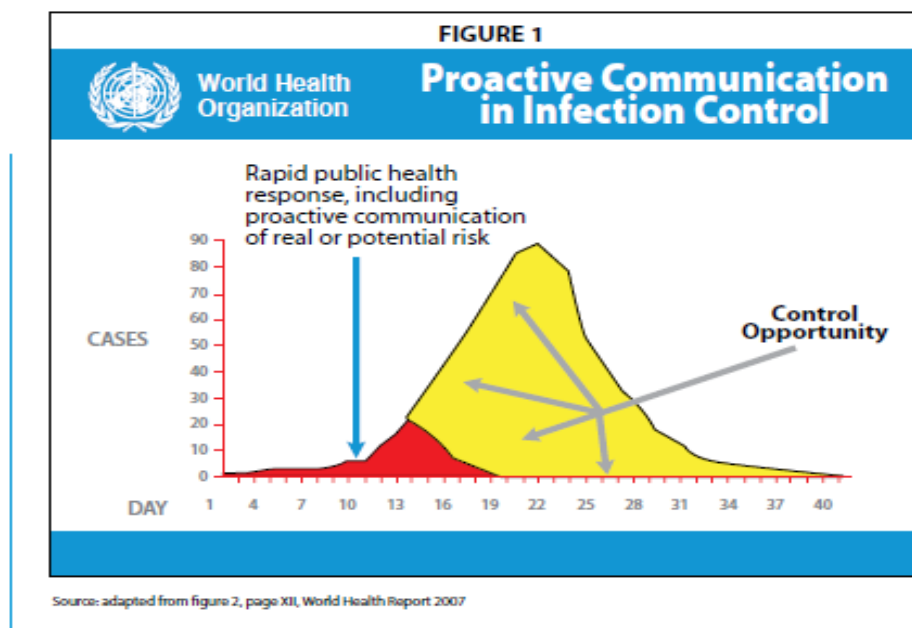
Pro-active communication encourages the public to adopt protective behaviours, facilitates heightened disease surveillance, reduces confusion and fear and allows for a better use of resources, all of which are

necessary for an effective response. Pro/active communication also shows that health authorities are in control of the situation and care about the public and build trust between them and the community at large. People have a fundamental right to information and to participation. In addition to the public health objectives, remember that people have a right to information on protective actions and they have a right to participate in and shape interventions that are acceptable to them.

Figure 16 illustrates a typical epidemic curve which tracks number of cases over time that could occur during an infectious disease outbreak. The yellow area represents the number of cases which could be avoided with the control opportunity of a rapid response to the threat.

The blue arrow indicates the point at which proactive communication plays a crucial role in supporting such a rapid response. By alerting a population and partners to an infectious disease risk, surveillance of potential cases increases, protective behaviours are adopted, confusion is limited and communication resources are more likely to be focused. Effective communication can help limit the spread of a disease and ultimately save lives. It also minimizes damage to societies and economies and can help communities recover faster from a health event or emergency.

Figure 16: Epidemic curve illustrating the importance of proactive communication



Identify and coordinate partners and other stakeholders during an outbreak

Outbreaks usually create fear in the community. Involvement of several different stakeholders sometimes leads to uncoordinated and duplication of effort. Provision of timely and accurate information through a well-coordinated mechanism is important.

Internal coordination of communication among national stakeholders is key during an emergency. The Risk Communication and Social Mobilization Subcommittee has the responsibility of ensuring that there

is an internal communication system among national stakeholders to ensure information flows to different government sectors on time.

Partner coordination is another key element during outbreak and event response and is aimed at fostering ownership, effective participation of key players and efficient use of resources. It establishes routine communication structures among health workers, community and partners. It helps ensure that this vital link is available and functional during an emergency. If a district, national level has a Risk Communication Plan, these would have been addressed in the Plan.

Coordination helps ensure that messages reaching the population are consistent and not contradictory or confusing and thereby promote trust and the likelihood that expert advice will be followed.

The IMT through the PHEOC or through a similar coordination structure at national level may take responsibility for ensuring communications are consistent and reflect the data that has been analysed. Ensure the focus of the communication activities are transparent and accurate, and take into account community experiences and expectations regarding the outbreak.

Distinguish between communication with stakeholders who are experts and those who are part of the response and require a more layman's description and explanation. They and other important interlocutors/panellists such as the media and civil society (and the general population) will require targeted and adapted products and messages. This means that carefully segmenting and targeting audiences, adapting materials, messages and mechanism to suit each of them is essential.

Communicate with the affected community and stakeholders

Communication with affected communities and stakeholders, including the media is essential during outbreak and event response. Thus, establishing routine communication structures and processes between the health and community partners helps to ensure that this vital link is available and functional during an emergency.

Options for communicating between the various partners can range from press releases, press conferences, television and radio messages, meetings (health personnel, community, religious, opinion and political leaders), IEC materials (posters, fliers), multi-media presentations (for example, films, video or narrated slide presentations) at the markets, health centres, schools, women's and other community groups, service organizations, religious centres, local community media, Social media (Facebook, Twitter, WhatsApp, etc.), SMS, telephone, hand-carried message, Community drama groups/play group; site visits; , email updates and exchanges of communication materials to more formal decision-making committees. Regardless of the mechanism, ensure that the focus is on transparent and trustworthy communication that considers community experiences.

Ensure the messages:

- **Are clear and understandable to the audience:** What, why and how it is happening? What threats to health exist or are likely to occur? What should the public do? Where can people get services or information? What assurances can be given? Are the messages written in an understandable language and to the levels of understanding of the audience? Research shows that risk should not be explained in technical terms.

- **Consider these factors:** Who is your audience? What do you want your audience to do after provision of this message? Do they have the enabling environment to do as advised? Are there functioning and accessible services that enable them to follow the advice?
- **Promote dialogue:** promote two-way communication exchange; listen to audience's concerns and respond appropriately rather than just informing.
- **Demonstrate empathy and caring:** Are you showing empathy for their suffering? Are you being too cold and clinical? Are you respectful?
- **Are harmonized and consistent:** ensure that consistent messaging goes to the public notwithstanding the different partners involved in dissemination of information. Use message maps and other tools to keep the same frame and logic for the messaging but allow partners to adapt to the context of more segmented audiences. Are messages consistent regardless of who is issuing them? Inconsistent or conflicting messages create confusion and destroy trust in the response and authorities.
- **Establish a mechanism of continuous collation of facts and figures of the public health event**

NB: Consider pre-testing the messages from similar settings before dissemination

In case of rumours, quickly respond to them and any inaccuracies in general and especially within the specific audience where they have occurred. Consider setting up a rumour monitoring system. Widespread damaging rumours should be counteracted through public statements or press conferences. Provide comprehensive information to prevent rumours being generated from your response.

On a regular basis, district and regional responders should meet with the local leadership to give:

- Frequent, up-to-date information on the outbreak and response
- Clear and simple health messages for the media
- Clear instructions to communicate only the information and health education messages from the IMT by the media

Develop and strategically place and disseminate IEC materials e.g. fact sheets, posters, flyers

Fact sheets are brief summaries of 1 to 2 pages. They are usually prepared by health staff for consumption by the general public and deal with a single topic or message. For example, a fact sheet on a *Shigella* outbreak in a district may contain the following information for the community; the cause of *Shigella*, how it is transmitted, steps for prevention and updates on the number of cases and deaths. The fact sheets could be posted on a bulletin board or distributed to community groups that are planning health education campaigns. Where possible transform the fact sheets into audio products (audio files, short audio recordings on a phone, or scripts), and into visual products (like posters or infographics). These can be used depending on the preference of the audience for audio (oral or visual/written/illustrated communication). See attached sample in Annex 7A.

Distribute also other IEC materials, which have been prepared. Ensure they have been pre-tested with the target audience to ensure comprehension and meaning.

Develop and distribute public health situation reports during outbreaks

In Uganda, public health bulletins are published at national and district level, but during outbreaks, these situation reports (Sitrep) will be produced more regularly and describe the outbreak. These sitreps have a wider audience than just the health staff in a particular district or health facility. They are usually brief (<10 pages) are seen by policy makers, legislators and other decision-makers, and are valuable channels for reaching technical and development partners.

The bulletins/Sitreps contain at least:

- A summary table showing the number of reported cases and deaths to date for each priority disease
- A commentary or message on a given disease or topic
- Inclusion of any relevant social science data on risky practices, behaviours and other factors.

If a national public health situation report is sent to the district office, display it where everyone can see it. Make copies and distribute to health facility staff. Take a copy of the report with you on your next supervisory visit to show health workers how data produced during outbreak contributes to public health.

Communicating to media

The media is a major influence and should be seen as a partner in risk communication. However, the media is often associated with political or private interests and can therefore have biases of their own. They are also able to find and report on people's concerns, sensationalize stories and may not always be based on facts and evidence. Therefore, it is essential to meet regularly with, brief and educate the media on priority hazards and on response systems and provide them with appropriate information so as to cultivate a respectful and trusted relationship with them. Media will enable a wider dissemination of messages on radio or other appropriate means.

As part of your risk communication plan, determine how you will announce news of the outbreak and then how you will keep the media regularly informed. Often, regular press releases and media briefings are appropriate tools for communicating with the media. If the emergency is complex, convening a workshop with targeted media is helpful to ensure correct information is disseminated, as most journalists have not been trained in medicine or public health.

In addition, it is good to develop media kits which could include fact sheets and community messages about the priority diseases and events.

Ensure prior to the outbreak you have reached out to media and identified the key outlets you will need to work with during an outbreak. Prior to an emergency it is also good, to identify the clearance process for media products and appreciate the following:

- Ensuring prompt and frequent access to experts, officials and spokespersons who will speak authoritatively and credibly on the issue at hand.
- Provide media training for spokespersons
- Spokespersons must be the ones who speak in lay (understandable) language and explain scientific ideas and terms well, those who do not speak in jargon and those who illustrate the information with easy-to-understand stories or examples. Talking points could be used with messages as simple as possible and the talking points should have latest information. Please ensure that spokespersons

identified could also communicate the uncertainty in an evolving event well and admit when they don't know something. Community case definitions and talking points will aid the spokesperson to deliver correct messages.

- Promptly answering journalists' calls as a show of respecting them
- Give them accurate and well explained information.
- Give exclusive stories and interviews to provide a different perspective
- Provide human interest stories
- Give them clear easy to use handouts (written, audio, visual or audio-visual)
- Use examples from the affected communities

NB: Release information to the media only through the spokesperson to make sure that the community receives clear and consistent information.

Ensure monitoring the media daily to see how the outbreak is being reported. Include social media in your monitoring strategy. If you feel that the wrong messages are being disseminated, devise a strategy for how to correct this misinformation.

Communicating to health workers

Ensure you communicate regularly with the health workers by providing correct information pertaining the outbreak. It is important to communicate with health staff from different levels about the data sent (including any gaps), results of the analysis of these data and measures that are taken to respond to the potential public health event which they have reported. Communication can also include providing participating healthcare workers with any outbreak or event response reports for future reference.

Make sure that health workers provide correct information of number of cases (confirmed, in isolation, admitted, recovered, discharged) and any death that has occurred. Also, ensure you provide any changing information regarding case management or any other response intervention

Encourage health workers to keep updated, and to update them real-time during an event or emergency using reliable sources such as daily situation reports, press briefs from Ministry of Health, PHEOC, WHO's knowledge transfer platform (www.OpenWHO.org) on common, re-emerging and emerging epidemic-prone disease and on risk communication.

Increasingly during emergency response to disease outbreaks, Ministry of Health, WHO and other partners will provide real-time online, off-line or face-to-face training to update healthcare workers and response teams. These provide an opportunity for knowledge and skills updating or for acquiring new knowledge or skills.

Developing a Fact sheet

Fact sheets are brief summaries of 1 to 2 pages that are prepared by health staff for use by the general public and deals with a single topic or message. For example, a fact sheet on a Shigella outbreak in a district may contain the following information for the community; the cause of Shigella, how it is transmitted, steps for prevention and updates on the number of cases and deaths

The fact sheets could be posted on a bulletin board or distributed to community groups, that are planning health education campaigns. Where possible transform the fact sheets into audio products (audio files, short audio recordings on a phone, or scripts, and into visual products (like posters or infographics). These can be used depending on the preference of the audience for audio (oral or visual/written/illustrated communication

7.6.3 Risk communication after outbreak response

Prepare an outbreak or event response report

After an outbreak or event response has taken place, the response team who led the investigation should prepare a report. The purpose of the report is to document how the problem was identified, investigated, responded to, what the outcome was, decision taken and recommendations made. Make sure that the health unit that reported the initial cases receives a copy of the report.

Evaluate lessons learned in order to strengthen appropriate public responses to similar emergencies in the future.

- (a) Assess the effectiveness of IEC materials
- (b) Assess the effectiveness of the communications team in each phase and area of work.
- (c) Assess the effectiveness of meetings.
- (d) Assess the effectiveness of the internal flow of communications.
- (e) Assess the monitoring of communications and of the media.
- (f) Assess the response of the communications media.
- (g) Assess the outputs and outcomes of risk communication and community engagement

Periodic testing of the Risk Communication Plan

Carry out simulations to test risk communication plan in order to detect possible weaknesses or gaps that need to be corrected before an emergency. Revise the plan based on lessons learnt from the simulation exercise, after action review (AAR) or other assessment done.

WHO provides ready-made desk top and other simulation exercises on www.OpenWHO.org

For further reading, refer to ^{1,14,27,31,44-47}

Annexes to SECTION 7

Annex 7A: Sample Fact Sheet

Annex 7B: Terms of Reference for risk communication and community engagement

Annex 7C: Sample messages for community education

- Hand-washing
- Safe handling of food
- Safe disposal of human waste
- Clean drinking water and storage
- Safe burial of bodies
- Reducing exposure to mosquitoes

Annex 7D: Sample District Outbreak Report

Annex 7A: Sample Fact Sheet-Influenza A Virus

Influenza A Virus

General information about Avian Influenza A Virus Infections in Humans

(Reference http://www.who.int/influenza/human_animal_interface/faq_H7N9/en/)

Influenza A H7 viruses are a group of influenza viruses that normally circulate among birds. The influenza A (H7N9) virus is one subgroup among the larger group of H7 viruses. Although some H7 viruses (H7N2, H7N3 and H7N7) have occasionally been found to infect humans, no human infections with H7N9 viruses have been reported until recent reports from China.

What are the main symptoms and signs of human infection with influenza A (H7N9) virus?

Thus far, most patients with this infection have had severe pneumonia. Symptoms include fever, cough and shortness of breath. However, information is still limited about the full spectrum of disease that infection with influenza A (H7N9) virus might cause.

Why is this virus infecting humans now?

We do not know the answer to this question yet, because we do not know the source of exposure for these human infections. However, analysis of the genes of these viruses suggests that although they have evolved from avian (bird) viruses, they show signs of adaption to growth in mammalian species. These adaptations include an ability to bind to mammalian cells, and to grow at temperatures close to the normal body temperature of mammals (which is lower than that of birds).

What is known about previous human infections with H7 influenza viruses globally?

From 1996 to 2012, human infections with H7 influenza viruses (H7N2, H7N3, and H7N7) were reported in the Netherlands, Italy, Canada, United States of America, Mexico and the United Kingdom. Most of these infections occurred in association with poultry outbreaks. The infections mainly resulted in conjunctivitis and mild upper respiratory symptoms, with the exception of one death, which occurred in the Netherlands. Until now, no human infections with H7 influenza viruses have been reported in China.

Is the influenza A (H7N9) virus different from influenza A (H1N1) and A (H5N1) viruses?

Yes. All three viruses are influenza A virus but they are distinct from each other. H7N9 and H5N1 are considered animal influenza viruses that sometimes infect people. H1N1 viruses can be divided into those that normally infect people and those that normally infect animals.

How did people become infected with the influenza A (H7N9) virus?

Some of the confirmed cases had contact with animals or with an animal environment. The virus has been

found in a pigeon in a market in Shanghai. It is not yet known how persons became infected. The possibility of animal-to-human transmission is being investigated, as is the possibility of person-to-person transmission.

How can infection with influenza A (H7N9) virus be prevented?

Although both the source of infection and the mode of transmission are uncertain, it is prudent to follow basic hygienic practices to prevent infection. They include hand and respiratory hygiene and food safety measures; Hand hygiene; Wash your hands before, during and after you prepare food; before you eat; after you use the toilet; after handling animals or animal waste; when your hands are dirty; and when providing care when someone in your home is sick. Hand hygiene will also prevent the transmission of infections to yourself (from touching contaminated surfaces) and in hospitals to patients, health care workers and others. Wash your hands with soap and running water when visibly dirty; if not visibly dirty, wash your hands with soap and water or use an alcohol-based hand cleanser. Respiratory hygiene. Cover your mouth and nose with a medical mask, tissue, or a sleeve or flexed elbow when coughing or sneezing; throw the used tissue into a closed bin immediately after use; perform hand hygiene after contact with respiratory secretions.

Is it safe to eat meat, i.e. poultry and pork products?

Influenza viruses are not transmitted through consuming well-cooked food. Because influenza viruses are inactivated by normal temperatures used for cooking (so that food reaches 70°C in all parts— "piping" hot — no "pink" parts), it is safe to eat properly prepared and cooked meat, including from poultry and game birds. Diseased animals and animals that have died of diseases should not be eaten. In areas experiencing outbreaks, meat products can be safely consumed provided that these items are properly cooked and properly handled during food preparation. The consumption of raw meat and uncooked blood-based dishes is a high-risk practice and should be discouraged.

Is it safe to visit live markets and farms in areas where human cases have been recorded?

When visiting live markets, avoid direct contact with live animals and surfaces in contact with animals. If you live on a farm and raise animals for food, such as pigs and poultry, be sure to keep children away from sick and dead animals; keep animal species separated as much as possible; and report immediately to local authorities any cases of sick and dead animals. Sick or dead **animals** should not be butchered and prepared for food.

Is there a vaccine for the influenza A (H7N9) virus?

No vaccine for the prevention of influenza A (H7N9) infections is currently available. However, viruses have already been isolated and characterized from the initial cases. The first step in development of a vaccine is the selection of candidate viruses that could go into a vaccine. WHO, in collaboration with partners, will continue to characterize available influenza A(H7N9) viruses to identify the best candidate.

These candidate vaccine viruses can then be used for the manufacture of vaccine if this step becomes necessary.

Does treatment exist for influenza A (H7N9) infection?

Laboratory testing conducted in China has shown that the influenza A (H7N9) viruses are sensitive to the anti-influenza drugs known as neuraminidase inhibitors (oseltamivir and zanamivir). When these drugs are given early in the course of illness, they have been found to be effective against seasonal influenza virus and influenza A(H5N1) virus infection. However, at this time, there is no experience with the use of these drugs for the treatment of H7N9 infection.

Is the general population at risk from the influenza A (H7N9) virus?

We do not yet know enough about these infections to determine whether there is a significant risk of community spread. This possibility is the subject of epidemiological investigations that are now taking place.

Are health care workers at risk from the influenza A (H7N9) influenza virus?

Health care workers often come into contact with patients with infectious diseases. Therefore, WHO recommends that appropriate infection prevention and control measures be consistently applied in health care settings, and that the health status of health care workers be closely monitored. Together with standard precautions, health care workers caring for those suspected or confirmed to have influenza A(H7N9) infection should use additional precautions

Does this influenza virus pose a pandemic threat?

Any animal influenza virus that develops the ability to infect people is a theoretical risk to cause a pandemic. However, whether the influenza A(H7N9) virus could actually cause a pandemic is unknown. Other animal influenza viruses that have been found to occasionally infect people have not gone on to cause a pandemic.

Preventing Human Infection with Avian Influenza A Viruses

The best way to prevent infection with avian influenza A virus is to avoid sources of exposure. Most human infections with avian influenza A viruses have occurred following direct or close contact with infected poultry.

Seasonal influenza vaccination will not prevent infection with avian influenza A virus, but can reduce the risk of co-infection with human and avian influenza A virus.

Because rare episodes of limited, non-sustained human-to-human transmission of HPAI H5N1 virus has been reported, persons should avoid sick patients who have suspected or confirmed HPAI H5N1 virus infection. Health care personnel caring for patients with suspected or confirmed HPAI H5N1 virus infection should wear recommended personal protective equipment and follow recommended infection control measures (standard, droplet, contact, and airborne precautions).

Annex 7B: TOR for Risk Communication and community engagement

- Provide risk communications materials and plans
- Conduct rapid assessment to establish community knowledge, attitudes, practices and behavior on prevailing public health risks/events
- Organize sensitization and mobilization of the communities
- Serve as focal point for information to be released to the press and public
- Liaise with the different subcommittees, local leadership and NGOs involved in activities on mobilizing communities
- Relay concerns of the communities to the Task Force
- Prepare and submit reports to the NTF/DTF

Annex 7C: Sample Messages for Community Education

Improve hand washing

Hand-washing with soap may be the most effective way to prevent transmission of some organisms causing infectious diseases. For that reason, promote hand-washing in every family. Hand-washing is particularly important after defecation, after cleaning a child who has defecated, after disposing of a child's stool, before preparing or handling food and before eating.

Hand-washing is practiced more frequently where water is plentiful and within easy reach. If possible, water for washing should be stored separately from drinking-water. During an epidemic, soap should be provided to those without it. If soap is not available, wood ash or alcohol hand rub can be used to scrub the hands. Do not dry washed hands with dirty cloths. Air-dry wet hands.

Message:

ARE YOU PROTECTED FROM DYSENTERY (bloody diarrhoea)?

Washing your hands protects yourself and others from disease.

Always wash your hands:

- after defecation
- after cleaning a child who has defecated
- after disposing of a child's stool
- before and after eating
- before preparing or handling food.

Message:

ARE YOU READY FOR HANDWASHING?

Do you have

- Clean water and soap (or if you do not have soap, use ash or earth to scrub your hands)
- Clean cloth for drying.

DO YOU PREPARE FOOD SAFELY?

Cooking kills germs

- Thoroughly cook all meats, fish and vegetables
- Eat cooked meats, fish and vegetables while they are hot.

Washing protects from disease

- Wash your hands before preparing or serving food
- Wash your dishes and utensils with soap and water
- Wash your *cutting board* especially well with soap.

Peeling protects from disease

- Only eat fruits that have been freshly peeled (such as bananas and oranges)

KEEP IT CLEAN: COOK IT, PEEL IT, OR LEAVE IT.

Five Ways to Safe Guard Food

- Keep yourself clean
- Separate raw and cooked food
- Cook food thoroughly
- Keep food at safe temperature
- Use safe water and raw materials



Safe disposal of Human Waste

High priority should be given to ensuring the safe disposal of human waste at all time, and especially during epidemics of diarrhoea. Sanitary systems appropriate for local conditions should be constructed with the cooperation of the community.

Community messages should emphasize:

- Everyone should use latrines properly, including children
- Transfer children's excreta with a scoop or shovel to the latrine or bury in a hole.
- Avoid defecating on the ground, or in or near the water supply.
- Treat or boil all drinking water

When large groups of people congregate, as at fairs, funerals, or religious festivals, ensure the safe disposal of human waste. If there is no latrine, designate areas for defecation and provide a shovel to bury the excreta.

Message:

ARE YOU PROTECTED FROM DYSENTERY (bloody diarrhoea)? DO YOU USE A TOILET OR LATRINE?

Germs that cause dysentery live in faeces. Even a person who is healthy might have dysentery germs.

- *Always use* a toilet or latrine. If you don't have one – build one!
- Keep the toilet or latrine *clean*
- *Wash your hands* with soap (or ash) and clean water after using the toilet or latrine.

KEEP IT CLEAN: USE A TOILET OR LATRINE

Clean drinking water and storage

▪ **Community drinking water supply and storage**

1. *Piped water.* To maintain safety, properly chlorinate piped water. To prevent entry of contaminated groundwater into pipes, repair leaking joints and maintain constant pressure in the system.
2. *Closed wells.* Equip with a well-head drainage apron, and with a pulley, windlass, or pump.
3. *Trucked in.* If locally available water is likely to be contaminated, drinking water should be supplied by tankers or transported in drums, if it is adequately chlorinated and a regular supply can be ensured. The trucking of water, however, is

expensive and difficult to sustain; it is usually considered a short-term measure until a local supply can be established.

▪ **Home drinking water storage and treatment**

When the safety of the drinking water is uncertain, it should be chlorinated in the home or boiled.

To prevent contamination of drinking water, families should store drinking water using one of the following types of containers:

1. *Covered containers* that are cleaned daily and kept away from children and animals. Water should be removed from the containers using a long-handled dipper, kept especially for this purpose.
2. *Narrow-mouthed containers* with an opening too small to allow the insertion of a hand. Water should be removed by pouring from the opening or spout.

Water used for bathing, washing and other purposes other than drinking need not be treated and should be stored separately from drinking water.

Safe disposal of bodies

The body fluids of persons who die due to diarrhoea or a viral haemorrhagic fever are still infectious. Use extreme caution when preparing the bodies of suspected cholera or viral haemorrhagic fever patients. Encourage safe funeral and burial practices

Reducing Exposure to mosquitoes

Mosquito control is the main intervention for reducing malaria transmission. It can reduce malaria transmission from very high levels to close to zero. In high transmission areas, mosquito control can significantly reduce child and maternal deaths. Personal protection against mosquito bites represents the first line of defence for malaria prevention.

Annex 7D: Sample District Outbreak Report

Sample district outbreak report _____

Title/Description (include disease/condition investigated) _____ Period _____ Place (Village, Parish, Sub-county District,) _____

Executive summary: _____

I. Introduction:

- Background
- Reasons for investigation (public health significance, threshold met, etc.)
- Investigation and outbreak preparedness

II. Methods:

- Dates of investigation
- Site(s) of investigation (health care facilities, villages, other)
- Case finding (indicate what was done regarding case finding, e.g., register review, contact investigation, alerting other health facilities, other)
- Laboratory specimen collection
- Description of response and intervention (include dates)
- Data management

III. Results:

- Date and location of first known (index) case
- Date and health facility where first case was seen by the health care system
- Results of additional case finding
- Lab analysis and results
- With text, describe key features of results of time, place, and person analysis
- Detailed results by time (epi curve), place (map), and person characteristics (tables) and line lists
- Results of response and evidence of impact

IV: Self-evaluation of the timeliness and quality of preparedness, outbreak detection, investigation, and response

Epidemic Preparedness

Indicator	Yes	No
Were adequate drugs and medical supplies available at the onset of the outbreak		
Were treatment protocols available to health workers?		
Does the District Task Force regularly meet as part of epidemic preparedness?		

Outbreak Detection

Indicator	Date 1	Date 2	Interval

Interval between onset of index case (or occurrence of an unusual cluster at the community level) [date 1] to arrival of first outbreak case at the health facility [date 2] (Target: <3 days)			
Interval between initial outbreak case seen at the health facility (or date of outbreak threshold crossing at the health facility) [date 1] and reporting to the district health team [date 2] (Target: within 24 hours)			
Cumulative interval between onset of index case (or occurrence of an unusual cluster at the community or health facility) [date 1] to notification to the district [date 2] (Target: <7 days)			

Outbreak investigation

Indicator	Yes	No
Were case forms and line lists completed?		
Were laboratory specimens taken (if required)?		

Indicator	Date 1	Date 2	Interval
Interval between notification of district [date 1] and district field investigation conducted [date 2] (Target: within 48 hours)			
Interval between sending specimens to the lab [date 1] and receipt of results by the district [date 2] (Target: 3-7 days, depending on type of test)			

Outbreak response:

Indicator	Date 1	Date 2	Interval
Interval between notification of outbreak to district [date 1] and concrete response by the district [date 2] (Target: within 48 hours of notification)			

Evaluation and Feedback:

Indicator	Date 1	Date 2	Interval
Interval between end of the outbreak [date 1] and finalization of outbreak report with case forms/line list sent to national level [date 2] (Target: 2 weeks)			

Indicator	Yes	No
Did the DTF meet to review investigation results?		

Was feedback given to health facilities and community?		
--	--	--

V. Evaluation of other aspects of the response:

VI. Interpretations, discussion, and conclusions:

VII. Recommended public health actions:

Comment on the involvement of the following levels/stakeholders: community, health facility, district, partners, Regional, and national.

District Task Force Chairperson:

Name _____

Signature _____

District Health Officer:

Name _____

Signature _____

Date report completed: _____

SECTION 8

**MONITOR, SUPERVISE, EVALUATE AND
PROVIDE FEEDBACK TO IMPROVE
SURVEILLANCE AND RESPONSE**

SECTION 8: MONITOR, SUPERVISE, EVALUATE AND PROVIDE FEEDBACK TO IMPROVE SURVEILLANCE AND RESPONSE

8.0 Monitor, supervise, evaluate and provide feedback to improve the surveillance and response system

Monitoring of surveillance and response systems refers to the routine and continuous tracking of planned surveillance activities (for example, reports are received on time), while evaluation which is done periodically (for example annually) to assess whether surveillance and response objectives have been achieved.

During support supervision, supervisors and health professionals work together to review progress, identify gaps/challenges, potential causes and develop feasible solutions to address them. Sustainable supervision and feedback, has been shown to contribute to improved performance of national diseases surveillance systems.

Benefits of routine monitoring and evaluation of IDSR system include:

Monitoring	Evaluation
<ul style="list-style-type: none"> - Tracking progress of implementation of planned activities and ensuring that planned targets are achieved in a timely manner - Tracking progress of targeted indicators of the quality and attributes of the system. - Identifying problems in the system in order to institute corrective and preventive measures in a timely manner; - Ensure that all implementers of the systems are held responsible and accountable for their defined activities. - Other stakeholders can receive information on the performance of the surveillance system. 	<ul style="list-style-type: none"> - Ensures that the surveillance system meets the objectives for which it was formulated; - Documents the status of, and any change in the performance of the system; - Provides evidence, based on which surveillance objectives, implementation strategy and planned activities can be implemented and/or modified; - Enables planning of resource allocation; - Provides explanations for achievements and failures in the system; - Provides specific recommendations for improving the system.

Monitoring and Evaluation of the surveillance system enables identification of problems, finding their solutions and also enable feedback measures to take place.

Questions to help evaluate include:

- Are surveillance objectives for existing activities being met?

- Was surveillance data used for taking public health actions?
- Did surveillance, laboratory and response activities have an impact on the outcome of health events in the facility / district?

8.1 Identify targets and indicators

Using indicators can be helpful in measuring the extent of achievement for a particular program or activity. Indicators are signs of progress – they are used to determine whether the programme/intervention is on its way to achieving its objectives and goal. This achievement is then compared to the overall recommended performance standards. Some disease-specific surveillance indicators also exist and can be used to monitor quality of the surveillance system e.g., AFP and Measles.

Indicators are also used to assess the performance of surveillance system, whether it is reaching its targets and objectives. For example, a district may have a goal of reaching 100% completeness of reporting on a weekly basis. An indicator can be developed to measure the proportion or percentage of facilities that are reporting. This proportion is then compared with the desired goal or target, and can be used to evaluate progress and, therefore, the quality of the service or activity.

8.1.1 Use indicators in accordance with national goals and specific plans

Use indicators according to national goals and specific plans to improve IDSR activities in the district. Select the indicators that are most relevant to the district’s plan for improving surveillance this year and that will provide information that the district can use.

Select data for measuring the indicators

After you have selected relevant indicators, specify the numerator and the denominator. For example, if a district’s objective is for all health facilities to keep trend analysis (lines) for selected priority diseases, the numerator and denominator are defined as follows:

Indicator: the proportion of health facilities in the district that have the current trend analysis for priority diseases.

Numerator: the number of health facilities that have current trend analysis for priority diseases

Denominator: the total number of health facilities in the district

Ensure sources of data are available

Each level should make sure that the level it supervises has the following sources of data available. For example, the national level has data available from the district and regional level to conduct the required monitoring activities.

Table 11: Types of sources of data at various levels

Data source	Community Level	Health Facility	District	Regional	National
Monitoring chart for tracking indicators (Sample charts are in Annex 8A.)	X	X	X	X	X
Outpatient register		X		X	
Inpatient register		X		X	
Laboratory register		X		X	
Health facility reporting forms		X	X	X	
Case-based and/or line listing reporting forms	X	X	X	X	X
Outbreaks investigations reports		X	X	X	X
Log of suspected outbreaks and rumours	X	X	X	X	X
Supervisory reports from health facility, district, /region, national	X	X	X	X	X
Laboratory reports/results received		X	X	X	X

8.2 Monitor the core functions for IDSR at district level

The indicators related to the core functions measure the processes and outputs from the surveillance system. This sub-section will highlight the key indicators at various health system levels as regard to the core functions. The core functions and their indicators are described in detail from Annex 8A-D and also in the IDSR matrix (Annex A of the introduction section)

The core functions are;

(i) Identify cases and public health events

Case detection is the process of identifying cases and outbreaks. Examples of indicators could be proportion of health facilities using Standard Case Definitions (SCD) to identify IDSR priority conditions.

(ii) Report Cases and Events

Reporting refers to the process by which surveillance data moves through the surveillance system from the point of generation to the next level. It also refers to the process of reporting suspected and confirmed outbreaks as well as notifying under the IHR 2005 of PHEIC using the decision instrument mentioned in section 2 Annex 2A. Examples of indicators could be Proportion of complete surveillance reports submitted to the next level

(iii) Data analysis and interpretation

Data analysis is the systematic process of examining data to generate relevant information for timely and appropriate public health action to be taken. Examples of indicators here could be Proportion of priority conditions/diseases for which a current line graph is available.

(iv) Investigate and confirm suspected cases/outbreaks

Examples of indicators for monitoring this core functions include Proportion of suspected outbreaks of epidemic prone conditions/disease notified to the next level within 24 hours of crossing the epidemic threshold and Proportion of investigated outbreaks with laboratory results

(v) Prepare

Epidemic preparedness refers to the existing level of preparedness for potential outbreak and includes availability of preparedness plans, stockpiling, designation of isolation facilities, setting aside of resources for outbreak response. Examples of indicators include Proportion of health facilities with stock of key items (for example PPE, specimen collection kits, case-investigation forms, I.V fluids, treatment kits) that are important in response and Proportion of districts with emergency preparedness and response plans

(vi) Respond

Examples of indicators for monitoring response include Proportion of districts with functional multi-sectoral District Task Force (DTF)

(vii) Provide Feedback

Feedback is a process in which the effect or output of an action is returned (fed-back) to modify the next action. Some examples of indicators for feedback include Proportion of districts producing regular epidemiological bulletins/reports and Proportion of health facilities with at least one IDSR technical support supervision visit in the previous quarter.

NOTE: *While all indicators for the IDSR core functions are important, WHO AFRO will measure the overall performance of core functions of IDSR in the countries, by using 16 key performance indicators explained in Annex 8I.*

8.3 Monitor the quality of IDSR activities at district Level

The quality of the surveillance system is defined by attributes such as the ones highlighted in the figure below.

Figure 17: Attributes/Qualities of a Surveillance System



Periodically the quality of the surveillance system should be assessed based on these attributes. Surveillance attributes can be evaluated using both quantitative and qualitative methods.

8.3.1 Monitoring other attributes for assessing the quality of the IDSR system

Some other key important attributes are summarized in the table below and can be used to assess the quality of surveillance system during periodic evaluation assessments (Table 12).

Table 12: Summary of other attributes for assessing quality of surveillance system.

Attribute	Definition	Examples of some questions to assist in assessment
Usefulness	Describes if the surveillance system has been able to contribute to the prevention and control initiatives or has been useful in contribution to the performance measures e.g., Usefulness of surveillance data in an early warning system	Is the system e.g., the early warning system able to detect outbreaks early? Example: A useful system over time must demonstrate that a certain intervention which has been instituted has worked. In a malaria program, data collected over time might show if ITN has been useful in reducing incidences of malaria among children under five
Simplicity	Simplicity refers to the structure of the system and the ease of implementation from the end user to those at higher levels	Is the system simple? e.g. is the standard case definition understandable? Does it have multiple reporting structures? Example: A health worker has to report maybe to the district as well as to another vertical program if a disease is under that program
Acceptability	Acceptability of a system is a reflection of the willingness of the surveillance staff to implement the system, and of the end users to accept and use the data generated through the system	How is the participation rate of health facilities? How is the completeness of reports? Example: number of health facilities submitting reports on time
Representativeness	Representativeness refers to the degree to which the reported cases reflect the occurrence and distribution of all the cases in the population under surveillance	Is the system covering all geographical areas to ensure accurate capture of cases? NB: A good system should be able to cover all population even those who are marginalized
Data quality	Data quality reflects the completeness and validity of the data recorded in the public health surveillance system.	For completeness one can examine the percentage of "unknown" or "blank" responses to items on surveillance forms NB: The validity depends on the quality of data. Error-prone systems and data prone to inaccurate measurement can negatively affect detection of unusual trends.

For further information on the other unmentioned attributes above, please refer to Centres for Disease Control and Prevention (CDC) (2001). Updated guideline for evaluating public health surveillance systems. MMWR: 50 (RR-13); 1-35.

8.4 Timeliness of Reporting

The single most important measure of timeliness is whether data are submitted in time to begin investigations and implement control measures. Timeliness of reporting should be measured against standards developed by each country in accordance with the timelines set by WHO AFRO. Important aspects of timelines of reporting in a communicable disease surveillance system include:

- timeliness of immediate notification, i.e., within 24 hours
- timeliness of weekly reporting
- timeliness of monthly reporting

8.4.1 Monitor timeliness of detection and notification of immediately reportable diseases or events

Monitor how well the system is able to detect immediately notifiable diseases, conditions or events. Monitor the interval between symptom-onset of the first known case and when the case was seen in the health facility. If this interval is too long, it will seriously affect the health outcome of individual patients and will alter the spread of the outbreak.

Other intervals to monitor for detection of immediately reportable diseases include monitoring reporting from the community to the health facility (within 24 hours of onset of illness) and the health facility to the next level (district-within 24 hours of onset of illness), from the district to the national level (within 24 hours) and from the time the threshold is reached to a concrete response (within 48 hours).

8.4.2 Monitor the timeliness of weekly reporting

An important indicator of a quality reporting system is the timeliness and completeness of reporting at each level. When reports are sent and received on time, the possibility of detecting a problem and conducting a prompt and effective response is greater. If they are incomplete, then the information cannot describe the problem. If reports are late, or are not submitted, the aggregated information for the district (or other administrative area) will not be accurate. Outbreaks can go undetected, and other opportunities to respond to public health problems will be missed.

8.4.3 Monitor the timeliness of monthly reporting

Routinely monitor the receipt of reports to evaluate the timeliness of reporting. A sample monitoring tool (**Annex 8G**) may be used. For example, use the record of reports received to: Measure how many health facilities submitted reports for a given month against the number of units expected to report; Identify which health facilities have reported; Measure how many monthly reports were timely.

8.5 Completeness of Reporting

Completeness in surveillance can have varying dimensions and may include the following:

8.5.1 Completeness of health facilities submitting surveillance forms

Completeness of reporting refers to the proportion of health facilities that submitted the surveillance report irrespective of the time when the report was submitted. Computing completeness of health facilities for each of the surveillance reports can:

- Provide a trend analysis on completeness of reporting for each of the surveillance reports over a period of time; and assist in identifying each health facility performance.
- It can also further trigger investigation for reasons for poor performances and possibly help to identify solutions to correct poor performance.

8.5.2 Completeness of case reporting

Completeness of case reporting refers to the match between the number of cases reported and the actual number of cases. This can be obtained by comparing the number of the reportable conditions reported to the next higher level over a period with the number of cases recorded in the patient register over the same period.

8.5.3 Completeness of surveillance data

Completeness of surveillance data is the match between the expected data requirement and what is reported. The following questions are useful in determining completeness of surveillance data and its implications on public health actions.

- Are all the data on each of the required variables in a surveillance form collected, registered, validated and compiled?
- If not, which variables are not routinely collected and what is the problem with their collection?
- What is the implication of the missing data on the quality of the surveillance data?
- How can this problem be resolved?

8.6 Report timeliness and completeness to other levels

When routine reports or line-listed records of the number of cases are sent to the regional or national level, also send the necessary data for timeliness and completeness. This will help the other levels understand the situation more clearly and evaluate the quality of the data that is being sent. For example, if the report to the national level states that two cases of measles were detected during the week/month, it should also include information about the number of health facilities that have reported. It will make a difference to the other levels when they evaluate the information if the two cases occurred with only 20% rather than 100% of the facilities reporting.

8.6.1 Identify problems and take action

If the monitoring information shows that a health facility has not provided a report, or if the report is not on time, contact the surveillance focal point at the facility. Work with the designated staff to identify what has caused the problem and develop solutions together (for example, find out if a reliable supply of forms or other reporting method such as text messaging is available). Explain to the facility staff the benefits of collecting good quality data and reporting it in a timely manner. For example, this can help them to detect outbreaks, improve medicines and supplies forecasting, and improve overall health facility management.

Additionally, ask if a new staff has started at the facility and is yet to receive orientation on the procedure for reporting. Or find out if health facility staff receives feedback about case reports they have generated and/or whether resources are available to take action as a result of the information.

Make plans with the health facility to find solutions for improving the situation. Explain that, when information is complete, the district can assist health worker more efficiently with planning responses and carrying them out. For example, if lack of supplies is a problem, the district can use the reporting information to advocate with higher levels in the system.

8.7 Monitor the quality of surveillance activities at community level

Monitoring CBS system is equally important as monitoring health facility, districts and regions. Community health workers/community focal persons/Village Health Teams (VHTs) involved in the system must understand the benefit of the system, and that their input is valued and can assist in improvement or adaptation of the system to work better for the community.

Qualitative feedback from VHTs and the community is an essential part of contextualizing and understanding quantitative CBS data. A system should be in place from the beginning to capture community and VHTs' feedback and this may involve one or more of the following approaches;

- Open and regular community meetings where all issues are noted and acted upon.
- Focus group discussions with VHTs and/or community leaders.
- Suggestions and complaints box (es) for use in the community.
- Appointment of a community representative(s) to gather feedback and complaints.
- Feedback platforms on mobile phones can be used by the VHTs to give feedback

There should also be community driven data analysis and monitoring, whereby the communities are supported to undertake their own data analysis. Communities can be provided with basic materials to record the type of occurrences they report and the resulting actions, as well as recording outbreaks or events that occurred but did not trigger an alert so that triggers can be adjusted. Some performance indicators listed below (table 8.3), are examples of indicators for community-based disease surveillance.

Table 13: Indicators for community-based disease surveillance

Indicator	Definition	Data source
Number of alerts detected	An alert is unofficial information about a disease, condition or event of public health importance which may be true or invented	CBDS reports
Proportion of alerts responded to within 24hr-48hr	<p>Numerator: Number of alerts responded to within 24hr-48hr</p> <p>Denominator: Total number of alerts detected from CBDS focal person</p> <p>NB: responding to alerts is defined as visit by the nearby health facility for case investigation, case management, health promotion, community sensitization and distribution of materials (Must be defined according to response plan)</p>	CBDS reports and response reports
Proportion of alerts which are true events	<p>Numerator: Number of true events detected</p> <p>Denominator: Total number of alerts reported</p>	CBDS reports and response reports

8.8 Support supervision for improving IDSR activities

Support supervision is a process of helping to improve work performance. Supervision is not an inspection. Rather, good support supervision aims to sustain good quality services rather than finding things that are wrong. In a good support supervision system, supervisors and health workers work together to review progress, identify problems, decide what has caused the problem and develop feasible solutions.

8.8.1 Steps for conducting supportive supervision:

(a) Ensure availability of terms of reference and Standard Operating Procedures (SOPs) for surveillance focal persons

Terms of reference and SOPs are the basis for conducting supervision and assessing performance. Review the terms of reference and SOPs of surveillance focal persons who have a role in the surveillance and response system. Make sure that the terms of reference state: the surveillance tasks to perform, Whom the focal person reports to and a defined scope of work and ensure that SOPs are adhered to in practice

(b) Prepare a supervision plan

Include surveillance and response targets in the overall plan for supervision in your district.

Districts should monitor health workers performance through conducting supervisory visits at least once quarterly for each health facility.

Ask health facility in-charges to make a schedule of the supervision they will conduct over the next year in their own facilities and to any community sites that report to the facility.

Make sure that transport is available for supervision and for surveillance activities that require transportation. For example, coordinate travel or logistics for surveillance supervisory visits with visits made by other programs or activities.

Include other health facilities in supervision of district surveillance activities such as private health facilities, pharmacies, drug-shops, and community health facilities in the overall plan.

(c) Use a supervisory checklist

Each health facility has unique problems and priorities that require specific problem solving and corrections. To maintain the positive motivation of the health facility, staff for making the improvements, consider developing a graduated checklist to guide the supervisory visit. The items listed in a graduated checklist (such as the one in Annex 8H) are some of the examples of achievements that a health facility can be evaluated on. Always refer to Annex (8 A-D) and look for additional examples to evaluate for each core surveillance function at the health facility level. Revise the supervisory checklist accordingly. Use it during future visits to help health worker monitor their activities and progress towards an improved system.

During the visit, use a checklist to monitor how well health workers are carrying out the recommended surveillance functions. For example, a district surveillance focal person visiting a health facility for a supervisory visit should verify the following:

Identify	Check the health facility register to see if the case diagnoses correspond to the recommended standard case definition
Register cases	Check the register to see if all the columns are filled out correctly
Confirm cases	Compare the laboratory records for priority diseases/ conditions with the number of cases seen in the clinic for the same period of time.
Reporting	Review reports for the most recent reporting period. Compare the number of cases of priority diseases/conditions that were reported with the number recorded in the register. Check the date on which the case report was sent against the date recommended for sending the report. Check the reports to make sure they are complete and accurate.
Review and analyse data	Verify that trend lines are prepared and kept up-to-date for priority diseases/ conditions. Ask to see the “Health Facility Analysis Book,”/ charts or the electronic health facility data in your district. Look to see if the trend lines for selected diseases are up to date.

Preparedness	Look at the stocks of emergency drugs, supplies and PPE to be sure there is an adequate supply.
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NB: *The questions to be answered during the supervisory visit can be adapted or modified to meet the specific concerns and extent of progress towards an integrated surveillance system within the health facility*

(d) Conduct supervisory visits

Conduct regularly scheduled supervision at all levels to ensure that:

Appropriate supplies (e.g., forms, job aids etc.) and required standard case definitions/guidelines are available.

Health workers know how to identify and use standard case definitions to record suspected cases of priority diseases seen in their health facility.

Priority diseases are recorded in the case register according to the standard case definition.

Data is analysed in the health facility to identify thresholds to take action both for routinely reported priority diseases (diseases of public health importance) and case-based diseases (epidemic-prone diseases, and diseases targeted for eradication or elimination).

Reported cases of diseases, conditions, or events for which a single case is a suspected outbreak or public health emergency are investigated promptly (for example a single confirmed case of Ebola, cholera or polio, maternal death, MDR/XDR TB).

Response takes place when outbreaks or other public health events are confirmed, or when problems are identified in routine reporting.

Response actions are monitored and action is taken by the health facility to improve surveillance and readiness for outbreak response.

Make sure during the visit to:

Provide feedback to health workers. Let the health workers know what is working and what is not working. Also give feedback on how the data reported previously was used to detect outbreaks and take action to reduce illness, mortality and disability in the district. If improvements are needed, discuss solutions with the health workers.

Provide on -job training as needed if a problem is identified.

Follow up on any request for assistance such as for emergency response equipment or supplies.

If a solution to a pre-existing problem was identified in a previous visit, check to see how well the solution has been implemented. Find out if problems are still occurring and modify the solution if necessary.

Ensure that both the supervisor and supervisee sign the supervision reports and also provide dates when the supervision was done.

(e) Write a report of the supervisory visit

Report achievements that were identified during the visit. Also state the follow-up actions that were planned with the health worker and any requests for additional resources, funds or special problems.

(f) Use supervisory visits to improve surveillance activities in the district

Visits of surveillance supervisors and regional or district disease control programs are good opportunities to discuss and improve disease control in your district. For example, if a national malaria control person visits the district, you might discuss why the inpatient malaria deaths have not been declining. You can ask about additional ideas or resources that the malaria control program can provide.

8.9 Providing feedback for improving IDSR activities

In most cases, health facilities and districts reliably report surveillance data to the next level as required. When the district or regional or central staff receive data, they should respond to the health facilities that reported it. The purpose of the feedback is to reinforce health workers effort to participate in the surveillance system. Another purpose is to raise awareness about certain diseases and any achievements of disease control and prevention projects in the area.

Feedback is classified as

- (i) supportive when it reinforces and acknowledges good performance, and
- (ii) corrective when a change in behavior and improvement is required. It also strengthens the communication and spirit of team working. The feedback should be both vertical and horizontal targeting at different audiences as provided by different levels in the health system.

Effective feedback should be;

- Specific to assure the recipient understands the subject of the feedback
- Should be based on the report submitted or the actual events and activities observed in the field
- Be given as soon as possible after receiving the report or field visit, so that the recipient will remember the activities that should be either sustained or corrected

If the facility does not receive information from the next level about how the data were used or what the data meant, health workers may think that their reporting is not important. As a result, future reporting may not be as reliable because health workers will not know if the information they sent to other levels was important or necessary. They will have a good understanding of the health situation at their own level, but they will not have the information they need for characterizing the situation at a district or national level. At the community level, feedback includes building relationships, communicating and coordinating with other community key informants, resource persons and existing formal and informal networks for information dissemination and reporting.

Feedback may be written, such as a monthly newsletter/bulletin, emails, WhatsApp, SMS or periodic official information like publications or it may be given verbally through telephone call or periodic meetings. Although this section focuses on district level feedback, this can also be applied in health facility and national levels. Feedback may also be given during supportive supervision carried out by Districts to health facilities, or Region to Districts or National to districts and regions. The supervision can be on performance of health programs and feedback can be provided during these visits.

8.9.1 Develop and disseminate routine epidemiological bulletins

Feedback should also be given periodically of IDSR priority diseases/ conditions, and this can be through weekly, monthly or quarterly epidemiological bulletins. The bulletins provide information on disease patterns and achievement of program objectives in the country. They are usually brief and are important for reaching policy makers, legislators, development partners, program technical staff and stakeholders. As a minimum, they contain:

- A summary table with the number of reported cases and deaths to date for each priority disease/condition
- A commentary or message on a given disease or topic
- Any relevant social, economic or cultural information or data on the context that can lead to the creation of real intelligence regarding an event.

A sample of a public health bulletin is shown in Annex 8J of this TG.

8.9.2 Develop information summary sheets

An information summary sheet is a report that presents data and its interpretation in a table or other graphic format. For example:

- At a staff meeting, or during a supervisory visit, give a verbal report or comment about the data that were reported by the health facility during a given period.
- Display the data in a simple table. Sit with the health worker and show them the data. Talk together about the likely conclusions that can be drawn. Consider conclusions not only for the health facility, but also for the district as a whole.
- Prepare a single sheet with a simple table that shows how the data reported for this period are different from the data reported for some other period or target population. For example, show the number of cases of diarrhoea with dehydration in children less than 5 years of age from the same period last year. Compare them with a corresponding period this year, after a safe water project was implemented in a high-risk area, for example, use the summary sheets to support requests made to higher levels for additional funds, supplies and resources.

8.9.3 Develop district newsletters

The purpose of a district newsletter is to provide shorter updates than those provided in a more detailed feedback bulletin. The district newsletter is useful for informing and motivating health workers. The target audience for a newsletter could be health workers in the district. The newsletter can be 2 to 4 pages long and produced simply.

Examples of articles that could be carried in a newsletter are:

- Summary of national or district data for a given priority disease
- Report of progress towards a specific public health target
- Report of a specific achievement towards public health by an individual health worker or a group of health workers
- Description of special events or activities (for example, a change in market day)

8.10 Evaluate effectiveness of the performance of IDSR strategy

The purpose of evaluation of a surveillance system is to assess the effectiveness of the system and response system in terms of timeliness, quality of data, preparedness, case management, overall performance and using the indicators to identify gaps or areas that could be strengthened. A comprehensive evaluation should, thus, include the surveillance system and if already available the IDSR Implementation Plan. The evaluation of the surveillance system should:

- Show to what extent the desired outputs and outcomes are achieved;
- Provide explanations for achievements, disparities and failures;
- Document the quality of system and demonstrate any changes in its performance;
- Demonstrate the extent to which the overall surveillance objectives are achieved.

Depending on the development status of surveillance in a district, select indicators for evaluation that will provide information that relates to the district's priorities and objectives for the year. If there is already an IDSR implementation plan with clearly defined objectives, then it is appropriate to conduct mid-term and end-of-term evaluations. Otherwise, surveillance systems should be evaluated every 2, 3 or 5 years.

8.10.1 Key steps in evaluation

Define your objectives

Objectives should be simple, measurable, attainable, realistic, and time-bound (SMART).

Development of evaluation indicators

Indicators should be identified for each of the evaluation objectives, and should be harmonized as much as possible with the monitoring indicators.

Development of evaluation methods and tools

Based on these indicators, an evaluation protocol should be developed describing how the evaluation will be conducted, methods, target group, data sources, data collection methods, and plan for data analysis and utilization

Identify people to conduct the evaluation

Determine who will be the evaluators; people within the districts, people outside the district, or a mixture including partners. Depending on the scope of the evaluation, its purpose and the available resources, a decision should be made during the planning stage on who should undertake them.

To ensure objectivity and transparency during the evaluation process, a blend of self/ internal evaluations and external evaluations should be conducted periodically.

8.10.2 Conducting the evaluation

Compile and organize monitoring data and other results

The district health office should summarize the surveillance data received from all health facilities in the catchment area, and submit the compiled report to the national and regional as appropriate. The submission of the report should not be delayed by late reports. Late reports may be submitted when they arrive. Follow up with health facilities who did not report or who consistently provide late reports.

Help the health facility to solve any problems that prevent them from submitting their summary reports on time. Provide feedback to health facilities about the indicator results on a regular basis.

The Community Health Department in the regional referral hospital should compile and submit the EPI/IDSR quarterly reports to the national level.

The national level should compile the surveillance data received from all the regions. The national level should look for epidemics that were not identified by the districts. Follow up with areas where reporting continues to be unreliable or does not happen at all. Support the regions in providing assistance to the districts when they evaluate the measurements and take action to improve the situation. Provide feedback to each of the levels about the national, provincial/regional, district and health facility levels.

Use a monitoring chart such as the one on the next page to monitor performance of the indicators at your level. Share these results with the staff in your catchment level. Acknowledge successes and help health worker to maintain the positive progress. When problems occur, talk together about what is causing the problem and how it can be solved. Seek assistance of the next level as needed for obtaining additional help or resources.

Gather data from several sources. For example:

- Review the objectives for the year listed in the district’s annual plan for improving surveillance and response.
- Gather the monthly summaries of cases and deaths reported to the district, spot maps, and other analysis results performed by the district.
- Collect any results from special surveys or studies that were done in the district over the last year.
- Include case investigation forms and reports of outbreak response activities that took place in the district.
- Gather summary information from the community and also from health worker

Analyse data

As you evaluate the summary data for the year, consider:

- Were the reports complete, on time and accurate?
- What were significant changes in disease or event trends during the year? If an increase occurred, was the problem identified?
- If additional cases are still occurring, why are they occurring? Where are they occurring?
- Were appropriate and timely actions taken in response to the surveillance data?
- Were supervisory visits conducted and follow up tasks carried out as planned?
- Did the community feel that response activities were successful?
- Were any actions taken to address health worker requests or suggestions about services or surveillance?
- Were appropriate measures taken to prevent similar events?

Identify problems and their causes

If expected targets or level of performance with any indicator were not met, identify the cause. Together with the district team and facility staff suggest possible solutions.

Update plans for improvements to the IDSR system

Include in the district plan successful activities that should continue. Also include feasible solutions selected as a result of analysis of the year’s annual evaluation. For example:

- State the new activity and its objectives.
- Specify the personnel who will carry out the activity.
- Estimate the cost of the activity.
- Develop a timetable for the activity. Define the sequence of activities in a logical order.
- Specify the logistics for the new activity (equipment, personnel, transportation, resource allocation).

Provide feedback to health facilities about the evaluation

Provide a report and give feedback to health facilities and other stakeholders in the district about the results of the evaluation activity highlighting:

- The objectives were for the year.
- Achievements
- Likely reasons for variation between what was planned and what was achieved.
- Recommended solutions and prioritized activities for improving surveillance and response in the district.

For further reading, refer to ^{2,4,5,7,8,34}

Annexes to SECTION 8

Annex 8A: Indicators for monitoring IDSR core functions at the health facility level

Annex 8B: Indicators for monitoring IDSR core functions at the district level

Annex 8C: Indicators for monitoring IDSR core functions at the regional level

Annex 8D: Indicators monitoring IDSR core functions at the national level

Annex 8E: Monitoring Chart for performance of IDSR indicators at health facility level

ANNEX 8F: Monitoring chart for performance of IDSR indicators at district, regional level

Annex 8G: Sample form for recording timeliness and completeness of weekly / monthly reporting from the health facility to the district

Annex 8H: Checklist for monitoring IDSR activities at the health facility

Annex 8I: Indicators for monitoring the performance of IDSR at Member State level

Annex 8J: Sample Public Health Bulletin

Annex 8A: Indicators for monitoring IDSR core functions at the health facility level

IDSR Core Function	Indicator	Purpose	Source of information	Target	When to be done
Identify	Availability of Standard case definition (SCD) and IDSR forms/registers Numerator: Total number of notifiable diseases (n=19) Denominator: Number of SCDs at the health facility	Correctly identifying and filling cases/events	Health facility noticeboard, records, booklets and in charge	100% of all notifiable diseases (n=19)	Quarterly
	Existence of a mechanism to capture unusual or public health events from non-routine sources (for example social media platforms) Numerator: N/A Denominator: N/A	Measure the ability of the system to capture unusual events	Interviews Health facility alert desk for suspected outbreaks Event based alert log (physical or electronic)	100%	Daily
Reporting	Proportion of complete surveillance reports submitted to the district (completeness) Numerator: Number of complete surveillance reports submitted to the district Denominator: Total number of reports expected from the health facility	The practice of health facilities in submitting complete surveillance reports to the next level	Weekly 033b HMIS forms at facility Routine summary reports	100%	Weekly
	Proportion of surveillance reports submitted on time to the district (timeliness) Numerator: Number of surveillance reports submitted on time to the district Denominator: Total number of reports expected from the health facility	The practice of health facilities in submitting timely surveillance reports to the next level	Weekly 033b HMIS forms at facility Routine summary reports	90%	Weekly
	Proportion of cases of priority diseases for case-based surveillance reported with case-based forms or line lists. Numerator: Number of cases of priority diseases selected for case-based surveillance reported with case- based forms or line list	Measures reporting of surveillance data with detailed information to use for further analysis	Routine summary reports and case-based or line listing reports	80%	Weekly

	Denominator: Total number of cases of diseases selected for case- based surveillance that occurred in the health facility				
Analysis and Interpretation	Proportion of priority diseases/ conditions for which a current line graph is available. Numerator: Number of priority diseases for which a current line graph is available. Denominator: Total Number of priority diseases/conditions (n=19)	Measures the practice and capacity to analyse surveillance data	Facility notice board	80%	Weekly
	Proportion of priority diseases for which an updated spot map is available. Numerator: Number of priority diseases for which an updated spot map is available. Denominator: Total Number of priority diseases	Measures the practice and capacity to analyse and interpret surveillance data	Facility notice board	80%	Weekly
	Proportion of priority diseases for which there is current lab data analysis (if a health facility has a laboratory) Numerator: Number of priority diseases for which a current lab data analysis is available. Denominator: Total Number of priority diseases (n=19)	Evidence of routine laboratory data analysis and interpretation	Laboratory register	80%	Weekly
Investigation and confirmation of suspected outbreaks	Proportion of suspected outbreaks of epidemic prone disease and other PHE notified to the district level within 24 hours of surpassing the epidemic threshold Numerator: Number of suspected outbreaks of epidemic prone diseases notified to the district within 24 hours of surpassing the alert threshold Denominator: Total number of suspected outbreaks of epidemic prone diseases in the health facility	Measures early detection and timely reporting of outbreaks	Health facility log of suspected outbreaks and alerts	80%	Monthly

	<p>Proportion of specimens from suspected cases collected within 24 hours of alert</p> <p>Numerator: Number of suspected cases for which samples were sent within 24hrs</p> <p>Denominator: Total number of suspected cases</p>	<p>Measure capacity to</p> <p>Refer samples in a</p> <p>Timely manner</p>	<p>Laboratory register, OPD registers</p>	80%	Monthly
	<p>Proportion of samples of suspect cases whose lab test results are returned within predetermined turn-around-time (TAT)</p> <p>Numerator: Number of samples of suspected cases whose lab test results have returned within the predetermined TAT</p> <p>Denominator: Total number of samples of suspected cases sent to the lab</p>	<p>Measures the functionality of the specimen referral network and the reference lab functionality</p>	<p>Lab register, Results Dispatch System (RDS)</p>	80%	Monthly
Prepare	<p>Availability of prepositioned key supplies for emergency response (see kit) ***</p> <p>Numerator: N/A</p> <p>Denominator: N/A</p>	<p>Measure preparedness of a facility to respond to PHEs</p>	<p>H/F Inventory (Stock cards/ stock book)</p> <p>Observation</p>	N/A	Monthly
	<p>Availability of All hazard's emergency preparedness and response plan</p> <p>Numerator: N/A</p> <p>Denominator: N/A</p>	<p>Measure preparedness of Health facility to respond to PHEs</p>	<p>Health Facility in Charge</p>		Annually
Respond	<p>Availability of a functional Public Health Emergency Management Committee</p> <p>Numerator: N/A</p> <p>Denominator: N/A</p>	<p>Measure ability to respond at health facility level</p>	<p>Minutes from Health Facility records</p>		Quarterly
	<p>Case fatality for each epidemic- prone disease reported</p> <p>Numerator: Number of deaths from each of the epidemic prone diseases</p>	<p>Measure response activities (early treatment seeking behaviour and quality of healthcare services)</p>	<p>Routine reports and outbreak investigation</p>	<p>Depends on disease</p>	Monthly

	Denominator: Number of cases from the same epidemic prone diseases				
	Attack rate for each epidemic- prone disease reported Numerator: Number of new cases detected Denominator: Population at risk	Measure response activities	Routine reports and outbreak investigation	Depends on disease	Monthly
	Availability of IPC measures in all health facilities including a holding area Numerator: N/A Denominator: N/A	Measures ability to prevent nosocomial infections	Observation		Quarterly
	Availability of an isolation facility in all hospitals Numerator: N/A Denominator: N/A	Measures ability to effectively manage highly infectious patients	Observation	100%	Quarterly
	Proportion of HCW trained in IPC in last 12 months at the facility Numerator: Number of HCW trained in IPC in last 12 months at a facility X Denominator: Total number expected to be trained	Measures ability to prevent nosocomial infections	Training reports	100%	Annually
Provide Feedback	Community feedback sessions at least once quarterly Numerator: N/A Denominator: N/A	Measures continuous community engagement	Community feedback reports		Quarterly
	Proportion of feedback bulletins/reports received from the next higher level Numerator: N/A Denominator: N/A	Presence of a feedback mechanism	Observation		Quarterly

Annex 8B: Indicators for monitoring IDSR core functions at the district level

IDSR Core Function	Indicator	Purpose	Source of information	Target	When to be done
Identify	Proportion of health facilities with Standard case definition (SCD) Numerator: Number of HFs with SCD Denominator: Total number of all HFs	Correctly identifying and filling cases/events	Checklist for the in charge at the H/Fs	100%	Quarterly
	Proportion of health facilities reporting information using EBS/eIDSR Numerator: Number of HFs reporting information from EBS/eIDSR Denominator: Total number of all HFs	Measure the ability of the system to capture unusual events	Routine summary reports and supervisory reports/eIDSR system	80%	Quarterly
	Proportion of health facilities including hospitals with standardized registers and HMIS forms Numerator: Number of HFs with registers and HMIS forms Denominator: Total Number of all HFs	Measure the availability of registers and HMIS forms	Checklist for the in charge at the H/Fs	100%	Quarterly
Reporting	Proportion of health facilities including hospitals submitting IDSR reports to the district Numerator: Number of health facilities that submitted surveillance reports to the district Denominator: Total Number of health facilities in the district	Measures the completeness of submission of surveillance reports	Monitoring chart for timely submission of report/DHIS2	80%	Weekly
	Proportion of health facilities including hospitals submitting IDSR reports on time to the district Numerator: Number of health facilities that submitted surveillance reports on time to the district Denominator: Total Number of health facilities in the district	Measures the timeliness of submission of surveillance reports	Monitoring chart for timely submission of report/DHIS2	80%	Weekly
	Proportion of cases of diseases targeted for elimination, eradication and any diseases selected for case-based surveillance reported with case-based forms or line lists. Numerator: Number of cases of diseases targeted for elimination, eradication, and any diseases selected for case-based surveillance reported with case-based forms or line list	Measures reporting of surveillance data with detailed information to use for further analysis	Routine summary reports and case-based or line listing reports for diseases targeted for elimination and eradication and for any diseases selected for case-based surveillance, eIDSR, eHMIS	80%	Quarterly

	Denominator: Total number of cases of diseases selected for case- based surveillance that occurred in the district				
Analysis and Interpretation	Proportion of health facilities that have current trend analyses Numerator: Number of health facilities that have current trend analysis for selected priority conditions Denominator: Total number of health facilities in the district	Measures the practice and capacity of the health facility team to detect trends of suspected/ possible outbreaks	Supervisory report Health facility notice boards	80%	Quarterly
	Proportion of health facilities that have current lab analysis data for priority diseases (if applicable) Numerator: Number of health facilities that have lab data analysis for selected priority conditions. Denominator: Total number of health facilities in the district	Evidence of routine laboratory data analysis and interpretation	Laboratory register	80%	Quarterly
Investigation and confirmation of suspected outbreaks	Proportion of suspected outbreaks of epidemic-prone diseases/ conditions notified to the district within 24 hours of surpassing the epidemic threshold Numerator: Number of suspected outbreaks of epidemic- prone diseases/ conditions notified to the next level within 24 hours of surpassing the epidemic threshold Denominator: Number of suspected outbreaks of epidemic-prone diseases/ conditions in the district	Measures use of data and thresholds for early detection of outbreaks and timely reporting to the next level	Log of suspected outbreaks and rumours. District analysis book or other routine analysis tool, HMIS tools	80%	Quarterly
	Proportion of reports of investigated outbreaks that include analysed case-based data Numerator: Number of outbreak investigation reports that include case-based data Denominator: Total number of outbreak investigation reports conducted in the district	Measures availability of additional variables for further analysis	Investigation reports, Case Investigation Forms Epidemic curve , Line lists or case-based reporting forms	80%	Quarterly
	Proportion of investigated outbreaks with laboratory results within 7 days Numerator: Number of investigated outbreaks with laboratory results within seven days Denominator: Total number of samples submitted for testing	Measures capacity of laboratory to confirm diagnosis and involvement of laboratory in surveillance activities	Log of suspected outbreaks and rumours Laboratory reports Outbreak investigation reports	80%	Quarterly

	<p>Proportion of confirmed outbreaks with a nationally recommended public health emergency response</p> <p>Numerator: Number of confirmed outbreaks with a nationally recommended response</p> <p>Denominator: Number of confirmed outbreaks in the district</p>	Measures capacity of the district to respond to outbreaks	<p>Log of suspected outbreaks and alerts</p> <p>Outbreak investigation reports</p> <p>Supervisory reports</p>	80%	Quarterly
	<p>Proportion of samples from suspected outbreak timely transported within 24 hours</p> <p>Numerator: Number of suspected outbreaks of which samples were sent on time (within 24 hours)</p> <p>Denominator: Number samples collected from suspected outbreaks</p>	Measure capacity to refer samples in a timely manner	Laboratory register	80%	Monthly
Prepare	<p>Presence of a functional central unit for coordination of PHEMC (PH EOC)</p> <p>Numerator: N/A</p> <p>Denominator: N/A</p>	Measure the District readiness	Minutes of reports, Annual work plans		Annually
	<p>Proportion of health facilities with emergency preparedness and response (EPR) plans</p> <p>Numerator: Number of HF with EPR plans</p> <p>Denominator: Number of all HF</p>	Measure preparedness of Health facility	Annual work plans		Annually
	<p>Availability of a District Emergency Preparedness and Response Plan</p> <p>Numerator: N/A</p> <p>Denominator: N/A</p>	Measure preparedness of District	Annual work plans		Annually
	<p>Existence of funds for emergency response (Or budget line for emergency funds)</p> <p>Numerator: N/A</p> <p>Denominator: N/A</p>	Measure preparedness of Health facility	Annual work plans		Annually
	<p>Proportion of Health facility that experienced shortage of drugs and supplies for the most recent outbreak (define the time frame e.g.</p>	Measure preparedness of Health facility	H/F inventory		

	3, 6, 12 months) Numerator: Number of HF that experienced shortage Denominator: Total Number of all HF				
	Proportion of health facilities that have contingency Stocks for 3-6 months Numerator: Number of HF with contingency stocks Denominator: Total Number of all HF	Measure preparedness of a facility	H/F Inventory Observation		Quarterly
	Proportion of HF with availability of laboratory Diagnostic reagents Numerator: Number of HFs with available lab reagents Denominator: Total Number of Health Facilities	Measure the capacity of preparedness of a HFs	H/F Inventory Observation		Quarterly
	Proportion of Health facilities with available supplies for Specimen collection and transportation Numerator: Number of HFs with available specimen collection and transportation Denominator: Total Number of Health Facilities	Measure the capacity of preparedness of HFs	H/F Inventory Observation		
	Proportion of Labs with performance reports of routine quality assurance Numerator: Number of labs with performance of routine QA Denominator: Total Number of Labs	Measure the capacity of preparedness of HFs	Quality reports		Quarterly
Respond	Presence of a Functional Public Health Emergency Management u Committee Numerator: N/A Denominator: N/A	Measure ability to respond at district level	Minutes from District Health Office		Quarterly
	Proportion of HFs with functional Public Health Emergency Management committee Numerator: Number of HFs with functional Committee Denominator: Total Number of all HF	Measure ability to respond at health facility level	Minutes from Health Facility records		Quarterly

	Availability of Public Health Emergency Rapid Response Team (PHERRT) Numerator: N/A Denominator: N/A	Measure ability to respond at health facility level	Minutes from District Health Office		Quarterly
	Case Fatality rate for each epidemic prone disease reported Numerator: Number of deaths from each of the epidemic prone diseases Denominator: Number of cases from the same epidemic prone diseases	Measures quality of case management	Routine reports and outbreak investigation	Depends on disease	
	Attack rate for each outbreak of priority disease Numerator: Number of new cases of an epidemic prone disease that occurred during an outbreak Denominator: Number of populations at risk during the outbreak	Helps to identify the population at risk and efficacy of the intervention	Demographic data about the district, Outbreaks investigation report with line lists or case-based forms	Depends on disease	
	Proportion of Outbreaks or any public health event responded to in the previous 12 months Numerator: Number of suspected outbreaks of epidemic prone diseases responded Denominator: Total number of suspected outbreaks of epidemic prone diseases/events	Measures early detection and timely reporting of outbreaks	Health facility log of suspected outbreaks and alerts	80%	
	Proportion of Hospitals with Infection Prevention and Control (IPC) requirements established including isolation ward/unit Numerator: Number of Hospitals that reported having established Infection Prevention and Control (IPC) requirements Denominator: Total number of Hospitals in the district	Measures the practice and the Capacity of the hospitals to apply infection control requirements	Routine summary reports and supervisory reports Observation of IPC practices		Annually
Provide Feedback	Availability of feedback reports/letters/bulletin Numerator: N/A Denominator: N/A	Presence of a feedback mechanism	Observation		Quarterly

	<p>Proportion of feedback bulletins/reports sent to the lower level</p> <p>Numerator: Number of reports/bulletins or any documentation actually sent to lower level and received</p> <p>Denominator: Total number of reports/bulletins or any form of feedback document expected to be sent to lower levels</p>	<p>Presence of a feedback mechanism</p>	<p>Observation</p>		<p>Quarterly</p>
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Annex 8C: Indicators for monitoring IDSR core functions at the regional level

Annex 8C: Indicators for monitoring IDSR core functions at the regional level

IDSR Core Function	Indicator	Purpose	Source of information for numerator and denominator	Target	When to be done
Identify	Proportions of districts with IDSR guidelines to guide identification of cases Numerator: Number of Districts with Guidelines Denominator: Total number of all districts within the region	Correctly identify and fill cases / events	District Inventory	100%	Quarterly
	Proportion of districts reporting information using eIDSR / EBS Numerator: Number of districts reporting information using event-based surveillance methods Denominator: Total number of all districts within the region	Measure the ability of the system to capture unusual events	Routine summary reports and supervisory reports	80%	Quarterly
	Number of events recorded in the log book of rumour Numerator: N/A Denominator: N/A	Measure the ability of the region to capture unusual events from unofficial reports sources	Regional rumour logbook	N/A	Quarterly
	Proportion of districts with routine surveillance data validation systems Numerator: Number of districts having routine data validation system for surveillance data Denominator: Total number of all districts within the region	Measures the routine validation of surveillance data	District and regional Reports	100%	Monthly

Reporting	Proportion of weekly 033b surveillance reports submitted from the district to the region Numerator: Number of districts that submitted IDSR reports to the region Denominator: Total number of districts that report to the regional level	Measures the practice of completeness of submitted surveillance data	Monitoring chart Routine summary reports	90%	Weekly
	Proportion of weekly 033b surveillance reports submitted from the district to the region on time Numerator: Number of districts that submitted IDSR reports on time to the region Denominator: Total number of districts that report to the regional level	Measures the practice of timely submission of surveillance data	Monitoring chart Routine summary reports	90%	Weekly
	Proportion of diseases targeted for elimination, eradication and any diseases selected for case-based surveillance reported with case-based forms or line lists. Numerator: Number of diseases targeted for elimination, eradication, and any diseases selected for case- based surveillance reported with case-based forms or line list Denominator: Total number of diseases targeted for elimination, eradication and any other disease selected for case-based surveillance	Measures reporting of surveillance data with detailed information to use for further analysis	Routine summary reports and case-based or line listing reports	80%	quarterly
Analysis and Interpretation	Proportion of districts in which a current line graph is available for selected priority diseases Numerator: Number of districts with priority diseases for which a current line graph is available. Denominator: Total Number of districts within the region	Measures the practice and capacity to analyse surveillance data	Supervisory reports District analysis book	80%	Quarterly

	<p>Proportion of districts in which an updated spot map of cases is available for selected priority diseases</p> <p>Numerator: Number of districts with priority diseases for which an updated spot map is available.</p> <p>Denominator: Total Number of districts within the region</p>	Measures the practice and capacity to analyse surveillance data	Supervisory reports District analysis book	80%	Quarterly
	<p>Proportion of districts that report laboratory data for diseases under surveillance</p> <p>Numerator: Number of district labs that submitted monthly data to higher level</p> <p>Denominator: Total number of district labs within the region</p>	Measures if districts are collecting and reporting lab data to higher level	Supervisory reports District analysis book	80%	Quarterly
Investigation and confirmation of suspected Cases	<p>Proportion of suspected outbreaks of epidemic prone diseases / conditions notified to the national level within 24 hours of surpassing the epidemic threshold</p> <p>Numerator: Number of suspected outbreaks of epidemic prone diseases / conditions notified to the national level within 24 hours of surpassing the epidemic threshold</p> <p>Denominator: Total number of suspected outbreaks of epidemic prone diseases / conditions within the region</p>	Measures early detection and timely reporting of outbreaks	Log of suspected outbreaks and alert Routine summary reports	80%	Quarterly
	<p>Proportion of reports of investigated outbreaks that includes analysed case-based data</p> <p>Numerator: Number of outbreak investigation reports that include epi curve, mapping, personal tables and case-based forms or line lists</p> <p>Denominator: Total Number of outbreaks investigation reports within the region</p>	Measures availability of additional variables for further analysis including possible risk factors involved	Investigation reports Routine summary reports	80%	Quarterly
	<p>Proportion of investigated outbreaks with laboratory results</p> <p>Numerator: Number of investigated outbreaks with laboratory results</p>	Measures capacity of the laboratory to confirm the diagnosis and involvement of laboratory in the surveillance activities	Outbreak investigation reports Laboratory reports	80%	Quarterly

	Denominator: Total number of investigated outbreaks within the region		Routine summary reports Log of outbreaks and rumours		
	Proportion of confirmed outbreaks with a nationally recommended public health response Numerator: Number of confirmed outbreaks with a nationally recommended public health response Denominator: Total Number of confirmed outbreaks within the region	Measures capacity of the region to respond to outbreaks	Log of suspected outbreaks and alerts Outbreak investigation reports Supervisory visit reports	80%	Quarterly
	Proportion of labs performing routine testing and reporting of Antimicrobial resistance Numerator: Number of labs reporting AMR results Denominator: Total Labs within the region	Measure capacity in readiness to respond to AMR outbreaks	Central Public Health Laboratories (CPHL) Lab register	80%	Quarterly
Prepare	Presence of a functional coordination of PHEMC (PHEOC) at regional level Numerator: N/A Denominator: N/A	Measure the Regional readiness	Minutes of reports, Annual work plans		Annual
	Proportion of districts with established functional District Task Forces (DTFs) Numerator: Number of districts with the functional District Task Forces Denominator: Total number of districts within the region	Measure the Regional readiness	Minutes of reports, Supervision reports	90%	Annual
	Proportion of districts with emergency preparedness and response plans Numerator: Number of districts with EPR plans	Measure preparedness of districts	Minutes of reports, Supervision reports	90%	Annually

	Denominator: Total number of districts within the region				
	Proportion of districts with public health risk and resource mapping Numerator: Number of districts that reported having conducted public health risks and resources mapping Denominator: Total number of districts within the region	Measure the practice and capacity of the district to conduct mapping of available resources and risks	Risk assessment and mapping reports and Resource mapping reports	80%	Annually
	Proportion of districts with funds for emergency preparedness and response Numerator: Number of districts with Budget lines for outbreak preparedness Denominator: Number of districts within the region	Measure preparedness of District	Annual Work plans, Meeting minutes, observations	80%	Annually
	Proportion of districts that have contingency stocks including lab supplies for 3-6 months Numerator: Number of districts with contingency stocks Denominator: Number of districts within the region	Measure preparedness of district	District/Region Inventory Observation	80%	Quarterly
	Proportion of districts labs with performance reports of routine quality assurance Numerator: Number of district labs with performance of routine QA Denominator: Number of district labs within the region	Measure the capacity of preparedness	Quality assurance reports	80%	Quarterly
Respond	Proportion of districts with functional District Rapid Response Teams (DRRTs) Numerator: Number of districts with functional DRRTs Denominator: Total number of districts within the region	Measures ability of regions and districts preparedness towards emergencies	Supervisory reports Minutes of meetings of DRRT	80%	Quarterly
	Attack rate for each outbreak of priority disease / conditions	Helps to identify the population at risk and efficacy of the intervention	Demographic data about the district, Outbreaks	Depends on disease	Quarterly

	<p>Numerator: Number of new cases of an epidemic prone disease / condition that occurred during an outbreak</p> <p>Denominator: Number of populations at risk during the outbreak</p>		investigation report with line lists or case-based forms		
	<p>Case Fatality rate for each epidemic prone disease / condition reported</p> <p>Numerator: Number of deaths from each of the epidemic prone diseases / conditions during an outbreak</p> <p>Denominator: Total Number of cases from the same epidemic prone disease during an outbreak</p>	Measures quality of case management and response to outbreak	Routine reports and outbreak investigation	Depends on disease	Quarterly
	<p>Proportion of Outbreaks or any public health events responded to within 24hours of detection</p> <p>Numerator: Number of suspected outbreaks of epidemic prone diseases responded to within 24hours of passing a response threshold</p> <p>Denominator: Total number of suspected outbreaks of epidemic prone diseases/events reported</p>	Measures early detection and timely reporting of outbreaks	Health facility log of suspected outbreaks and alerts	80%	Annual
	<p>Proportion of health facilities with Infection Prevention and Control (IPC) requirements</p> <p>Numerator: Number of health facilities that reported having established Infection Prevention and Control (IPC) requirements</p> <p>Denominator: Total number of health facilities within the region</p>	Measures the practice and the Capacity of the hospital to apply infection control measures	Routine summary reports and supervisory n	80%	Annually
Provide Feedback	<p>Proportion of districts with epidemiological analyses published in bulletins / newsletters / manuscripts / briefs summaries</p> <p>Numerator: Number of districts with analyses published in bulletins / newsletters / manuscripts / briefs summaries</p>	Presence of a feedback mechanism in the region and districts	Supervision reports, bulletins, newsletters, manuscripts, brief summaries	60%	Annual

	Denominator: Total number of districts within the region				
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Annex 8D: Indicators monitoring IDSR core functions at the national level

Core Surveillance	Indicator	Purpose	Source information numerator and denominator	Target	When to be done
Identify	Proportions of districts with IDSR guidelines to identify cases Numerator: Number of Districts with Guidelines Denominator: Total number of districts	Correctly identify and file cases/events	District Inventory	100%	Quarterly
	Proportion of districts reporting information using eIDSR / EBS Numerator: Number of districts reporting information using event-based surveillance methods including eIDSR Denominator: Total number of districts	Measure the ability of the system to capture unusual events	Routine summary reports and supervisory reports	80%	Quarterly
	Number of events recorded in the log book of alerts Numerator: N/A Denominator: N/A	Measure the ability of the national to capture unusual events from unofficial reported sources	National logbook of alerts at PHEOC		Quarterly
	Proportion of districts with routine data validation system Numerator: Number of districts having routine data validation system Denominator: Total number of districts	Measure the routine validation of data	National Reports	90%	Quarterly
Reporting	Proportion of health facilities submitting weekly 033b IDSR reports on the district Numerator: Number of health facilities submitting reports to the district Denominator: Number of health facilities	Measures practice of complete submission of surveillance data from health facilities to district	Summary reporting forms	90%	Monthly

	<p>Proportion of health facilities submitting weekly 033b IDSR reports on time to the district</p> <p>Numerator: Number of health facilities submitting reports on time to the district</p> <p>Denominator: Total Number of Health facilities</p>	Measures practice of timely submission of surveillance data from health facilities to district	Summary reporting forms	90%	Monthly
	<p>Proportion of monthly surveillance reports submitted from the districts to the national level on time in the last 3 months</p> <p>Numerator: Number of districts that submitted IDSR reports on time to the national level Denominator: Total number of districts that report to the national level</p>	Measures the practice of timely submission of surveillance data	Monitoring chart Routine summary reports	80%	Monthly
	<p>Proportion of cases of diseases / conditions targeted for elimination, eradication and any diseases selected for case-based surveillance reported with case-based forms or line lists.</p> <p>Numerator: Number of diseases / conditions targeted for elimination, eradication, and any diseases selected for case- based surveillance reported with case-based forms or line list</p> <p>Denominator: Number of diseases / conditions targeted for elimination, eradication and any other disease selected for case-based surveillance</p>	Measures reporting of surveillance data with detailed information to use for further analysis	Routine summary reports and case-based or line listing reports	80%	Monthly
Analysis and Interpretation	<p>Proportion of districts in which a current line graph is available for selected priority diseases</p> <p>Numerator: Number of districts in which a current line graph for priority diseases / conditions is available.</p> <p>Denominator: Total number of districts</p>	Measures the practice and capacity to analyse surveillance data	Supervisory reports District analysis book	80%	Monthly
	<p>Proportion of regional laboratories reporting analysed lab data to the national lab</p> <p>Numerator: Number of provincial laboratories analysing and reporting to national level</p>	Measures how well regional levels analyse district laboratory data	Central Public Health Laboratory (CPHL)	80%	Monthly

	Denominator: Total number of regional labs				
	Proportion of districts that report laboratory data for diseases under surveillance Numerator: Number of district labs that submitted data to higher level Denominator: Total number of district labs	Measures if districts are collecting and reporting lab data to higher level	Central Public Health Laboratory (CPHL)	80%	Monthly
Investigation and confirmation of suspected	Proportion of suspected outbreaks of epidemic prone disease notified to the national level within 24 hours of surpassing the alert threshold Numerator: Number of suspected outbreaks of epidemic prone diseases notified to the national PHEOC within 24 hours of surpassing the alert threshold Denominator: Total number of suspected outbreaks of epidemic prone diseases	Measures early detection and timely reporting of outbreaks	Log of suspected outbreaks and alerts Routine summary reports	80%	Quarterly
	Proportion of reports of investigated outbreaks that includes analysed case-based data Numerator: Number of outbreak investigation reports that include epi-curve, mapping, personal tables and case-based forms or line lists Denominator: Number of outbreaks investigation reports	Measures availability of additional variables for further analysis including possible risk factors involved	Investigation reports Routine summary reports	80%	Quarterly
	Proportion of investigated outbreaks with laboratory results Numerator: Number of investigated outbreaks with laboratory results Denominator: Number of investigated outbreaks	Measures capacity of the laboratory to confirm the diagnosis and involvement of laboratory in the surveillance activities	Outbreak investigation reports Laboratory reports Routine summary reports Log of outbreaks and rumours	80%	Quarterly
	Proportion of confirmed outbreaks with a nationally recommended public health response	Measures capacity of the region to respond to outbreaks	Log of suspected outbreaks and alerts	80%	Quarterly

	<p>Numerator: Number of confirmed outbreaks with a nationally recommended public health response</p> <p>Denominator: Number of confirmed outbreaks</p>		<p>Outbreak investigation reports</p> <p>Supervisory visit reports</p>		
	<p>The number of outbreaks detected at the national level and that were missed by district level</p> <p>Numerator: Number of outbreaks detected by the regional or national level from analysing district specific data</p> <p>Denominator: Total number of outbreaks reported by all districts</p>	<p>Checks the capacity of the entire health system to detect outbreaks and shows that the national level is checking whether districts are observing trends</p>	<p>District summary reporting forms</p> <p>District analysis book</p> <p>Supervisory reports</p> <p>Standard surveillance reports</p>	02%	Quarterly
Prepare	<p>Presence of a functional coordination of PHEMC (PHEOC) at national level</p> <p>Numerator: N/A</p> <p>Denominator: N/A</p>	<p>Measure the National level readiness</p>	<p>Annual work plans</p>		Annually
	<p>Proportion of regions with established functional regional PHEOCs and/or coordination mechanism for public health epidemics/emergency</p> <p>Numerator: Number of regions with the functional regional PHEOCs and/or mechanism body for coordination of public health emergencies</p> <p>Denominator: Total number of all health regions (n=16)</p>	<p>Measure the regional readiness</p>	<p>Supervision reports</p> <p>Work plans</p>	90%	Quarterly
	<p>Proportion of regions with emergency preparedness and response (EPR) plans</p> <p>Numerator: Number of regions with EPR plan</p> <p>Denominator: Total number of all health regions (n=16)</p>	<p>Measures preparedness of regions</p>	<p>Supervision reports</p>	90%	Annually
	<p>Proportion of regions with public health risks and resources mapped</p> <p>Numerator: Number of regions that reported having conducted public health risks and resources mapping</p>	<p>Measure the practice and capacity of the regions to conduct mapping of available resources and risks</p>	<p>Risk assessment and mapping reports and</p>	80%	Annually

	Denominator: Total number of regions targeted for public health risks and resource				
	Proportion of regions with funds for emergency preparedness and response Numerator: Number of regions with Budgets / Budget line Denominator: Number of all regions (n=16)	Measures preparedness of regions	Annual Work plans	80%	Annually
	Proportion of regions that have contingency Stocks including lab supplies for 3-6 months Numerator: Number of regions with contingency stocks Denominator: Number of all regions (n=16)	Measure preparedness of regions	District/Region Inventory Observation	80%	Quarterly
	Proportion of regions labs with performance reports of routine quality assurance Numerator: Number of regions labs with performance of routine QA Denominator: Number of regions labs	Measures the capacity of preparedness	Quality reports	80%	Quarterly
Respond	Attack rate for each outbreak of priority disease / condition Numerator: Number of new cases of an epidemic prone disease / condition that occurred during an outbreak Denominator: Number of populations at risk during the outbreak	Helps to identify the population at risk and efficacy of the intervention	Demographic data about the district, Outbreaks investigation report with line lists or case-based forms	Depends on disease / condition	Quarterly
	Case Fatality rate for each epidemic prone disease / condition reported Numerator: Number of deaths from each of the epidemic prone disease / condition	Measures quality of case management	Routine reports and outbreak investigation	Depends on disease /	Quarterly

	Denominator: Number of cases from the same epidemic prone diseases / condition			condition	
	Proportion of outbreaks or any public health event responded to in the previous 12months Numerator: Number of suspected outbreaks of epidemic prone diseases / condition responded to Denominator: Total number of suspected outbreaks of epidemic prone diseases/events	Measures early detection and timely reporting of outbreaks	Health facility log of suspected outbreaks and alerts	80%	Quarterly
	Proportion of facilities with Infection Prevention and Control (IPC) requirements Numerator: Number of facilities that reported having established Infection Prevention and Control (IPC) requirements established Denominator: Total number of facilities in the country	Measures the practice and the Capacity of the facility to apply infection control measures	Routine summary reports and supervisory reports	80%	Quarterly
Provide Feedback	Proportion of regions with epidemiological analyses published in bulletins / newsletters / manuscripts / briefs summaries Numerator: Number of regions with analyses published in bulletins / newsletters / manuscripts / briefs summaries Denominator: Total number of regions (n = 16)	Presence of a feedback mechanism	Supervision reports, bulletins, newsletters, manuscripts, brief summaries	60%	Annual

Annex 8E: Monitoring Chart for performance of IDSR indicators at health facility level

Instructions:

Use this chart to keep track of the health facility's performance with those indicators relevant to health facility performance for IDSR.

Each month, summarize and compile the health facility's summary data for priority diseases. Report the summary data to the district level on time. Record on this chart the indicator results. Share this chart with the district supervisor during his or her visit to the health facility, or bring it to the scheduled district health team (DHT) meetings.

Indicator	Ja	Fe	Ma	Ap	Ma	Ju	Ju	Au	Se	Oc	No	De
Availability of SCD and HMIS												
Existence of a mechanism to capture unusual or public health events from non-												
Proportion of complete surveillance reports												
Proportion of complete surveillance reports												
Proportion of cases of diseases / conditions selected for case-based surveillance, which were												

Proportion of priority diseases / conditions for which a current													
Proportion of priority diseases / conditions for													
Availability of an all Hazards Emergency													
Availability of supplies for specimen collection and transportation													
Availability of contingency stocks of emergency													
Proportion of suspected outbreaks of epidemic prone diseases /													
Proportion of samples from suspected outbreak													
Availability of a functional task force for outbreak preparedness													
Availability of an isolation facility													

Case Fatality rate for each epidemic prone													
Attack rate for each epidemic-prone disease /													
Availability of community													
Proportion of feedback bulletins / reports received													
Reply YES or NO to the following checklist items													
Were the weekly surveillance													
Were the weekly surveillance													
Are the trend graphs up-to-													
If YES, have you observed any changes in the trends?													
If YES, has the threshold been													
If YES, have you taken action to alert the district?													

Annex 8F: Monitoring chart for performance of IDSR indicators at district, regional level

<i>District:</i> _____ <i>Region:</i> _____ <i>Year:</i> _____												
Indicator	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Proportions of Health facilities with SCDs												
Proportion of districts reporting information using eIDSR / EBS												
Proportion of health facilities within the district with standardized HMIS registers and forms												
Number of events recorded in the district log book for rumours												
Proportion of health facilities submitting IDSR reports to the district												
Proportion of health facilities submitting IDSR reports on time to the district												
Proportion of cases of diseases / conditions targeted for elimination, eradication and any diseases selected for case-based surveillance reported with case-based forms												

Proportion of hospitals submitting IDSR reports on time												
Proportion of private health facilities submitting IDSR reports on time												
Proportion of priority diseases / conditions for which a current line graph is available												
Proportion of health facilities that have current trend analysis												
Proportion of health facilities that have current lab analysis data for priority diseases analysed												
Proportion of suspected outbreaks of epidemic-prone diseases/ conditions notified to the region/provincial level within 24 hours or crossing the epidemic threshold												
Proportion of reports of investigated outbreaks that include analysed case-based data												

Proportion of investigated outbreaks with laboratory results												
Proportion of confirmed outbreaks with a nationally recommended public health response												
Proportion of samples from suspected outbreaks transported the laboratory within 24hrs for investigation												
Presence of a functional regional unit for coordination of PHEMC (Regional PHEOC)												
Proportion of health facilities with emergency preparedness and response plans												
Availability of a District Emergency Preparedness and Response Plan												
Proportion of Health facilities with a functional outbreak task force												

Availability of Public Health Emergency Rapid Response													
Case Fatality rate for each epidemic prone disease reported													
Attack rate for each outbreak of priority													
Proportion of outbreaks or any public health event responded to in the previous 12 months													
Proportion of hospitals with isolation facilities													
Availability of feedback reports/letters/bulletin													
Proportion of feedback bulletins/reports sent to the lower level													

Annex 8G: Sample form for recording timeliness and completeness of weekly / monthly reporting from the health facility to the district

Country _____ District _____

Health Facility: _____ Year _____

Indicator	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total number of reports expected (N)												
Total reports sent on time (T)												
Total reports sent late (L)												
Total number of reports not received (W)												
Timeliness of the reports = $100 * T / N$												
Completeness of reporting = $100 * (N - W) / N$												

Legend

T = arrived on time

L = arrived late

W=report not received

*The timeliness and completeness are expressed as percentages (%). When the surveillance system is good, the rates for timeliness and completeness should approach 100%. This table allows for monitoring the progress of these two indicators in the district so that action can be taken to improve timeliness for each health facility in the district.

Annex 8H: Checklist for monitoring IDSR activities at the health facility

Health Facility: _____ Date of Supervisory Visit: _____

ACTIVITY	SUPERVISORY QUESTION	ANSWER	COMMENT (What Caused Problem)
Data collection to identify Suspected Cases within health	1. How often do you collect information from the community about reports of suspected cases or deaths due to a priority disease or condition?		
Register cases	1. Are diagnoses of cases of priority diseases / conditions recorded in the	Yes [] No []	
Report	1. Do health worker use a standard case definition to report the suspected cases and outbreaks? 2. Do you record information about immediately notifiable diseases / conditions on a case form or line list?	Yes [] No [] Yes [] No []	
Analyse and Interpret	1. Do you plot the numbers of cases and deaths for each priority disease / condition on a graph? (Ask to see the health facility's analysis book. Look to see if the trend lines are up-to date.) 2. Do you plot the distribution of cases on a map?	Yes [] No [] Yes [] No []	
Investigate and Confirm Reported Cases and Outbreaks	1. If an epidemic-prone disease / condition was suspected, was it reported immediately to the district office? 2. For the cases of priority diseases / conditions needing laboratory tests seen since the last supervisory visit, how many had laboratory results? 3. Are appropriate supplies available or set aside for collecting of laboratory specimens during an urgent situation? (show me the supply)	Yes [] No [] Number of results obtained: Number of expected cases seen: Yes No	

ACTIVITY	SUPERVISORY QUESTION	ANSWER	COMMENT (What Caused Problem)
Respond	1. Are appropriate supplies available for responding to a confirmed case or outbreak (<i>for example, immunization supplies and vaccine, ORS, antibiotics, and so on</i>)? 2. Please show me the supplies for carrying out a recommended response. 3. Who is the outbreak coordinator for this facility? 4. How often do you provide information and training in outbreak response to the staff of this facility?	Yes [] No [] Supplies seen Yes [] No [] Name:	
		Designation :	
		Training is done :	
Provide Feedback	1. How often do you report information to the community? 2. Do you receive the latest bulletin from the (<i>central, subnational</i>) level?	Report it	
		Yes [] No []	
Evaluate and Improve the System	1. Were the last 3 routine weekly reports sent to the district office? 2. Were the last 3 routine monthly reports sent on time?	Yes [] No [] Yes [] No []	
Epidemic Preparedness	1. What precautions do health worker (including laboratory staff) take routinely with all patients regardless of the patients' infection status? 2. How do you estimate the number of supplies to set aside for use during an emergency situation?	Minimum level of standard precautions:	
		How supplies are estimated:	

Annex 8I: Indicators for monitoring the performance of IDSR at Member State level

1. Proportion of health facilities submitting weekly (or monthly) surveillance reports in time to the “district”.
2. Proportion of districts submitting weekly (or monthly) surveillance reports in time to the next higher level.
3. Proportion of cases of diseases targeted for elimination, eradication and any other diseases selected for case-based surveillance that were reported to the district using case-based or line-listing forms.
4. Proportion of suspected outbreaks of epidemic-prone diseases notified to the next higher level within 48 hours of surpassing the epidemic threshold.
5. Proportion of health facilities in which a current trend analysis (line graph or histogram) or spot map is available for selected priority diseases.
6. Proportion of districts that produce a regular weekly (or monthly) IDSR bulletin.
7. Proportion of reports of investigated outbreaks and other public health emergencies that include analysed case-based data.
8. Proportion of investigated outbreaks or events with laboratory results within seven days.
9. Proportion of confirmed outbreaks or other public health emergencies with a nationally recommended public health response within 48 hours.
10. Case fatality rate for each epidemic-prone disease reported.
11. Incidence of priority diseases, events and conditions.
12. Mortality from priority diseases, events and conditions.
13. Number of epidemics detected at the national level that were missed by the “district” level during the last year.
14. Proportion of districts that report laboratory data for diseases under surveillance.
15. Proportion of district laboratories that received at least one supervisory visit that included written feedback from the provincial or national level during the last year.
16. Proportion of districts reporting monthly analysed laboratory data to the national reference laboratory.

NB: “District” for the purposes of this strategy refers to the administrative level next to the national level

Annex 8J: Sample Public Health Bulletin

MINISTRY OF HEALTH WEEKLY EPIDEMIOLOGICAL BULLETIN

District Epidemiological Week Week ending (date)

Epidemiological Situation: Week (insert week number and date here)

Table 1: Epidemiological Situation: Week

Disease	Cases	Deaths	Fatality (%)	Districts in Alert	Districts in Epidemic	Reported week	Timeliness (%)	Completeness (%)
D1								
D2								
Dn								
Total								

Comments:

Contact us:

Synthesis of the Epidemiological Situation (insert the weeks being reported on here)

Table 2: Epidemiological Situation: Weeks

Districts	Cases	Deaths	Fatality (%)	Districts in Alert	Districts in Epidemic	Reported week	Timeliness (%)	Completeness (%)
D1								
D2								
Dn								
Total								

Comments:

Graphs (This section provides a graphical representation of data)

Epidemic Trends

SECTION 9

ELECTRONIC INTEGRATED DISEASE SURVEILLANCE AND RESPONSE (eIDSR)

SECTION 9: ELECTRONIC INTEGRATED DISEASE SURVEILLANCE AND RESPONSE (eIDSR)

9.0 Electronic IDSR

Electronic IDSR is the application of electronic tools to the principles of IDSR to facilitate prediction, prevention, detection, reporting and response. It is based on;

- Standardized interoperable and interconnected information systems administered within the national context.
- Rapid collection, analysis, reporting and use of disease/events data in real-time for appropriate public health action.

The use of paper-based tools for implementation of IDSR has been an instrumental strategy for strengthening public health surveillance in the African region since IDSR was adopted in 1998. With the adoption of the International Health Regulations IHR (2005), which requires countries to strengthen capacity for disease surveillance and response, application of electronic tools to enhance real-time surveillance can improve timeliness of outbreak detection.

The application of e-tools in the health sector has the potential to provide real-time validated data for public health surveillance, timely detection, investigation and prompt outbreak response. eIDSR provides new opportunities for acceleration of the achievement of the IHR (2005) core capacities.

9.1 eIDSR in the context of eHealth

Digital health, as defined by the Broadband Commission for Sustainable Development (BCSD), is an umbrella term that encompasses all concepts and activities at the intersection of health and ICTs. This includes the delivery of health information, using ICTs to improve public health services, and using health management information systems (HMIS) to capture, store, manage or transmit information on patient health or health facility activities. ICTs are defined as tools that facilitate communication, processing and transmission of information by electronic means and these encompass a full range of tools like radio & television, telephones (fixed and mobile), computers and the Internet.

In 2013, the African region adopted an eHealth resolution (AFR/RC60/R3) to address the use of Information and Communication Technologies (ICT) for health and health-related fields, including disease surveillance⁴⁸. The recommended actions included the development of national policies, strategies, norms and appropriate governance mechanisms resulting in long-

term strategic plans and frameworks for eHealth capacities in countries. eHealth encompasses a range of services and systems, including;

- health and medical informatics
- tele-health, which means transmission of health-related services or information over the telecommunications infrastructure
- e-learning which means utilizing technologies to access education outside of the traditional classroom
- m-health which is a general term for use of mobile phone and other wireless technologies in medical health

Member states echoed the same sentiment in the recent 71st World Health Assembly (WHA) and unanimously agreed that digital health solutions should complement and enhance existing health service delivery models. Subsequently, they adopted the new resolution on Digital health which underscores the importance of nationally-supported digital health strategies, supporting and investing in the digital health enabling environment (including policy, standards, capacity, interoperability, privacy, security, and more), and transitioning to sustainability and government ownership.

Digital health or sometimes called eHealth provides cost-effective and secure use of ICTs in health and health-related fields.

eIDSR, which is part of e-Health, is one of the essential innovations for fulfilment of the regional committee recommendations on use of information technology, which is core in the achievement of IHR (2005) requirements by countries. Standardization of electronic tools and sustained infrastructure across the region will promote easy generation and sharing of country and regional profiles of priority diseases, conditions and events.

9.2 eIDSR in the context of HMIS

Health Management Information Systems (HMIS) are used by countries to facilitate routine collection of data to support planning, management and decision-making in the health service provision. HMIS routinely collects data about diseases, events and conditions, as well as other administrative and service provision data. The primary source of the data is the health facility Outpatient (OPD) or Inpatient (IPD) register, among others. The most widely used electronic platform of HMIS is District Health Information Software 2 (DHIS2). It is used in low and middle-income countries. In Africa, DHIS2 is being used in more than 70 countries.

In both HMIS and eIDSR, the source data at the health facility are derived from the health facility OPD or IPD register including patients' folders among others. eIDSR is an enabling platform for reporting in real time for IDSR priority diseases, as well as public health events. These are reported immediately/weekly/monthly depending on the disease or public health event.

9.3 Rationale of eIDSR

The limitations of the current approaches to IDSR data collection and transmission are attributed to the fact that many countries still use manual procedures and paper methods to collect and transmit data. Submitting and transmitting the data on time is a challenge, as health workers have to travel long distances on difficult terrains to submit their files. This leads to delays in getting information on time for action, especially if there is a suspected outbreak.

eIDSR system aims at facilitating the work of every staff member in a health system by improving disease surveillance using electronic tools and hence strengthening surveillance and response capacities and in a long term, reducing morbidity and mortality from epidemic prone diseases as well as other public health events.

eIDSR is thus likely to improve the following;

- Timeliness and completeness of reporting
- Early detection, investigation, and response to outbreak or public health events
- Reduce manual data entry that is prone to errors
- Systematic information sharing across levels and sectors
- Combining data streams
- Data use, analysis, analytics

Recently, there have been various supporting initiatives and resolutions, regionally and globally which have recognized the potential of digital technologies, to advance the Sustainable Development Goals (SDGs), and in particular to support health systems in all countries in health promotion and disease prevention. The eIDSR is hence developed to reflect the following recent adopted overarching frameworks:

- Integrated Disease Surveillance and Response ((AFR/RC/48.8)⁴⁹
- IHR (2005)(WHA58.3)⁵⁰
- Regional Strategy for Health Security and emergencies strategy (AFRO/RC66/6)³⁶

- eHealth resolution and decision (WHA58.28)
- Digital health (WHA71.7)
- Global Health Security Agenda

9.4 Benefits of eIDSR

The eIDSR provides real-time information for immediate action. The potential benefits of eIDSR include:

- ***Early alert and detection***

With eIDSR, the speed of outbreak detection can be improved as information may be more rapidly captured, and in some cases, the time and place of an outbreak can be predicted with varying degrees of accuracy enabling opportunities for prevention and control⁵¹

- ***Timely reporting***

eIDSR tools allows rapid and timely transmission of data from communities and health facilities to subsequent higher levels (district and national) to enable appropriate public health action.

- ***Standardization of data***

Standardization of tools in eIDSR system enables data gathering to be consistent and complete to more easily facilitate data exchange and comparison across health facilities

- ***Better data transmission and management including storage***

A major challenge of paper based is a need to compile reports from various sources and provide these to higher level offices at regular intervals and to different administrative levels. Moreover, data storage and transport can be difficult, and there is a risk of data damage and loss.

With eIDSR there is faster data transmission, and moreover, data are also organized into a format that is more accessible for use and interpretation. The data must be under custody of the government as per data protection and privacy act (2019).

- ***Interoperability and sharing of data***

eIDSR provides an opportunity for exchange and use of information across systems and stakeholders, especially if the standards and workflow have been well developed for the eIDSR system to allow interoperability with other information systems.

- ***Automated transmission, analyses and improved quality data***

Paper based reporting approach runs the risk of omitting valuable information as well as data quality issues when reporting to higher administrative levels.

eIDSR reduces the number of data entry errors and facilitates automated data analysis saving considerable effort for health staff as well as enhancing data use.

- ***Ultimately contribute towards good response, better monitoring and evaluation***

eIDSR provides a platform for data storage and automatic analysis across the health facilities for better monitoring and evaluation of various public health events and interventions⁵².

- ***Reduced cost***

eIDSR leads to early detection of disease outbreaks, which in effect, can contribute to the overall cost reduction associated with management of these outbreaks.

9.5 Key guiding principles in establishing eIDSR

The following are key guiding principles in the establishment of eIDSR

Use of existing infrastructure: eIDSR should be built on existing framework and systems, such as paper-based IDSR, HMIS, DHIS2, etc. This enables easy adaptability by the implementers and promotes smooth transitions. If there is already an existing infrastructure, eIDSR introduction may not be costly.

Standardization: Standardization of data and electronic tools will promote uniformity in data collection and aggregation. Standardization promotes comparison between the various surveillance systems and across countries.

Integration: IDSR is built on the premise of integration. eIDSR should therefore be implemented in the spirit of integration. This could entail integration of the various data sources and information systems from other health programs (e.g. malaria, EPI, cancer registry, non-communicable diseases etc.) into a common platform or data warehouse.

Interoperability- is the ability of different health information systems to work together within and across organizational boundaries to exchange data and use the information that has been exchanged.

Multi-sectoral Collaboration: It is essential to collaborate with stakeholders, such as telecom companies. Such collaboration could be in form of waivers, corporate social responsibility, and partial tax holidays etc. Effective collaboration could accelerate the roll out and coverage of eIDSR. Collaboration with other sectors like animal and environment is also key as this will facilitate efficient utilization of scarce resources, effective and prompt leveraging of various sectors capabilities for better disease prevention and control.

Real-time approach: Every effort should be made to ensure provision of real-time transfer of information about events incorporated into the design and implementation of eIDSR.

One Health: The One Health approach offers a platform where various disciplines work together to address health at the human-animal-environment interface. In view of the fact that the majority of emerging and re-emerging infections are often zoonotic and responsible for large outbreaks in recent times, maintaining a focus on diseases that affect both humans and animals is a worthwhile investment.

Data security: Protection of health information is essential in every health information system. Security of data will ensure that information is only accessible by authorized personnel at all levels (community, district and national levels). It also promotes ethical handling of data. Caution should be taken to ensure patient confidentiality.

User-friendly system: The system should ideally be simple enough to be used by staff at all levels. It should be easy to log on, input, share and receive information. The system should also be flexible to adapt to change of disease, conditions and events' profiles over time.

9.6 eIDSR development and implementation process

Developing an eIDSR system should be planned carefully with the involvement of all relevant stakeholders. The system should fit the capabilities and needs of the country, and a plan for securing resources should be developed prior to initiating eIDSR.

The most important considerations for the process of developing and implementing eIDSR are shown below. It is important that design, development, implementation and rollout plan as well as cost of implementation plan be developed before embarking on the eIDSR implementation process.

9.6.1 Process for establishing eIDSR

(i) Engage stakeholders and establish technical working group

The success of eIDSR requires an effective engagement of all relevant stakeholders for instance Ministry of Health departments (IES&PHE, PHEOC, DHI, UNEPI, NMCD, HIV, Laboratory, among others), Ministry of agriculture, Ministry of water and environment, as well as collaborating partners (WHO, CDC, TDDA, USAID, UNICEF, etc).

eIDSR may need to leverage ICT capacity provided by other line ministries, especially the Ministry of ICT.

(ii) Assess country IDSR functionality

IDSR functionality needs to be assessed at all levels including the political commitment to use ICT as a pivot of development and social transformation. Determine country capabilities and needs

A crucial step in the development of an electronic system is to assess the capabilities and infrastructure needs of the country. The WHO eSurveillance assessment tool could be used for this. The IES&PHE which oversees surveillance activities should carefully consider the capabilities, infrastructure and resources against the needs of the surveillance system such as:

Network coverage

- Assessing the network availability is a critical step to determine the type of system that can be developed. Internet and mobile network coverage is a key component to consider. Mechanisms of information sharing where there is no network should be thought through including offline functionalities.
- Internet: number of providers, cost of subscription, internet speeds, internet coverage in Uganda including national and district level connectivity.
- Mobile: number of providers, cost of text messaging, cost of phone calls, provider coverage in all areas of the country, distribution of providers by customers, common operating systems (android/iOS).

Power supply option

Availability of power supply is a key input for a successful eIDSr. A reliable power supply to suit the needs of the system must be available at each level of implementation.

Equipment – data capture, data management, data analysis

Equipment is an essential component of eIDSr. It is important to assess the equipment required/available for eIDSr at each level of the health system. If the equipment is not available, consideration for the feasibility of use of other options for each type of equipment. Furthermore, consideration of the lifecycle of all hardware should be done including developing a plan for replacing/renewing as needed.

Data Storage –

Consider how you will address housing of the data on servers. Will the servers be cloud based or housed nationally? If locally housed, where you will house the service i.e. physical structure (requires cool room with consistent power); potential costs, including initial/setup and ongoing must be considered.

Consider security of the servers (where are they housed and what protection is given? Security should also include having in place access and encryption protocols.

Consider types of computers and quantities required. Note that desktop computers are cheaper but must have power, laptops are portable but expensive while tablets may be portable and convenient

Consider types of mobile devices required including smart phones

Consider the availability of power and how you will ensure un-interrupted power supply

Software for surveillance or similar function

- Is there already software used for other surveillance that could be leveraged?
- Is there a need to develop? Open source software that can be customized is ideal for government institutions.
- Partnerships between system developers are key in developing software which could be flexible and easily adaptable.
- It is important to evaluate the software which could be adopted or adapted to their particular surveillance needs.
- A good back-up system should be in place
- Service and contractual agreements need to be instituted (between software developers and the user)

Devices

Are there already mobile devices in the country? Smart phones? Tablets? Computer? Can they be made readily available to the users?

Human resources – technical capacity

- There is need for the government to have a pool of software development staff and informaticians/data managers available to be able to support the agreed upon systems.
- Computer literacy of the staff is key for those who will use the electronic system that is developed. Plans for capacity building should be in place as there might be a need to train and retrain as technology evolves (continued education).

(iii) Availability of partnerships

Partnership frameworks for public private partnerships with telecom operators to support eIDSR systems should be explored jointly with the respective Ministry.

Explore if there are necessary partnerships available for implementing eIDSR.

(iv) Determine appropriate scope of eIDSR implementation, including One Health approach

Based on the assessments above, the health sector should determine the scope of implementing the eIDSR (alert notification, case-based reporting, routine weekly reporting, routine monthly

reporting, outbreak/emergency management). The One Health approach should as well be contextualized.

(v) Roll out the eIDSR plan

- Develop and launch country-specific eIDSR implementation plan.
- Develop annual operational plan (timelines, costs, responsibilities) and long-term (5 years) national eSurveillance plan in the framework of existing integrated health plan(s).
- Incorporate routine monitoring and evaluations, including an initial baseline assessment prior to implementation.

9.6.2 Important considerations for a successful eIDSR

The following are considered as important considerations for successful implementation of eIDSR in a country

(i) Laboratory integration

- System should link with lab data.
- Data Privacy e.g. the use of a unique identifier (ID numbers).
- Access to data should be controlled through user access rights

(ii) Data security and user agreements policies

- There should be clear guidelines on how to access the data.
- There should be scheduled Data backups, local and remote.
- The Physical data storage devices should be secure.

(iii) IT System Maintenance

- There should be plans for Software upgrades, hardware upkeep or replacement and server maintenance.

(iv) Sustainability

- In order to ensure sustained support of the eIDSR programme, a sustained financial base will need to be established to account for routine and one-time costs such as hardware system maintenance, training of personnel, connectivity costs and end user materials like Information, Education and Communication (IEC).
- There should be local capacity to maintain software and hardware
- There should be adequate resources to support operational infrastructure
- There should be enough resources to support capital investments, such as mobile devices and computers and associated operational costs

- Resources for continued capacity building, training, re-training, etc. should be established

(v) Interoperability

- Ideally, data can be shared across information systems of various sectors, including those from the animal, environment and other relevant sectors.

9.6.3 Potential available tools for eIDSR

Several countries in the region use Open-Source tools such as DHIS2 for data collection and aggregation. In considering the use of a commercial software, the Ministry of Health should ensure that there is a budget for licensing costs and negotiations would be done to ensure the supplier provides enhancements or adaptations. It is important to note that Open Source does not mean “free” as there are always implementation and customization costs to fit that country’s specific context and needs.

9.7 Use of eIDSR in core surveillance functions

There are many components that will ensure the successful implementation of eIDSR in the public health sector. These components include understanding the scope and operational environment, using the right tools and building the capabilities within the local context. The One Health approach also provides an opportunity for creating interoperable, interconnected electronic reporting systems between human, animal and environment surveillance system.

The use of e-tools to conduct Data Quality Assessment/Assurance (DQA) is also part of a monitoring and evaluation strategy of IDSR functions which can be used for continued improvement of the quality of data. Such tools can identify errors, inconsistencies and other data anomalies which can lead to reliable, accurate, precise and complete data.

Within the context of the country’s Public Health System, the establishment of electronic platform can facilitate the implementation of the following IDSR activities as described in previous sections of the document:

- Real-time reporting (indicator and event-based surveillance): Introduction Section
- Alert notification (community and health facility) and Case-based reporting: Section 2
- Routine (weekly aggregates/ mTrac, and monthly/DHIS2) reporting: Section 2.
- Outbreak/emergency management -Section 6
- Case investigation: Section 4
- Contact tracing: Section 6

- Logistics and supply chain management/ Rx Solution, eELIMS: Section 6
- Real time outbreak line listing: Sections 4 and 6
- Event management: Section 5 and 6
- Information Products: Section 7;
- Supportive supervision: Section 8
- Monitoring and Evaluation and Data Quality Assessment (DQA): Section 8

9.8 Roles and Responsibilities during eIDSR implementation at different levels

The following are some of the roles and responsibilities as regard to eIDSR at various levels. These roles should also be complemented by specific roles as described in relevant sections.

Table 14: Roles of stakeholders in eIDSR implementation at each level

Level	Roles in eIDSR implementation
Community	Contribute information on events e.g. through toll-free helplines
Health facility	<ul style="list-style-type: none"> • Depending on the eIDSR platform, report events requiring immediate action • Submit weekly IDSR reports • Follow-up on events that are reported by community • Act on notifications and respond as recommended for their area of jurisdiction
District	<ul style="list-style-type: none"> • Provide district staff access to the eIDSR • Verify and approve onward transmission of reported events from lower health facilities • Issue alerts to other facilities and leaders regarding events within the district • Provide feedback to the reporting health facility regarding the event • Update the health facilities and leaders regarding progress in the response • Training, mentorship and supervision of health staff • Mobilization of resources to support effective implementation of eIDSR • Ensure availability of eIDSR compatible ICT equipment
Region	<ul style="list-style-type: none"> • Training and supervision • Collaborate with National level to develop and update electronic tools • Issue alerts to districts • Provide feedback to the reporting district regarding the event • Monitor implementation of actions/recommendations from the national level
National	<ul style="list-style-type: none"> • Maintaining the eIDSR server • Developing and updating electronic tools • Managing the eIDSR system, including troubleshooting • Maintaining system administration (registration of health staff using server) • Training and supervision • Routine routing of messages, analysis and provision of feedback to all stakeholders (national program, partners, districts as well as health facilities, and notifiers) • Issue alerts to districts, region and other relevant stakeholders • Coordination of partners and stakeholders in the implementation of eIDSR • Ensuring linkage with other platforms, to facilitate interoperability and avoid duplication • Monitoring alerts • Advocacy to policy makers and mobilizing resources to sustain the system

	<ul style="list-style-type: none"> ● Ensuring data security ● Align eIDSR investments and work with the national eHealth/digital health strategy ● eIDSR System governance
WHO and regional bodies	<ul style="list-style-type: none"> ● Facilitate creation of formal platform for sharing information and data across countries ● Technical assistance to member states ● Share best practices and facilitate exchange of expertise

9.9 Supervision, Monitoring and Evaluation

- eIDSR development and implementation requires constant monitoring. This is very important during the initial system development and implementation phases. System functionality can be evaluated by looking at its qualities highlighted in section 8.
- To improve data use at the service level, users should be encouraged to use the system with regular feedback of information to the lower levels (districts and health facilities); information flow should not be one-way.

Other system performance indicators include the core surveillance indicators for monitoring IDSR (refer to Annexes 8A-D). The IDSR support supervision checklist shall be used during supervisory visit, and this has to be inclusive of the eIDSR component. The overall evaluation of the eIDSR system and its interoperability with the HMIS and e-Health system should be done periodically (annually).

9.10 eIDSR implementation in Uganda

9.10.1 Background to eIDSR implementation in Uganda

In Uganda, the Integrated Diseases Surveillance and Response (IDSR) Technical Guidelines recommends immediate reporting of notifiable diseases electronically through email, SMS, or phone calls and reported as aggregate data using the Ministry of Health HMIS Form 033b submitted weekly from all health facilities through the mTrac System. All the other diseases (non-reportable) are reported on a monthly and some quarterly basis through the Health Management Information System (HMIS).

With support from partners including CDC and HISP-U, Ministry of Health developed an electronic IDSR using the DHIS2 platform, for registering all immediate and notifiable disease cases as well as events of public health concern. This system was reviewed in August 2017 by the National eHealth Technical Working Group (TWG) and approved to be adopted as a Ministry of Health-owned system for registering and reporting of new cases of notifiable diseases and events of public health concern in the entire country. The eIDSR has further

developed to include other arms of surveillance like Laboratory and Case Management, among others.

9.10.2 Objectives of the eIDSR system in Uganda

The overarching objective of the eIDSR system is to facilitate real-time case reporting and notification of identified suspect or confirmed cases of notifiable diseases and events of public health concern. This system also achieves the following specific objectives:

- i. Provide integration of case epidemiology data and laboratory results
- ii. Translate surveillance and laboratory data into specific public health actions
- iii. Strengthen district-level surveillance of priority diseases and response during outbreaks

9.10.3 Key capabilities of the system

- **Notifications:** SMS and email notifications are generated and sent to appropriate users whenever: (i) a suspect case is identified at the health facility and registered in the System; (ii) laboratory requests are placed; (iii) specimen(s) are tracked via the hub system; (iv) laboratory results are released; (v) any deaths associated with the outbreak are reported.
- **Specimen tracking:** Laboratory requests may trigger shipment of specimens through the hub system. The eIDSR system has a module for specimen tracking until the specimen reaches the final laboratory and result is confirmed.
- **Outbreak identification:** The eIDSR system assigns unique outbreak identifier for every outbreak depending on where and when it was confirmed. The identifier format conforms to the international ICD coding of disease requirements.
- **Outbreak tracking:** The system keeps a repository of electronic records of all outbreaks for future references. Important data elements collected by the eIDSR system include outbreak code, confirmed cases, notified cases, deaths, probable dates of onset and outbreak closure, etc. Such records allow for the generation of epi-curves and line-lists for both current and concluded outbreaks.
- **Contact tracing:** The contact-tracing module captures data recorded on the contact tracing form. The data enables sending of alerts to all contacts that develop symptoms related to the outbreak. The data also allows (at least partially) determination of the infection network starting from the index cases.
- **Integration with the weekly aggregate data from HMIS Form 033B:** The system extracts the weekly aggregate data from the mTrac system. This allows for data validation

between case-based and aggregate data reporting, a function that is being taken on by the Ministry of Health IES & PHE staff. Weekly trend curves are also pre-programmed on dashboards to help in detection of epidemic alert and outbreak thresholds.

- **Manual Outbreak Confirmation and Closure:** A user with appropriate permissions is allowed to manually confirm or end an outbreak. This happens whenever the National Taskforce (NTF) declares the start or end of outbreak.
- **Epidemic Clustering (Merging Outbreaks):** If two or more outbreaks are detected in neighboring districts, the system allows for their linking, upon investigation and confirming that the outbreaks are related. The system then generates a single epidemic cluster identifier for the merged outbreaks.

9.10.4 System Environment

The eIDSR system is an online system running on the MOH DHIS2 platform, which can be accessed from anywhere wherever there is internet. Through a Memorandum of Understanding (MoU) between the Ministry of Health and Mobile Telephone Network (MTN), the MTN has granted free (zero cost) access to the HMIS Domain.

The main users of the eIDSR at the district-level are the District Surveillance Focal Persons (DSFPs), who are responsible for receiving all messages and case report forms from the health facilities, and input such information into the system. Additionally, eIDSR can receive SMS from locally registered SIM cards, and these messages are processed by the designated officer at PHEOC and at the district.

The current practice is that whenever the DSFP receives notifications or filled case report forms from the health facilities, s/he calls the contact persons at the regional and/or national PHEOC, and fills case investigation form (CIF) which is sent together with a sample to the testing laboratory. The implementation of eIDSR system at the district level introduces a coherent and consistent data/information exchange between the district and the central level.

9.10.5 Information flow and management

The information flow following the occurrence and reporting of a public health event up to the conclusion of a possible outbreak is shown below in:

Figure 18: Information flow and management, eIDSR system in Uganda

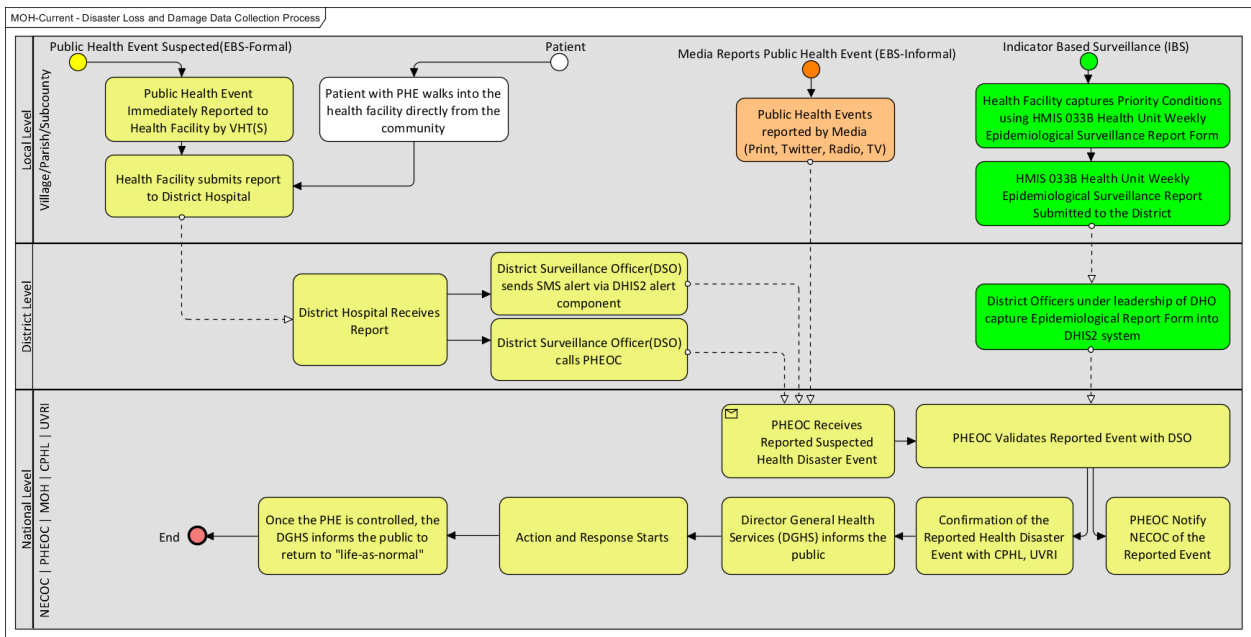
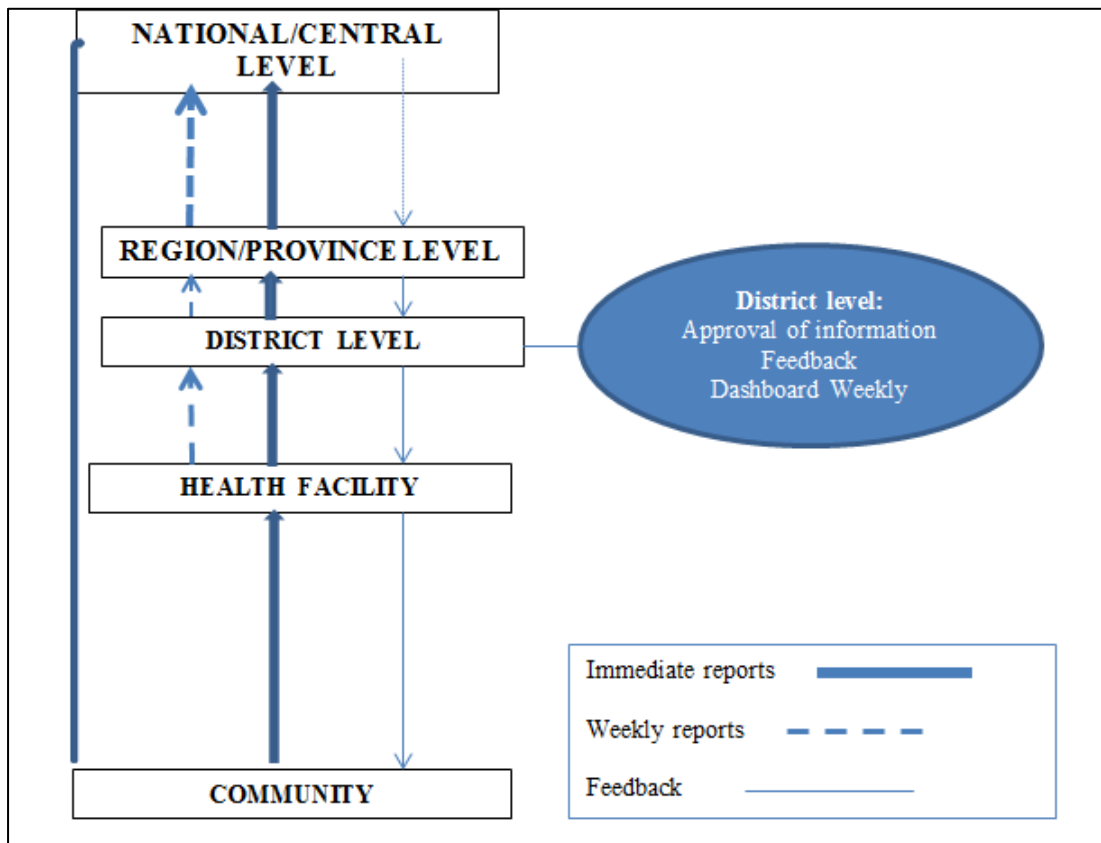


Figure 19: Simplified information flow diagram for eIDSR



9.10.6 Features of Uganda’s eIDSR application

The eIDSR application has three features:

- SMS Platform is one of the ways eIDSR collects information from the community: This platform is commonly used community members i.e. VHTs, health workers who send an SMS to 6767.
- Android Platform is where one can access the eIDSR system by using an android phone, installs the app and uses it to register cases.
- Web platform is where trained personnel can login and be able to register, update and make analysis of data.

For further reading, refer to ^{12,23,48,53-57}

SECTION 10

TAILORING IDSR TO EMERGENCY OR FRAGILE HEALTH SYSTEM CONTEXTS

SECTION 10: TAILORING IDSR TO EMERGENCY OR FRAGILE HEALTH SYSTEM CONTEXTS

10.0 Introduction

Humanitarian emergencies have major implications on the populations where they occur and, on their health, services including surveillance systems. Emergencies disrupt the productive capacity of people, destroy the infrastructure and resources, divert the planned use of meagre resources, interrupt programs and retard the pace of development. Population displacement that is associated with disasters poses significant hinderance in accessing basic needs like water, food, shelter. Other social services are as well constrained. Uganda has witnessed a number of natural and human-induced disasters. The following have been prevalent: displacement as a result of civil strife; famine as a result of drought; transport accidents, earthquakes; flooding, landslides, environmental degradation, crop pest infestation, human, livestock and wildlife epidemics ⁵⁸. These conditions, thus, increase the risk of death.

Consequently, effective public health surveillance and response is a priority during public health emergencies in affected populations. Due to the disruption of health and other social services during the emergencies, the routine IDSR system needs to be enhanced to meet the public health surveillance and response needs in humanitarian contexts. In these settings, IDSR should be tailored to the prevailing context to meet the additional emergency needs.

An enhanced IDSR system should therefore be established to address the humanitarian emergency. The system set up should be based on the IDSR strategy, structures, tools, guidelines and resources while ensuring the flexibility required in addressing the surveillance and response needs of affected populations in emergency situations. This should be done within the existing national IDSR system¹⁰.

This section introduces key principles of implementing IDSR in complex humanitarian emergencies. This will involve enhancing IDSR core functions to ensure early detection, assessment and response to acute public health events. For more detailed description, please refer to the WHO document on early detection, assessment and response to acute public health events - implementation of early warning and response with focus on event-based surveillance, (WHO, 2014).

10.1 Health information system in emergency contexts

Acute and protracted crises have major immediate and long-term effects on population health and health systems. Conflicts and disasters create disruptions in the overall functionality of the health system. The routine IDSR system may underperform or be disrupted and may need to be tailored to adequately meet surveillance information needs of a humanitarian emergency. Examples of such humanitarian emergencies include: armed conflict, famine, natural disasters and other major emergencies.

10.1.1 Key definitions in emergency contexts

Disaster

A serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources. A disaster is also defined as a situation or event, which overwhelms local capacity, necessitating additional national or international assistance

Humanitarian emergency

A situation where the basic human needs of a population are threatened and therefore requires extra-ordinary measures and urgent action.

Complex emergency

A humanitarian crisis in a country, region or society where there is total or considerable breakdown of authority resulting from internal or external conflict and which requires an international response that goes beyond the mandate or capacity of any single and/or ongoing UN country program.

10.2 Early Warning and Response

Early warning is an organized mechanism to detect as early as possible any abnormal occurrence or any divergence from the usual or normally observed frequency of diseases, conditions and events. It relies on a network of people from the community and functional static or mobile health facilities/clinics that are responsible for collection, investigation, reporting, analysis and dissemination of information from the field to the district and to the central level for appropriate action.

10.2.1 Why is enhanced surveillance needed?

The enhanced surveillance needs during humanitarian emergencies demand that surveillance systems are in place for systematic collection, collation, analysis, and interpretation of data, and dissemination of information to facilitate public health response to prevent excess morbidity, mortality and disability. Consequently, during the acute phase of a humanitarian emergency, IDSR should be modified as soon as possible to focus on priority health problems during the emergency phase. The tailored IDSR should focus on diseases, conditions or events for a given emergency context and should be flexible enough to respond to other emerging public health priorities.

During emergencies, populations are more vulnerable to morbidity, mortality and disability resulting from endemic and epidemic prone diseases. Thus, IDSR should be enhanced within 3-10 days of grading the public health emergency to facilitate rapid detection and response to disease outbreaks and public health events. Ultimately, this will contribute to the overall goal of reducing avoidable mortality, morbidity, and disability during humanitarian crises.

10.2.2 What are the objectives of tailoring IDSR to emergency context?

The main objective is to rapidly detect and control acute public health events of any origin, with particular attention to prioritized health risks. The aim is to increase sensitivity of detection, quality of risk assessment, timeliness and effectiveness of the response to acute public health risks in order to minimize the negative health consequences to the affected population.

The specific objectives are to:

- Detect any acute public health events and health risks early;
- Ensure immediate communication of information from the community to the district and to national levels and vice versa;
- Verify the initial information (i.e. signals);
- Document the nature of the event through epidemiological investigation and characterization, and etiological confirmation
- Perform risk assessment to determine the level of risk posed by the detected event;
- Ensure immediate alert mechanisms from community to district to national levels and vice versa;
- Ensure prompt investigation as necessary and implement an adequate response through mitigation and control measures, as required by the continuous risk assessment; and
- Inform national/international stakeholders and maintain communication/coordination with them.

10.2.3 Critical components of IDSR in emergency context

During humanitarian crises, community, functional static and mobile health facilities/clinics including Internally Displaced Persons (IDP)/refugee camp clinics that provide curative, disease prevention and health promotion interventions should be included in the IDSR network to enhance the sensitivity of the system. Depending on the extent of the crisis, the surveillance network may include government and/or partner-supported clinics.

To ensure efficiency, the data collection and analysis processes need to be systematized and formalized. Epidemic intelligence should be based on the two main IDSR event detection systems, namely: indicator-based and event-based surveillance (details in Section 1). These complementary systems increase the sensitivity of IDSR to ensure timely detection and verification of outbreaks, and effective monitoring of morbidity patterns.

10.3 Steps in implementation of IDSR in humanitarian emergencies

Step 1: Conduct rapid assessment of the situation

During the acute phase of the emergency, undertake a systematic assessment of the risk of acute public health events. This involves gauging both the likelihood of a disease occurring and its consequences/impact. The assessment should identify the epidemic-prone diseases that have the potential to cause the greatest amount of morbidity and mortality in the affected population,

and determine the geographical scope of surveillance. The assessment is also done on the status of key surveillance infrastructure, including existing surveillance capacity, identification of resource needs for IDSR implementation, including staff with relevant skills, communication and IT equipment, laboratory support, transport and context in which the emergency is occurring. The assessment should be based on consensus-building, analysis of existing data, establishment of working groups and conducting in-depth interviews, as required. It should be based on an all-hazards approach and be repeated as the emergency evolves, to account for changes. The following are criteria for prioritizing diseases, conditions, and events:

- Epidemic vaccine preventable diseases due to disruption of immunization in most of the emergencies;
- Ability to cause severe morbidity or death;
- International Health Regulations (IHR, 2005) requirements;
- Availability of prevention and control measures;
- Availability of reliable and meaningful case definitions and simple laboratory tests, where appropriate.

Step 2: Conduct a gap analysis

Gap analysis is usually done to complement the assessment of the surveillance system. In order to do this, perform the following:

- assess the specific needs and environment/context of the humanitarian emergency
- review the strengths, weaknesses, threats and opportunities in the existing national surveillance system
- identify available resources to reinforce IDSR

The results of previous evaluations of the surveillance system may be used for the gap analysis. If more information is required conduct focus groups or in-depth interviews with stakeholders at all levels.

Step 3: Prioritization of diseases, conditions, and events in the context of the humanitarian emergency

IDSR should be tailored to adequately meet surveillance information needs for the prioritized diseases and events in the humanitarian emergency. The information obtained from the gap analysis and the list of priority events from the rapid assessment for surveillance are critical in conducting a prioritization exercise. For each priority disease, condition or event, surveillance objectives need to be specified based on the local context. The surveillance objectives will depend on the characteristics of the disease, condition or event (e.g., attack rate, morbidity and mortality, setting), the mode of transmission (e.g., person to person, point source outbreaks, exposure to toxic substances), and the nature of the public health interventions required to control spread.

Step 4: Development of a plan of action for the implementation of IDSR

Once the prioritization exercise has been completed and all potential sources of information listed, a plan of action should be developed and implemented at the national, and district levels. The plan of action should be well integrated with the national IDSR system.

Step 5: Designate a coordination mechanism

The National Task Force, and the District Task Forces of affected districts together with their Rapid Response Teams should be activated to coordinate reporting, analysis and triaging

information, verifying signals, assessing risks, and monitoring and responding to acute public health events.

10.4 Stakeholders in implementation of IDSR in humanitarian emergencies

During acute or complex emergencies, where the capacity of the national and sub-national IDSR system in the Ministry of Health is greatly constrained, the roles and responsibilities of various actors may need to be reinforced. These actors should be mapped using a 4W (who, where, what, when) matrix.

National level

The overall coordination of data collection, entry, analysis and dissemination during humanitarian crises is the responsibility of the Ministry of Health. The PHEOC should be activated to support coordination and response activities in the affected regions and districts. An Incident Commander will be appointed with the following functions:

- Provide dedicated technical oversight to the response;
- Supervise surveillance and outbreak response activities in crisis affected areas;
- Provide guidance to health workers and partners for effective disease surveillance and outbreak/public health response in crisis affected populations;
- Support districts to investigate and respond to outbreaks or public health events including reorientation of staff in IDSR;
- Conduct regular analysis of epidemiological trends and production of regular surveillance bulletins and situation reports;
- Provide tools for reporting and notifying priority diseases, conditions and events
- Support evaluation.

District level

The DTF will coordinate surveillance and response activities in crisis-affected populations. However, during acute crises or complex emergencies where the capacities of districts are constrained, the national level will deploy teams to support the following functions:

- Coordinate disease surveillance and outbreak response in crisis-affected populations;
- Ensure timely reporting of priority diseases, conditions and events related to the crisis
- Conduct trend analyses and provide feedback to health facilities and clinics;
- Conduct initial investigation of disease outbreaks and public health events;
- Respond to disease outbreaks and public health emergencies.

Health facility level

Health workers at all levels of the health system shall implement the following surveillance activities:

- Detect, collect and report priority diseases, conditions and events;
- Support the verification and investigation of outbreaks and public health events;
- Implement public health and outbreak response measures with support from the VHTs, DRRT and NRRT

10.5 Surveillance functions during an acute humanitarian emergency

10.5.1 Support functions for surveillance in crisis affected populations

- Disseminate surveillance and outbreak response guidelines at all levels;
- Training of health workers, surveillance focal persons or points, and rapid response teams on surveillance functions including outbreak preparedness, investigation, and response;
- Support communication (computers, phones, internet connectivity) based on local context and surveillance needs;
- Regular support supervision to enhance surveillance functions at all levels;
- Periodic evaluation to improve the performance of the surveillance system (refer to framework for evaluating surveillance systems).

10.5.2 Develop priority diseases/conditions/events list

During the acute phase of a humanitarian emergency, a rapid risk assessment shall be undertaken to identify diseases, conditions, and events that pose a threat to the population. These should be prioritized in addition to the ones on the national IDSR priority list (if different). Always make reference to the list of IDSR priority diseases

10.5.3 Identify priority diseases/ conditions and events

For the diseases, conditions, and events already included on the IDSR priority disease list, the existing case definitions should be used. Sensitive case definitions that increase the chances of detecting new outbreaks should be developed for the additional diseases, conditions, events, and syndromes identified as part of the risk assessment. These case definitions should be simple, standardized, and harmonized with the national IDSR case definitions.

10.5.4 Alert and epidemic thresholds

The following thresholds are used in crisis affected populations:

- Assess the severity of the humanitarian crisis based on the crude mortality rate (CMR) and under five mortality rates (U5MR)
 - The CMR threshold should be less than 1 death per 10,000 people per day;
 - The U5MR threshold should be less than 2 deaths per 10,000 children per day;
- Alert system for detecting possible outbreaks based on doubling of weekly incidence compared to the weekly average of previous 2-3 weeks;
- Detection of a case of potentially severe epidemic prone disease like measles, polio, cholera, viral haemorrhagic fevers (VHF) or meningitis based on the IDSR alert and epidemic thresholds specific to crisis affected populations.

Once the thresholds are exceeded, verification, investigation, and response should be instituted promptly to prevent further morbidity and mortality.

10.5.5 Alert verification

To minimize morbidity and mortality, alert verification should start immediately once an alert is received by district surveillance focal points. Immediate Reporting Forms should be used to collect information about the alert.

10.5.6 Outbreak investigation

The investigations should follow existing IDSR outbreak investigation guidelines that have been adapted to address the unique needs of crisis affected populations. The investigations should be undertaken by RRTs at national and district levels that have been established as part of the national IDSR framework. In acute and complex emergencies, dedicated and trained teams will be identified to undertake the investigations.

10.5.7 Report suspected cases/conditions/events

Data is collected from data sources such as inpatient and outpatient clinics, mobile clinics, laboratories, disease-specific active case search or outbreak investigations, community health workers, community alerts, and other sources of disease surveillance data. The following tools should be used which may be paper-based tools and/or electronic platforms:

- Strict adherence to case definitions while collecting disease, conditions or event data;
- Each patient should be assigned one main diagnosis and counted once;
- New and follow up visits should be coded separately in the health facility register;
- National Health Management Information System (HMIS) outpatient and inpatient registers;
- IDSR immediate case-based and laboratory investigation form;
- IDSR Weekly/Monthly Summary Reporting form;
- IDSR health facility rumour/alert logbook;
- Disease specific line lists;
- Generic or disease-specific case investigation forms;
- Mortality line lists;

The reporting platforms shall provide for the following reporting timelines:

- Immediate reporting of epidemic prone disease alerts;
- Daily reporting of aggregated and/or case-based data on priority diseases, conditions, events during the acute phase of the crisis and after a new outbreak is confirmed;
- Weekly reporting of aggregated data on priority diseases;
- Weekly mortality line listing updated with community and health facility deaths.

10.5.8 Laboratory support

Laboratory confirmation is very critical for suspected outbreaks in crisis affected populations and the following should be in place to facilitate timely investigation of new outbreaks:

- Adequate stocks of outbreak and sample collection kits / SOPs at the local level;
- Cold chain and shipping arrangements that are linked to the national specimen transportation system;

- Strengthened laboratory specimen referral network to address the routine and outbreak laboratory testing needs of crisis affected populations;
- National reference laboratories and laboratories at sub-national levels strengthened to address the extra demands of crisis affected populations;
- The existing IDSR laboratory and case investigation forms should be used for routine collection and reporting of laboratory aggregate and case-based data;
- Harmonized reporting systems between the laboratory and surveillance for timely dissemination of results

10.5.9 Analyze and interpret findings

The principles of data analysis utilized as part of the routine IDSR should be used in crisis affected populations.

Morbidity indicators in emergency affected populations include:

- Absolute counts of cases and deaths by priority disease
- Incidence of disease (new cases by week divided by the total population) with a graph to show trends from recent weeks. This can be disaggregated by location and person characteristics
- Proportional morbidity (new cases of a specific disease in a week divided by the new total consultations in the week)
- Case fatality ratio (CFR) – the proportion of cases that die from a specific disease
- Attack rate during outbreaks as the cumulative incidence of epidemic disease in a population over a period of time.

Mortality indicators in crisis affected populations:

It is critical that mortality rates (CMR and U5MR) are monitored for crisis affected populations to ensure that rates exceeding the established emergency threshold are detected and responded to promptly.

- Crude Mortality Rate (CMR) as deaths per 10,000 per day is calculated as the number of deaths divided by the population present during the period and the total number of days over which the deaths were reported.
- U5MR as deaths per 10,000 per day is calculated as the number of deaths in under-fives divided by the population of under-fives present during the period and the total number of days over which the deaths were reported.

The existing electronic platforms (see Section 9 on eIDSR) offer the advantage of automated analyses for both routine and case-based outbreak data thus saving time and ensuring analyzed data is available in real-time to inform disease surveillance and outbreak response decisions at all levels.

10.5.10 Monitoring and evaluation

Monitoring for ensuring full engagement of the stakeholders is critical. In addition to informing disease control efforts, information providers must be included in feedback. Daily situation reports, weekly surveillance summaries, bulletins, and presentations should be shared and reviewed during; weekly IDSR or DTF/NTF meetings; intersectoral and other meetings

The existing electronic platforms offer the advantage of producing automated disease surveillance and epidemic bulletins or situation reports to inform disease surveillance and outbreak response decisions at all levels.

10.5.11 Outbreak preparedness

The key preparedness efforts in crisis affected populations should entail the following:

- Activating the DTFs and NTF;
- Updating existing or developing new outbreak prevention and response plans that incorporate risks unique to crisis affected populations;
- Development or updating (if necessary) of standard line-list forms for data collection during an outbreak;
- Development and distribution of standard treatment protocols for key diseases, with strategies for training of staff;
- Calculation of potential attack rates for epidemic-prone diseases based on previous outbreaks or similar humanitarian emergencies, where possible;
- Pre-positioning stocks of essential treatment supplies to initiate outbreak control (e.g. oral rehydration salts, intravenous fluids, vaccination materials, personal protective equipment, transport media for samples, water purification supplies, disinfectants, spray pumps and information leaflets on preventive measures for health staff or the community);
- Procurement of laboratory sample collection materials/kits for the priority diseases, and identification of a competent laboratory for confirmation of cases;
- Identification of potential sites for isolation and adequate treatment of patients, or for extra capacity in the event of a surge in cases (e.g. a cholera treatment centre);
- Implementation of relevant prevention measures based on the risk assessment of diseases (e.g. measles and cholera vaccination, indoor-residual spraying of dwellings and distribution of long-lasting insecticide-treated nets to prevent outbreaks of measles, cholera, and malaria respective).
- Accelerate preparedness and response efforts by activating DRRTs in districts with points of entry (PoE)

10.5.12 Outbreak response

Outbreak response should follow the same principles for enhanced surveillance and response adapted for the humanitarian emergency (Refer to section 6)

10.6 Exit strategy

During the recovery phase of the crisis, the Ministry of Health will work with health development partners to re-establish all the IDSR structures and focal points in the crisis affected populations. An evaluation (after action review) should be conducted to assess what happened, why it happened, document lessons learnt, and gaps identified to inform the recommendations to prevent future occurrence.

For further reading, refer to ^{10,32,35,46,47,59,60}

SECTION 11

SUMMARY GUIDELINES FOR SPECIFIC PRIORITY DISEASES AND CONDITIONS

SECTION 11: SUMMARY GUIDELINES FOR SPECIFIC PRIORITY DISEASES AND CONDITIONS

11.0 Summary guidelines for specific priority diseases and conditions

The pages in this section provide summary guidelines for each of the priority diseases targeted for surveillance. This section is intended as a rapid reference only. When further information is required, please use the detailed references listed in the summary and/ or other materials recommended by MoH. The table below shows how information is organized in this section.

Priority disease or event for integrated disease surveillance

<p>Background</p> <p>In this section, you will find general information about:</p> <ul style="list-style-type: none"> • The disease or event, the causative agent, geographic range affected and other epidemiologic information. • Transmission routes such as person-to-person, unprotected contact with infectious body fluids or contaminated materials, vector-borne, and so on. • Why the disease is a priority disease for surveillance. For example, the disease is responsible for a high number of deaths, disability and illness, especially in African countries. • General and specific risk factors in African countries. • Any additional background information that might serve the district surveillance team.
<p>Surveillance goal</p> <p>This section states how the surveillance information is used for action.</p>
<p>Standard case definition</p> <p><i>Suspected case</i>: A definition is provided for suspecting a case or outbreak of this disease or event. <i>Probable case</i>: A definition is provided for a suspected case with epidemiological link to a confirm case or an outbreak.</p> <p><i>Confirmed case</i>: A definition is provided for classifying a case as confirmed through laboratory diagnostic testing.</p>
<p>Respond to alert threshold</p>

Some diseases or events have program specific thresholds for alerting the health facility or district to a potential problem.

For epidemic-prone diseases, diseases targeted for elimination or eradication, or public health events of international concern, a single case is a suspected outbreak and requires immediate reporting followed by patient treatment, collection of specimens for case confirmation, and investigation of the case to determine the risk factors and potential interventions.

For other priority diseases of public health importance, an outbreak or event is suspected when there is any unusual cluster, pattern, or increase in the number of cases when compared with previous time periods. This should prompt a response such as investigating what might have caused the unusual events. If laboratory confirmation is indicated, specimens should be collected for laboratory confirmation.

Respond to action threshold

For epidemic-prone diseases, diseases targeted for elimination or eradication, or public health events of international concern, a confirmed case should trigger a response such as conducting an emergency immunization activity, enhancing access to safe drinking water, community education campaigns, and improving case management.

For other priority diseases of public health importance, a confirmed outbreak should prompt an appropriate response such as improving coverage for specified immunizations, strengthening case management, providing information, education and communication about preventing and controlling the disease, and so on.

Analyze and interpret data

This section contains generic information about the minimum data elements to collect, analyze and interpret. The key points to consider for interpreting the data and specific elements for analysis are also stated (time, place, person).

Laboratory confirmation

In this section guidelines on laboratory confirmation are provided including: relevant diagnostic test, how to collect, store and transport the specimens needed for lab confirmation, and information on the results of laboratory work.

Reference

Appropriate references for further information stated for each disease. Most are available from the WHO website.

Acute haemorrhagic fever syndrome
Background
<p>Acute haemorrhagic fever syndromes can be attributable to Ebola and Marburg viral diseases (filoviridae); Lassa fever (arenaviridae), Rift Valley fever (RVF) and Crimean-Congo haemorrhagic fever (CCHF) (bunyaviridae); dengue (dengue haemorrhagic fever (DHF)) and yellow fever (flaviviridae); and other viral, bacterial or rickettsial diseases with potential to produce epidemics.</p> <p>All cases of acute viral haemorrhagic fever syndrome whether single or in clusters, should be immediately notified without waiting for the causal agent to be identified.</p>
Surveillance goal
<p>Early detection of acute viral haemorrhagic fever syndrome cases and outbreaks, rapid investigation, and early laboratory verification of the aetiology of all suspected cases.</p> <p>Investigation of all suspected cases with contact tracing.</p> <p>During epidemics, most infected patients do not show haemorrhagic symptoms and a specific case definition according to the suspected or confirmed disease should be used (e.g. case definitions for Ebola-Marburg, CCHF, RVF, Lassa, DHF, and yellow fever).</p>
Standard case definition
<p>Suspected case: Illness with onset of fever and no response to treatment for usual causes of fever in the area, and at least one of the following signs:</p> <ul style="list-style-type: none"> - bloody diarrhea - bleeding from gums - bleeding into skin (purpura) - bleeding into eyes and urine <p>Confirmed case: A suspected case with laboratory confirmation or epidemiologic link to confirmed cases or outbreak.</p> <p><i>Note: During an outbreak, case definitions may be changed to correspond to the local event.</i></p>
Respond to alert threshold
<p>If a single case is suspected:</p> <ul style="list-style-type: none"> • Report case-based information immediately to the appropriate levels. • Suspected cases should be isolated from other patients and strict barrier nursing techniques implemented. Standard precautions should be enhanced throughout the health care setting. • Treat and manage the patient with supportive care. • Collect specimen safely to confirm the case. • Conduct case-contact follow-up and active case search for additional cases.
Respond to action threshold

<p>If a single case is confirmed:</p> <ul style="list-style-type: none"> • Maintain strict VHF infection control practices* throughout the outbreak. • Mobilize the community for early detection and care and conduct community education about how the disease is transmitted and how to implement infection control in the home care setting and during funerals. • Conduct case-contact follow-up and active searches for additional cases that may not come to the health care setting. • Request additional help from other levels as needed. • Establish isolation ward to handle additional cases that may come to the health centre. 	
<p>Analyze and interpret data</p>	
<p>Person: Implement immediate case-based reporting of cases and deaths. Analyze age and sex distribution. Assess risk factors and plan disease control interventions accordingly.</p> <p>Time: Graph cases and deaths daily/weekly. Construct an epidemic curve during the outbreak.</p> <p>Place: Map locations of cases' households and work sites.</p>	
<p>Laboratory confirmation</p>	
<p>Diagnostic test</p>	<p>Presence of IgM antibodies against Ebola, Marburg, CCHF, Lassa or West Nile Fever</p> <p><i>or</i></p> <p>Presence of Ebola in post-mortem skin necropsy</p>
<p>Specimen</p>	<p><i>For ELISA:</i> Whole blood, serum or plasma</p> <p><i>For PCR:</i> Whole blood or blood clot, serum/plasma or tissue</p> <p><i>For immunohisto-chemistry:</i> Skin or tissue specimens from <i>fatal</i> cases.</p>
<p>When to collect the specimen</p>	<p>Collect specimen from the first suspected case.</p> <p>If more than one suspected case, collect until specimens have been collected from 5 to 10 suspected cases.</p>

<p>How to prepare, store, and transport the specimen</p>	<p>Handle and transport specimens from suspected vhf patients with extreme caution. Wear protective clothing and use barrier precautions.</p> <p><i>For ELISA or PCR:</i></p> <ul style="list-style-type: none"> • Refrigerate serum or clot • Freeze (-20C or colder) tissue specimens for virus isolation <p><i>For Immunohistochemistry:</i></p> <ul style="list-style-type: none"> • Fix skin snip specimen in formalin. Specimen can be stored up to 6 weeks. The specimen is not infectious once it is in formalin. • Store at room temperature. Formalin-fixed specimens may be transported at room temperature.
<p>Results</p>	<p>Diagnostic services for VHF are not routinely available. Advance arrangements are usually required for VHF diagnostic services. Contact the appropriate National authority or WHO.</p>
<p>Reference</p>	
<ul style="list-style-type: none"> • Interim Infection Control Recommendations for Care of Patients with Suspected or Confirmed Filovirus (Ebola, Marburg) Hemorrhagic Fever. BDP/EPR/WHO, Geneva March 2008. • Infection control for VHF in the African health care setting, WHO, 1998. WHO/EMC • WHO Recommended Surveillance Standards WHO/CDS/CSR/ISR/99.2 • WHO recommended Guidelines for Epidemic Preparedness and Response: Ebola Haemorrhagic Fever (EHF). WO/EMC/DIS/97.7. • Infection Control for Viral Hemorrhagic Fevers in the African Health Care Setting WHO/EMC/ESR/98.2 • Viral Infections of Humans; Epidemiology and Control. 1989. Evans, A.S. (ed). Plenum Medical Book Company, New York 	

Acute viral hepatitis

Background

Viral hepatitis A and viral hepatitis E

- Enterically transmitted HAV and HEV are a worldwide problem.
- Common source epidemics have been related to contaminated water and to contamination via infected food handlers.
- In general, both HAV and HEV are self-limiting viral infections; case fatality is normally low (0.1 - 0.3%). Women in the third trimester of pregnancy are especially susceptible to fulminant HEV disease.
- Both HAV and HEV are transmitted via the faecal-oral route.
- Prevention and control measures for hepatitis A and hepatitis E include adequate supplies of safe-drinking water and improvement of sanitary and hygienic practices to eliminate faecal contamination of food and water.

Viral hepatitis B and viral hepatitis C:

- Estimates indicate that worldwide, there are 350 million carriers of hepatitis B virus and 170 million carriers of hepatitis C virus.
- Hepatitis B and C epidemics are uncommon.
- Chronic infection and severe sequelae occur with hepatitis B - an estimated 15% to 25% of chronically infected persons will die prematurely of either cirrhosis or hepatocellular carcinoma. Chronic infection is common in hepatitis C and 5% to 20% of those infected with HCV may develop cirrhosis. There seems to be a connection between HCV infection and hepatocellular carcinoma.
- Hepatitis B is transmitted by percutaneous or per mucosal exposure to blood or other infectious body fluids. Major modes of transmission include sexual contact with an infected person, perinatal transmission from mother to infant, shared needles or syringes among injecting drug users, household contact (e.g., communally used razors and toothbrushes) and nosocomial exposure (transfusions, unsafe injection practices). In most countries where HBV is highly endemic, most infections occur during infancy and early childhood.
- Hepatitis C is transmitted by parenteral exposure to blood and plasma derivatives. It is found in highest concentrations in blood. The major causes of HCV infection worldwide are use of unscreened blood transfusions and re-use of needles and syringes that have not been adequately sterilised.
- Prevention and control measures for hepatitis B and C include transfusion safety, safe and appropriate use of injections and vaccination (hepatitis B).
- There is no specific treatment for acute viral hepatitis A, B, C and D.

Surveillance goal

- Detect hepatitis outbreaks.
- Identify areas/populations at high risk to target prevention and control measures.
- Estimate burden of disease.
- If countrywide surveillance is not possible, surveillance in sentinel areas or hospitals may provide useful information on potential sources of infection.

Standard case definition

<p>Suspected case: Any person with acute illness typically including acute jaundice, dark urine, anorexia, malaise, extreme fatigue, and right upper quadrant tenderness. (Note: infected children are often asymptomatic.)</p> <p>Confirmed case: A suspected case that is laboratory confirmed</p>	
<p>Respond to alert threshold</p>	
<p>If hepatitis cases are suspected:</p> <ul style="list-style-type: none"> • Report case-based information to the appropriate levels. • As necessary, treat and manage the patient(s) with supportive care. • Collect specimens and send to laboratory to identify the aetiology of the illness 	
<p>Respond to action threshold</p>	
<p>If hepatitis cases are confirmed</p> <ul style="list-style-type: none"> • Determine mode of transmission • Identify population exposed to risk of infection • Eliminate common source(s) of infection • Implement appropriate prevention and control interventions 	
<p>Analyze and interpret data</p>	
<p>Time: Analysis of suspected and confirmed cases by week. Graph cases and deaths weekly. Construct an epidemic curve during outbreaks.</p> <p>Place: Plot location of case households.</p> <p>Person: Analyze by age and gender. Assess risk factors to plan and monitor prevention and control measures.</p>	
<p>Laboratory confirmation</p>	
<p>Diagnostic test</p>	<p>Hepatitis A: IgM anti-HAV positive</p> <p>Hepatitis B: +ve for Hepatitis B surface antigen (HbsAg) or IgM anti-HBc positive</p> <p>Hepatitis C: Anti-HCV positive</p> <p>Hepatitis D: HBsAg positive or IgM anti-HBc positive plus anti-HDV positive (only as co-infection or super-infection of hepatitis B)</p> <p>Hepatitis E: IgM anti-HEV positive and/or IgG anti-HEV positive</p>
<p>Specimen</p>	<p>Serum</p>

When to collect the specimen	<p>Specimens should be collected from suspected patient.</p> <p>IgM anti-HAV becomes detectable 5-10 days after exposure.</p> <p>HBsAg can be detected in serum from several weeks before onset of symptoms to days, weeks or months after onset; it persists in chronic infections. IgM anti-HBc positive usually disappears within 6 months.</p>
How to prepare, store and transport the specimen	<p>Use universal precautions to minimize exposure to sharps and anybody fluid.</p> <p>Collect 5-10 ml of venous blood.</p> <ul style="list-style-type: none"> • Let clot retract for 30 to 60 minutes at room temperature or centrifuge to separate serum from red blood cells. • Aseptically pour off serum into sterile, screw capped tubes. • Store serum at 4°C. • For storage >5 days, samples are held at -20°C <p>Transport serum samples using appropriate packaging to prevent breakage or leakage.</p>
Results	<p>Results are usually available within one to 3 days from arrival in the laboratory</p>
Reference	
<ul style="list-style-type: none"> • WHO Recommended Strategies for Prevention and Control of Communicable Diseases; WHO/CDS/CPE/SMT/2001.13 • WHO Recommended Surveillance Standards WHO/CDS/CSR/ISR/99.2 • WHO Fact Sheet No 328, Hepatitis A, revised May 2008. <hr/> <ul style="list-style-type: none"> • WHO Fact Sheet No 204, Hepatitis B, revised August 2008 • WHO Fact Sheet No 164, Hepatitis C. • WHO Fact Sheet No 280, Hepatitis E, revised January 2005. • World Health Organization http://www.who.int/topics/hepatitis/en/ • United States, Centers for Disease Control and Prevention http://www.cdc.gov/hepatitis/ • Control of Communicable Diseases Manual. 18th Edition 	

Adverse Events Following Immunization (AEFI)
Background
Reports of AEFIs have had negative effects on national immunization programmes. Most reports are "coincidental" events not related to vaccines. It is important to identify real events and determine their cause.
Surveillance goal
To determine the cause of an AEFI or cluster of AEFIs and correct it.
Standard case definition
A medical incident that takes place after immunization, causes concern and is believed to be caused by the immunization
Respond to alert threshold
<p>If a single case is suspected:</p> <ul style="list-style-type: none"> • Treat the patient • Communicate with the parents and community • Respond to rumours or public enquiries • Complete case investigation form
Respond to epidemic threshold
<p>If a single case is confirmed:</p> <ul style="list-style-type: none"> • Monitor for a cluster • Send report immediately to initiate investigation of cause • Take remedial action to avoid another AEFI occurring from the same cause
Analyze and interpret data
Determine the cause of the event. Is it programme-related, Vaccine-induced, coincidental or unknown? Beware of mass psychological illness if a number of school-aged or older individuals are involved at the same time.
Reference
<ol style="list-style-type: none"> 1. Surveillance of adverse events following immunization. Field guide for managers of immunization programmes. WHO/EPI/93.02 Rev 1. http://www.who.int/vaccines- documents/DocsPDF/www9541.pdf 2. Kharabsheh S. Mass psychogenic illness following Td vaccine in Jordan. Bulletin of the WHO 2001. 79 (8); 764-770. http://www.who.int/bulletin/pdf/2001/issue8/vol79.no.8.764-770.pdf

Anthrax (human)
Background
<ul style="list-style-type: none"> • Anthrax is a widespread zoonotic disease caused by the spore-forming bacterium <i>Bacillus anthracis</i>, a Gram positive rod-shaped bacterium. A. It is transmitted from infected domestic livestock (cattle, sheep, goats, buffaloes, pigs and others) or wild game animals to humans by direct contact or indirect contact with animals or their products. • The incubation period typically ranges from 1 to 7 days, but may be longer (up to two to three weeks for cutaneous anthrax and up to 42 days for inhalation anthrax). Persons exposed to occupational hazards include those handling infected carcasses and those employed in the processing of bones, hides, wool and other animal products. Persons may also become infected by handling or consuming meat from animals that are sick with or have died of the disease. Biting flies have been reported to transmit the disease from infected animals to humans however how readily or often this occurs is unknown. • Human anthrax is a serious problem in several countries and has potential for explosive outbreaks (especially the gastrointestinal form that is contracted from eating infected meat); while pulmonary (inhalation) anthrax is mainly occupational, the threat of biological warfare attacks should not be forgotten. Anthrax has a serious impact on the trade of animal products. • The control of anthrax is based on its prevention in livestock. Programmes based only on prevention in humans are costly and likely to be ineffective except for those industrially exposed. • There is an effective vaccine for those persons considered at risk for occupational exposure, and successful vaccines are used for livestock, particularly for herds with ongoing exposure to contaminated soil or vegetation. • In most countries anthrax is a notifiable disease.
Surveillance goal
<ul style="list-style-type: none"> • To detect outbreaks. • To monitor control and prevention programmes
Standard case definition
<p>Suspected case</p> <p>Any person with acute onset characterized by several clinical forms which are:</p> <ul style="list-style-type: none"> (e) Cutaneous form: Any person with skin lesion evolving over 1 to 6 days from a papular through a vesicular stage, to a depressed black eschar invariably accompanied by edema that may be mild to extensive (f) Castro-intestinal: Any person with abdominal distress characterized by nausea, vomiting, anorexia and followed by fever (g) Pulmonary (inhalation): any person with brief prodrome resembling acute viral respiratory illness, followed by rapid onset of hypoxia, dyspnoea and high

with X-ray evidence of mediastinal widening

- (h) **Meningeal:** Any person with acute onset of high fever possibly with convulsions, loss of consciousness, meningeal signs and symptoms; commonly noted in all systemic infections, but may present without any other clinical symptoms of anthrax.

AND has an epidemiological link to confirmed or suspected animal cases or contaminated animal products

Confirmed case

A confirmed case of anthrax in a human can be defined as a clinically compatible case of cutaneous, inhalational or gastrointestinal illness that is laboratory-confirmed by:

- (c) isolation of *B. anthracis* from an affected tissue or site; or
(d) Other laboratory evidence of *B. anthracis* infection based on at least two supportive laboratory tests.

Note: it may not be possible to demonstrate *B. anthracis* in clinical specimens if the patient has been treated with antimicrobial agents.

Respond to alert threshold

If a single case is suspected:

- Report case-based information immediately to the appropriate levels (public health sector and animal health sector)
- Use standard barrier precautions for all forms. Use protective equipment and clothing (gloves, gowns, face shields), and respiratory protection if there is a risk of aerosols, disinfection and dressing any cuts and abrasion before putting on protective clothing.
- Perform environmental cleaning (disinfection) with hypochlorite.
- Treat and manage the patient with supportive care and using antibiotics such as Penicillin V, procaine penicillin (uncomplicated cases), or penicillin G (severe cases)
- Collect specimen safely to confirm the case.
- Conduct joint (public health and animal health sectors) investigation of cases/deaths
- Vaccination is required for animals when exported/imported
- In humans, selective preventive vaccination may be considered in case of occupational exposure

Respond to action threshold

If a single case is confirmed:

- Standard infection control precautions are sufficient and should be used when managing

<p>patients</p> <ul style="list-style-type: none"> • Particular attention should be paid to body fluid spills which should be managed by the usual methods for cleaning and decontamination of anybody fluid spills. This should be done promptly and thoroughly, because organisms which remain on surfaces may form spores which are infectious • As is usual practice, personal protective equipment should be used in situations where there is potential for splashes and inoculation injuries. Any incidents should be reported immediately • Mobilize the community for early detection and care. • Proper burial or cremation (if practiced) of dead bodies (humans and animals) • Conduct community education about the confirmed case, how the disease is transmitted, and how to use infection control in the home care setting. • Conduct active searches for additional cases that may not come to the health care setting (older women or small children, for example) and provide information about prevention in the home and when to seek care. • Request additional help from national levels as needed. 	
<p>Analyze and interpret data</p>	
<p>Time: Graphs of number of suspected / probable / confirmed cases by date.</p> <p>Place: Map of suspected and confirmed human and animal cases by geographical area (district)</p> <p>Person: Table showing the number of suspected / probable / confirmed cases by date, age and sex</p>	
<p>Laboratory confirmation</p>	
<p>Diagnostic test</p>	<p>Isolation of <i>Bacillus anthracis</i> from a clinical specimen (e.g. blood, lesions, discharges)</p> <p>Demonstration of <i>B.anthraxis</i> in a clinical specimen by microscopic examination of stained smears (vesicular fluid, blood, cerebrospinal fluid, pleural fluid, stools)</p> <p>Positive serology (ELISA, Western blot, toxin detection, chromatographic assay, fluorescent antibody test)</p>
<p>Specimen</p>	<p>Cutaneous</p> <ol style="list-style-type: none"> 1.For vesicular lesions, two swabs of vesicular fluid from an unopened vesicle 2.For eschars, the edge should be lifted and two swab samples rotated underneath 3.For ulcers, the base of the lesion should be sampled with two saline moistened swabs

	<p>evidence of systemic symptoms.</p> <p>5. A full thickness punch biopsy of a papule or vesicle including adjacent skin should be obtained from all patients with a lesion being evaluated for cutaneous anthrax, to be submitted in 10 percent formalin for histopathology.</p> <p>6. In patients not on antibiotic therapy or on therapy for <24 hours, a second biopsy specimen</p> <p>7. Acute and convalescent serum samples for serologic testing.</p> <p>Castro-intestinal</p> <p>1. Blood cultures obtained prior to antimicrobial therapy.</p> <p>2. Ascites fluid for culture and PCR.</p> <p>3. Stool or rectal swab for culture and PCR.</p> <p>4. Oropharyngeal lesion, if present, for culture and PCR.</p> <p>5. Acute and convalescent serum samples for serologic testing.</p> <p>6. Autopsy tissues from fatal cases for histopathology.</p> <p>Inhalation</p> <p>1. Blood cultures obtained prior to antimicrobial therapy.</p> <p>2. Pleural fluid, if present, for culture and PCR.</p> <p>3. CSF, in patients with meningeal signs, for culture and PCR.</p> <p>4. Pleural and/or bronchial biopsies for IHC.</p> <p>5. Acute and convalescent serum samples for serology</p> <p>6. Autopsy tissues from fatal cases for</p>
<p>When to collect the specimen</p>	<p>Specimens should be collected from any patient being evaluated for cutaneous <i>Bacillus anthracis</i> infection.</p> <p>It may not be possible to demonstrate <i>B. anthracis</i> in clinical specimens if the patient has been treated with antimicrobial agents.</p> <p>Organism is best demonstrated in specimen taken at the Vesicular stage</p> <p>Specimens for culture should be obtained prior to initiation of antimicrobial therapy</p> <p>If available at reference laboratories specimens may be submitted for PCR</p> <p>Caution: <i>B. anthracis</i> is highly infectious</p>

<p>How to prepare, store and transport specimen</p>	<p>Vesicular stage: collect fluid from intact vesicles on sterile swabs.</p> <p>Eschar stage: without removing eschar, insert swab beneath the edge of eschar, rotate and collect lesion material. Store specimen for: S24 h and transport for: S2h at room temperature.</p> <p>Stool: collect 5-10 g in a clean sterile leak-proof container. Store for: S24 h at 4°C. Transport: S1h at room temperature.</p> <p>Blood: collect per institution's procedure for routine blood culture. Collect 10 ml of blood in EDTA for PCR. Transport: S2h in room temperature.</p> <p>Sputum: collect expectorated specimen into a sterile leak proof container. Store for: S24 h at 4°C. Transport: S2 h in room temperature.</p>
<p>Results</p>	<p><i>Diagnostic services for Anthrax are not routinely available. Advance arrangements are usually required for Anthrax diagnostic services. Contact the appropriate National authority or WHO.</i></p>
<p>Reference</p>	
<ul style="list-style-type: none"> • WHO. Anthrax in humans and animals. World Health Organization, Geneva. (2008) (Available on http://www.who.int/csr/resources/publications/AnthraxGuidelines2008/en/index.html) • WHO Recommended Surveillance Standards WHO/CDS/CSR/ISR/99.2 • WHO recommended Strategies for the Prevention and Control of Communicable Diseases, WHO/CDS/CPE/SMT/2001.13 • 2003 WHO Manual for Laboratory Diagnosis of Anthrax (http://www.searo.who.int/en/Section10/Section17/Section58/Section909.htm) • "CDC: Anthrax Information for Health Care Providers" (http://emergency.cdc.gov/agent/anthrax/anthrax-hcp-factsheet.asp) • "CDC: Recommended Specimens for Microbiology and Pathology for Diagnosis: 	

Buruli ulcer (<i>Mycobacterium ulcerans</i> disease)
Background
<ul style="list-style-type: none"> • Skin infection caused by <i>Mycobacterium ulcerans</i> (an AFB) • Occurring mainly as skin lesions (nodules, plaques and ulcers) than can be complicated by bone and joint involvement. Involvement of other organs like the eyes is rare • Spreading in inter-tropical areas, in swampy soils or water body surroundings, forestry or surface mining zones • Patients are classified into three categories: <ul style="list-style-type: none"> ○ Category I: patient with a single lesion which size is less than 5 cm of diameter (early lesion) ○ Category II: patient with single lesion which size is between 5 and 15 cm of diameter ○ Category III: patient single lesion which size is over 15 cm of diameter or with multiple lesions or lesion located in critical site (face, head & neck, breast, perineum, genitalia, lesion spanning over joints) • BU case management has improved greatly through use of WHO recommended antibiotics (rifampicin and streptomycin) in 2004. Surgery is still needed for late cases (category III). Cumulative number of cases is over 60,000 in 2009. • Mode of transmission is still unknown. <i>M ulcerans</i> could penetrate the skin through insect bite (water bugs); micro trauma or small wounds • Confirmation of diagnosis is done by PCR, AFB search with ZN staining, culture or histology. Specimens of lesions are taken by swab in ulcer, fine needle aspiration (FNA) or biopsy in case of surgery.
Surveillance goal
<ul style="list-style-type: none"> • Geographical distribution of the disease to locate endemic areas and districts and focus early case finding, proper management with WHO recommended antibiotics and prevention of disabilities
Standard case definition
<p>Suspected case: A person presenting a painless skin nodule, plaque or ulcer, living or having visited a BU endemic area</p> <p>Confirmed case: A suspected case confirmed by at least one laboratory test (ZN for AFB, PCR, culture or histology)</p>
Respond to alert threshold

<p>If a single case is suspected:</p> <ul style="list-style-type: none"> • Report the suspected case to the appropriate level of the health system <p>At health facility level:</p> <ul style="list-style-type: none"> • Take a specimen for laboratory confirmation (Swab or FNA) • Begin wound dressing and combined antibiotic treatment with: <ul style="list-style-type: none"> -- Rifampicin 10 mg/kg daily oral intake for 8 weeks (56 days). -- Streptomycin daily injection for 8 weeks (56 days) • Refer category III patients to reference hospital/centre • Fill in case report form (BU 01 or BU 02) with origin village GPS data and report to Health District, Regional and National levels • Search other cases in origin village of confirmed case of BU 	
<p>Respond to action threshold</p>	
<p>If a suspected case is confirmed (Not applicable to BU)</p>	
<p>Analyze and interpret data</p>	
<p>Time: Graph of cases by year of diagnosis, graph of cumulative number of cases.</p> <p>Place: Plot cases by location of households and colour shade endemic districts</p> <p>Person: Count newly detected cases monthly by category of patients (Cat I, II or III). Analyze age and disability distribution and treatment outcomes (cases cured, cured without limitation of movement or amputation, relapse after recommended antibiotic treatment).</p>	
<p>Laboratory Confirmation</p>	
<p>Diagnostic test</p>	<p><i>Mycobacterium ulcerans</i>: Smears and biopsy specimens can be sent to the laboratory for confirmation by:</p> <ul style="list-style-type: none"> • Ziehl-Neelsen stain for acid-fast bacilli • Culture • PCR • Histopathology
<p>Specimen</p>	<p>Smears Biopsy specimens</p>

When to collect the specimen	<p>Specimens should be collected from suspected patient with clinical symptoms (nodule, plaque, ulcer, osteomyelitis.)</p> <p>Specimen should be collected before any antibiotic is given. Another specimen should be collected at the end of the treatment (in case the treatment is not efficacious or surgery is indicated)</p>
How to prepare, store, and transport the specimen	<p>Collection of specimens: it is important to avoid cross contamination between the collection of samples</p> <p>Materials: Dry swabs and recipients.</p> <p>Types of specimens: No ulcerative forms, Ulcerative forms, Bone</p> <p>Store at 4°C</p>
Results	<p>Buruli ulcer is usually diagnosed clinically and by finding acid fast bacilli (AFB) in smears from infected ulcers and tissue biopsies. It can also be identified using PCR.</p> <p><i>M. ulcerans</i> can be cultured in a reference lab using the same culture media used to grow <i>M. tuberculosis</i>.</p> <p>The organism grows very slowly, usually requiring several weeks to provide visible colonies.</p> <p>Diagnostic services are not routinely available. Contact the appropriate National authority or WHO.</p>
References	
<ul style="list-style-type: none"> • Resolution WHA 57.1 on surveillance and control of <i>Mycobacterium ulcerans</i> disease (Buruli ulcer). In: 57th World Health Assembly, Geneva, 17-22 May 2004; Resolutions and decisions, annexes. Geneva, WHO; 2004 (WHA57/2004/REC/1: 1-2) 	
<ul style="list-style-type: none"> • Provisional guidance on the role of specific antibiotics in the management of <i>Mycobacterium ulcerans</i> disease (Buruli ulcer) WHO/CDS/CPE/GBUI/2004.10 • Buruli ulcer: First programme review meeting for West Africa - Summary report. WHO, WER, 6; 2009 : 43-48 • Control of Communicable Diseases Manual, 18th Edition • District Laboratory Practice in Tropical countries, Cambridge • Ulcere de Buruli , prise en charge de l'infection a <i>Mycobacterium ulcerans</i> 	

Chikungunya
Background
<ul style="list-style-type: none"> • Chikungunya fever is a viral illness that is spread by the bite of infected mosquitoes. The disease resembles dengue fever, and is characterized by severe, sometimes persistent, joint pain (arthritis), as well as fever and rash. It is rarely life-threatening. Nevertheless, widespread occurrence of diseases causes substantial morbidity and economic loss • The word "chikungunya" is Makonde for "that which bends up," in reference to the stooped posture of patients afflicted with the severe joint pain associated with the disease. Epidemics of fever, rash and arthritis, resembling Chikungunya fever were recorded as early as 1779. However, the virus was first isolated between 1952-1953 from both man and mosquitoes during an epidemic, in Tanzania. • Chikungunya fever historically displayed interesting epidemiological profiles in that: major epidemics appeared and disappeared cyclically, usually with an inter-epidemic period of 7-8 years and sometimes as long as 20 years. After a long period of absence, outbreaks appeared in Indonesia in 1999 and have been virtually ongoing since 2004.
Surveillance goal
<ul style="list-style-type: none"> • Detect chikungunya sporadic cases and outbreaks promptly, and seek laboratory verification • Identify high risk areas in order to improve prevention of outbreaks by taking steps to avoid mosquito bites and elimination of breeding sites.
Standard case definition
<p><i>Suspected case:</i> Any person with acute onset of fever $>38.5^{\circ}\text{C}$ and severe arthralgia/arthritis not explained by other medical conditions.</p> <p><i>Confirmed case:</i> A suspected case with laboratory confirmation.</p>
Respond to alert threshold
<p>If chikungunya cases are suspected:</p> <ul style="list-style-type: none"> • Report case-based information immediately to the next level. • Collect specimens for confirming the cases • Conduct an investigation to determine the risk factors for transmission • Manage and treat the cases using anti-inflammatory agents
Respond to action threshold

If chikungunya cases are confirmed

- Symptomatic treatment for mitigating pain and fever using anti-inflammatory drugs along with rest usually suffices. Persistent joint pain may require analgesic and long-term anti-inflammatory therapy.
- Prevention is entirely dependent upon taking steps to avoid mosquito bites and elimination of mosquito breeding sites.

To avoid mosquito bites:

- Wear full sleeve clothes and long dresses to cover the limbs.
- Use mosquito coils and repellents.
- Use mosquito nets - to protect babies, old people and others, who may rest during the day. The effectiveness of such nets can be improved by treating them with permethrin (pyrethroid insecticide). Curtains (cloth or bamboo) can also be treated with insecticide and hung at windows or doorways, to repel or kill mosquitoes.
- Mosquitoes become infected when they bite people who are sick with chikungunya. Mosquito nets and mosquito coils will help prevent mosquitoes from biting sick people

Analyze and interpret data

Time: Graph cases and deaths weekly. Construct an epidemic curve during outbreaks.

Place: Plot location of case households with precise mapping.

Person: Report immediate case-based information for cases and deaths. Report summary totals monthly. During outbreak, count cases and deaths weekly. Analyze by age. Assess risk factors to improve prevention of outbreaks.

Laboratory confirmation

Diagnostic test	Serological tests show a rise in antibody titer to chikungunya virus; the virus may be isolated from the blood of acutely ill patients in newborn mice, mosquitoes or cell culture or detected using IFA or Reverse Transcription Polymerase Chain Reaction (RT-PCR)
Specimen	Serum

<p>When to collect the specimen</p>	<p>Collect specimen from the first suspected case (s). Suspected CHIK cases occur in clusters.</p> <p>Collect representative specimens from suspected cases. If outbreak is confirmed, collect more specimens from cases and also mosquitoes from the affected homes for testing.</p> <p>Type of Specimen</p> <ul style="list-style-type: none"> • Acute-phase blood (0-10 days after onset) • Convalescent-phase blood (7 - 21 days after onset) <p>Time of collection:</p> <p>When patient presents; collect second sample during convalescence. Between days 7 and 21 after onset.</p>
<p>How to prepare, store, and transport the specimen</p>	<p>Transport of specimens should comply with the WHO guidelines for the safe transport of infectious substances and diagnostic specimens (WHO, 1997).</p> <p>For ELISA:</p> <ul style="list-style-type: none"> • Refrigerate at 2° to 8° C serum or clot for testing within 24 hours. If kept for longer store at -80°. <p>For Isolation and RT PCR</p> <ul style="list-style-type: none"> • Store at -80° or transport in fully charged dry shipper. <p>Mosquitoes for testing should be transported in fully charged dry shipper. Focus on Aedes species</p>
<p>Results</p>	<p>Diagnostic services for Chikungunya are not routinely available. Contact the appropriate National authority or WHO.</p> <ul style="list-style-type: none"> • Ministry of Health, Disease Outbreak Management Unit should send samples to WHO reference labs e.g. KEMRI • Preliminary results are ready within 24 hours after samples arrive in the laboratory. Confirmatory results are ready within a week from sample reception.
<p>Reference</p>	

- Weekly Epidemiological Record N° 1, 2005, 80, 1-8; <http://www.who.int/wer>
- World Health Organization <http://www.who.int/mediacentre/factsheets/fs327/en/>
- United States, Centers for Disease Control <http://www.cdc.gov/ncidod/dvbid/chikungunya/>
- Seron et al Seroprevalence of Chikungunya Virus (CHIKV) Infection on Lamu Island, Kenya, October 2004. Am J Trop Med Hyg. 2008 Feb;78(2):333-337
- Powers et al. Evolutionary relationships and systematics of the alphaviruses. J Virol. 2001 Nov;75(21):10118-31

Cholera
Background
<ul style="list-style-type: none"> • Acute illness with profuse watery diarrhoea caused by <i>Vibrio cholerae</i> serogroups O1 or O139. The disease is transmitted mainly through the faecal-oral route; that is through eating or drinking contaminated food or water. • Cholera causes over 100 000 deaths per year. It may produce rapidly progressive epidemics or worldwide pandemics. In endemic areas, sporadic cases (less than 5% of all non-outbreak-related diarrhoea cases) and small outbreaks may occur. • Incubation period is from a few hours to 5 days, usually in the range of from 2 to 3 days. • There has been a resurgence of cholera in Africa since the mid-1980s, where over 80% of the world's cases occurred in 1999. The majority of cases occurred from January through April. • Cholera may cause severe dehydration in only a few hours. In untreated patients with severe dehydration, the case fatality rate (CFR) may exceed 50%. If patients present at the health facility and correct treatment is received, the CFR is usually less than 1%. At least 90% of the cases are mild, and they remain undiagnosed. • Risk factors: eating or drinking contaminated foods such as uncooked seafood or shellfish from estuarine waters, lack of continuous access to safe water and food supplies, attending large gatherings of people including ceremonies such as weddings or funerals, contact with persons who died of cholera. • Other enteric diarrhoea may cause watery diarrhoea, especially in children less than 5 years of age. Please see <i>Diarrhoea with dehydration</i> summary guidelines.
Surveillance goal
<ul style="list-style-type: none"> • Detect and respond promptly and appropriately to cases and outbreaks of watery diarrhoea. To confirm an outbreak, collect and transport stool specimens transported in Cary-Blair medium. • Do immediate case-based reporting of cases and deaths when an outbreak is suspected.
Standard case definition
<p>Suspected case:</p> <ul style="list-style-type: none"> • In a patient age 5 years or more, severe dehydration or death from acute watery diarrhoea. • If there is a cholera epidemic, a suspected case is any person age 5 years or more with acute watery diarrhoea, with or without vomiting.
<p>Confirmed case:</p> <ul style="list-style-type: none"> • A suspected case in which <i>Vibrio cholerae</i> O1 or O139 has been isolated in the stool.
Respond to alert threshold

If a single case is suspected:

- Report case-based information immediately.
- Manage and treat the case according to national guidelines.
- Enhance strict hand-washing and isolation procedures.
- Conduct case-based investigation to identify similar cases not previously reported.
- Obtain stool specimen from 5 patients within 5 days of onset of acute watery diarrhoea, and before antibiotic treatment is started. See laboratory guidelines for information on how to prepare, store and transport the specimens.

Respond to action threshold**If a suspected case is confirmed:**

- Establish treatment centre in locality where cases occur. Treat cases onsite rather than asking patients to go to standing treatment centres elsewhere.
- Strengthen case management including treatment.
- Mobilize community early to enable rapid case detection and treatment. Survey the availability of clean drinking water.
- Work with community leaders to limit the number of funerals or other large gatherings for ceremonies or other reasons, especially during an epidemic.
- Reduce sporadic and outbreak-related cases through continuous access to safe water. Promote safe preparation of food (especially seafood, fruits, and vegetables). Promote safe disposal of human waste.

Analyze and interpret data

Time: Graph weekly cases and deaths and construct an epidemic curve during outbreaks. Report case-based information immediately and summary information monthly for routine surveillance.

Place: Plot the location of case households.

Person: Count weekly total cases and deaths for sporadic cases and during outbreaks. Analyze distribution of cases by age and according to sources of drinking water. Assess risk factors to improve control of sporadic cases and outbreaks.

Laboratory confirmation**Diagnostic test**

Isolate *V. cholerae* from stool culture and determine O1 serotype using polyvalent antisera for *V. cholerae* O1.
If desired, confirm identification with Inaba and Ogawa antisera.
If specimen is not serotypable, consider, *V. cholerae* O139 (see note in Results column).

Specimen	Liquid stool or rectal swab
When to collect the specimen	<p>For each new area affected by the outbreak, a laboratory confirmation should be done.</p> <p>Collect stool sample from the first suspected cholera case. If more than one suspected case, collect until specimens have been collected from 5 to 10 cases. Collect stool from patients fitting the case definition and:</p> <ul style="list-style-type: none"> • Onset within last 5 days, and • Before antibiotics treatment has started <p><i>Do not delay treatment of dehydrated patients.</i> Specimens may be collected after rehydration (ORS or IV therapy) has begun.</p> <p>If possible, specimens should be collected from 5 - 10 suspected cases every 1 - 2 weeks to monitor cessation of the outbreak, changes in serotypes, and antibiotic sensitivity patterns of V.cholerae.</p>
How to prepare, store, and transport the specimen	<ul style="list-style-type: none"> • Place specimen (stool or rectal swab) in a clean, leak proof container and transport to lab within 2 hours. • If more than 2- hour delay is expected, place stool-soaked swab into Cary-Blair transport medium.
	<p>If Cary-Blair transport medium is not available and specimen will not reach the lab within 2 hours:</p> <ul style="list-style-type: none"> • Store at 4°C to 8°C • Do not allow specimen to dry. Add small amount of 0.85% NaCl if necessary • To transport, transport in well marked, leak proof container • Transport container in cold box at 4°C to 8°C
Results	<ul style="list-style-type: none"> • Cholera tests may not be routinely performed in all laboratories. • Culture results usually take 2 to 4 days after specimen arrives at the laboratory. • Cary-Blair transport medium is stable and usually good for at least one year after preparation. It does not require refrigeration if kept sterile and in properly sealed container. If colour changes (medium turns yellow) or shrinks (depressed meniscus), do not use the medium. • The O139 serotype has not been reported in Africa and only in a few places in southwest Asia. <p>Serological determination of Ogawa or Inaba is not clinically required. It is also not required if polyvalent antisera results are clearly positive.</p>
Reference	

- *Management of the patient with cholera*, World Health Organization, 1992. WHO/CDD/SER/91.15 Rev1 (1992)
- *Epidemic diarrhoeal disease preparedness and response--Training and practice*. Facilitator and participant manuals. World Health Organization, 1997. WHO/EMC/DIS/97.3 and WHO/EMC/DIS/97.6
- "Laboratory Methods for the Diagnosis of Epidemic Dysentery and Cholera." CDC/WHO, 1999 CDC, Atlanta, GA, USA

Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)

Background

- The Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is a new virus that had not been previously identified in humans and therefore no population-level immunity exists. This virus belongs to the coronaviridae family grouped together in 1968 due to existence of crown-like appearances on their cell membrane.
- The virus is highly transmissible by way of inhalation of respiratory droplets, contact with contaminated objects and surfaces or occasionally by aerosol inhalation. It attacks the respiratory, intestinal and brain tissues. Infection from SARS-CoV-2 results in coronavirus disease (COVID-19) which manifests along a spectrum ranging from mild to severe symptoms; in severe cases, death can occur due to complication from the disease.
- Risk factors for developing severe forms/ complications of the disease are; Age > 65 years, heart conditions such as history of heart attack or stroke, Diabetes Mellitus, Sickle cell disease, Cancer patients whether or not on chemotherapy, Advanced liver disease, Person living with HIV, Lung diseases (e.g. asthma, TB, COPD), Kidney disease and Severe Acute Malnutrition
- Incubation period is on average 5-6 days, but varies from 1-14 days.
- The early symptoms of COVID-19, including fever, myalgia, and fatigue might be confused with malaria and other febrile infections. This non-specific presentation can lead to challenges in early clinical diagnosis and management.
- Coronavirus disease was first reported from Wuhan State in China in December 2019 and declared by WHO as a Public Health Emergency of International Concern (PHEIC) on 30 January 2020 and later a pandemic on the 11th March, 2020. Uganda reported her index case on the 21st March 2020 subsequently Uganda has reported more cases of the disease with widespread community transmission. By the 31st October 2020 the country had a cumulative number of 12495 confirmed cases and cumulative 111 deaths.
- There is currently no therapeutic with proven effectiveness for COVID-19. Treatment is mainly supportive.

Surveillance goal

Early detection of COVID-19 cases and outbreaks, rapid investigation, and early laboratory verification of the cause of all suspected cases. Identify contacts and Investigate all suspected cases using a case definition according to the suspected, probable or confirmed disease should be used.

Standard case definition: COVID-19

Suspected case (sporadic or cluster):

A) Any person with acute respiratory illness (Temperature greater 37.5°C and at least one sign/symptom of respiratory infection such as cough or shortness of breath) and no other cause that fully explains the clinical presentation and no other history that fully explains the clinical presentation AND history of travel in the last 14 days before onset to an area reporting local transmission of COVID-19.

OR

B) Any person with acute respiratory illness (Temperature greater 37.5°C and at least one sign/symptom of respiratory infection such as cough or shortness of breath) and no other cause that fully explains the clinical presentation and no other history that fully explains the clinical presentation AND requiring hospitalization.

OR

C) Any person with acute respiratory illness (Temperature greater 37.5°C and at least one sign/symptom of respiratory infection such as cough or shortness of breath) and no other cause that fully explains the clinical presentation and no other history that fully explains the clinical presentation AND history of contact with a confirmed or probable COVID-19 Case in the last 14 days before development of symptoms.

Suspected case (Community transmission pattern)

Any person or groups of persons with flu like symptoms such as fever, running nose, sneezing, sore throat and difficulty in breathing.

Probable Case

A) A suspect case for whom tests for COVID-19 are inconclusive

OR

B) A suspect case for whom tests could not be performed for any reason.

Confirmed COVID-19 case: A person with confirmed COVID-19 infection irrespective of the presence of clinical signs and symptoms **Contact:**

Any person who experienced any one of the following exposures during the 2 days before and the 14 days after the onset of symptoms of a probable or confirmed case;

1. Face –to-face contact with a probable or confirmed case within 2 meters and for more than 15 minutes;
2. Direct physical contact with a probable or confirmed case;
3. Direct care for a patient with probable or confirmed COVID-19 disease without using proper Personal Protective Equipment (PPE).

Note For confirmed asymptomatic cases, the period of contact is measured as the 2 days before through the 14 days after the date on which the sample was taken which led to confirmation.

Respond to alert threshold**If no case is identified in the country but Cases elsewhere**

- Phase 1. Aim to prevent entry of cases into the territory.
Establish controls at the points of entry.

If a single case is suspected:

- Report case-based information immediately to the appropriate levels.
- Suspected cases should be isolated from other patients/people with at least 2 metres and strict infection prevention procedures should be implemented. Infection Prevention and Control (IPC) precautions should be enhanced throughout the health care setting and in communities.
- Suspect should be instructed to wear at least medical or cloth mask and practice appropriate hand hygiene. If possible, dedicated toilet facilities should be made available.
- Treat and manage the patient with supportive care.
- Collect the appropriate specimen while observing strict IPC procedures to confirm the case.
- Complete a laboratory request form, use triple packaging of the specimens (see detailed SOP for triple packaging) and mark well the containers to warn of a potential laboratory biosafety risk
- Conduct case-contact tracing and follow-up and active case search for additional cases (See detailed SOP for contact tracing and follow up).

If a single case is confirmed:

- Maintain strict COVID-19 infection prevention and control (IPC) practices throughout the outbreak (Refer to IPC guidelines).
- Mobilize the community for high index of suspicion, early detection and care
- Conduct community education on how the disease is transmitted and how to implement IPC in the home care setting and during gatherings (e.g. funerals and burials). Consider social distancing strategies at every event.
- Conduct case-contact identification and proceed based on the stage of infection;
Phase 2: Continue measures for phase 1 and put containment measures in place, identify and quarantine high risk persons and isolate suspects/cases.
Phase 3: Continue with phase 1, Identify cases and do contact tracing test only those who are symptomatic. **Phase 4:** Continue Phase 1 and 3. Conduct Mitigation (Syndromic surveillance, shielding of vulnerable population, admit only symptomatic cases, provide home based care for the asymptomatic cases).
- Request additional help from other levels whenever needed.
- Establish an isolation ward or treatment centre to handle additional cases that may come to the health centre and ensure strict IPC measures to avoid transmission in health care settings.
- Suspected cases should be isolated and treated for more common conditions with similar symptoms, which might include malaria, pneumonia. Ensure a barrier is instituted between suspected and confirmed cases.
- Provide psychosocial support for the family, community and staff.
- Consider quarantine for high risk contacts with home support during the incubation period and ensure daily follow up of their movements and regular checks to establish development of symptoms.

COVID-19 vaccines are still in development so;

- Treat conservatively the symptoms which might be present based on the National COVID-19 treatment guidelines; severe cases may require intensive care support; if dehydrated ensure fluid replacement with fluids that contain electrolytes, if reduced oxygen saturation (<92%) provide oxygen therapy, provide oxygen if difficulty breathing or evidence of severe disease.
- A range of potential treatment options including blood products, immune therapies, and drug therapies are under study but no definitive treatment for COVID-19 has been identified as yet.

Analyse and interpret COVID-19 data:

Person: Initiate immediate case-based reporting of cases and deaths. Analyse age and sex distribution. Assess risk factors and plan outbreak response interventions accordingly.

Time: Plot a graph of cases and deaths daily/weekly. Construct an epidemic curve during the outbreak.

Place: Map locations of cases' households and work sites using available national system e.g. Village Health team (VHT). If you have a Geographical Positioning System (GPS) gadget, this will aid location of the suspect as well as contacts.

Laboratory confirmation: COVID-19

Diagnostic test: Viral and antibody tests. Diagnosis is confirmed by the presence of Viral RNA detected by molecular testing, usually RT-PCR.

Specimen: Nasal or Oropharyngeal swab.

When to collect the specimen:

For each new area affected by the outbreak, laboratory confirmation should be done. Collect nasal or oral pharyngeal swab from suspected COVID-19 cases or contacts of confirmed cases.

Provide for treatment based on symptoms for mild case and severe cases (refer to treatment guidelines for COVID-19)

How to prepare, store, and transport the specimen

- Use flexible Nasopharyngeal/Oropharyngeal swab to collect specimens,
- Leave swab in place for several seconds to absorb secretions. Slowly remove the swab while rotating it.
 - Place specimen (nasal or oropharyngeal swab) in viral transport media (VTM), triple packaged and labeled appropriately.
 - Store collected specimens at temperatures of 2 – 8 °C until ready to send to the reference laboratory.
 - Specimens may be held at this temperature for up to 72 hours. Specimens **must** be received reference Laboratories within three days of being collected.

<p>Results: COVID-19 laboratory test</p>	<ul style="list-style-type: none"> • COVID-19 tests may not be routinely performed in all laboratories. • Return and communication of results is done through centralized electronic result download system. Results are uploaded in to this system by accredited COVID -19 testing laboratories into electronic results dispatch system (eRDS) • Results are always received within 48 to 72 hours. • The country along with the neighbours have set up the Regional Electronic data and driver tracking system (RECDTS) in 15 points of entry at the border posts (Malaba, Kitagate, Elegu, Busia, Mutukula, Mpondwe, Bunagana, Vurra, Mirama Hills, Padea, Goli, Suam, Lwakhakha, Lia and Odramacako) which enables access to results of tested truck drivers by the authorities.
<p>References</p> <ul style="list-style-type: none"> • Benjamin J Cowling, Allison E Aiello, Public Health Measures to Slow Community Spread of Coronavirus Disease 2019, The Journal of Infectious Diseases, doi: https://doi.org/10.1093/infdis/jiaa123 • WHO. Coronavirus disease 2019 (COVID-19) Situation Report – 91 • Coronavirus: The four stages of a global pandemic; 2020. Available from: https://economictimes.indiatimes.com/news/politics-and-nation/coronavirus-the-four-stages-of-a-global-pandemic/stage-1/slideshow/74884278.cms • WHO. Coronavirus disease 2019 (COVID-19) Situation Report – 72 • WHO. Responding to community spread of COVID-19, Interim Guidance. 202 • National guidelines for management of COVID-19 in Uganda, 2020 	

Dengue Fever

Background

- Dengue fever is an arbovirus transmitted by *Aedes* mosquitoes (both *Ae. aegypti* and *Ae. albopiticus*). Dengue is caused by four serologically distinct, but closely related viruses: dengue virus (DENV) 1, 2, 3, and 4 of the flaviviridae family.
- Dengue fever is an emerging pandemic that has spread globally during the past 30 years as a result of changes in human ecology. Dengue is found in tropical and sub-tropical regions around the world, predominately in urban and semi-urban areas. During dengue epidemics, infection rates among those who have not been previously exposed to the virus are often 40% to 50%, but can reach 80% to 90%.
- Dengue fever is a severe, influenza-like illness that affects infants, young children and adults, but seldom causes death. Dengue haemorrhagic fever (DHF) is a potentially deadly complication that has become a leading cause of hospitalization and death among children in Asia. There is good evidence that sequential infection with the different serotypes of dengue virus increases the risk of more severe disease that can result in shock syndrome (DSS) and death.
- Epidemic dengue activity in Africa has mostly been classical dengue fever caused by DENV-1 and DENV-2 without associated mortality. The first major outbreak of DENV-3 in Africa was documented in Mozambique in 1984-1985. During this outbreak, most patients experienced secondary infections and 2 deaths were attributed to DHF and shock. In 2008, yellow fever and DENV-3 were found to be co-circulating in Abidjan, Cote d'Ivoire, however, no severe dengue cases or deaths attributable to dengue were identified.
- There is no specific treatment for dengue, but appropriate medical care frequently saves the lives of patients with dengue haemorrhagic fever.
- Infected humans are the main carriers and multipliers of the virus, serving a source of the virus for uninfected *Aedes aegypti* mosquitoes which maintain the urban dengue transmission cycle. The virus circulates in the blood of infected human for 2-7 days, at approximately the same time that they have a fever. A sylvatic transmission cycle has been documented in west Africa where DENV-2 has been found in monkeys. There is no evidence of person-to-person transmission.
- At present, the only method of controlling or preventing dengue virus transmission is to combat the vector mosquitoes using environmental management and chemical methods.

Surveillance goal

- Surveillance for suspected cases and investigation of clusters of suspected cases in areas with *Ae. aegypti* and *Ae. albopiticus* mosquitoes

Standard case definition

Dengue Fever Suspected case: Any person with acute febrile illness of 2-7 days' duration with 2 or more of the following: headache, retro-orbital pain, myalgia, arthralgia, rash, haemorrhagic manifestations, leucopenia.

Dengue Fever Confirmed case: A suspected case with laboratory confirmation (positive IgM antibody, rise in IgG antibody titres, positive PCR or viral isolation).

Dengue Haemorrhagic Fever : A probable or confirmed case of dengue with bleeding tendencies as evidenced by one or more of the following: positive tourniquet test; petechiae, ecchymoses or purpura; bleeding: mucosa, gastrointestinal tract, injection sites or other; haematemesis or melaena; and thrombocytopenia (100 000 cells or less per mm³) and evidence of plasma leakage due to increased vascular permeability, manifested by one or more of the following: 20% rise in average haematocrit for age and sex, 20% drop in haematocrit following volume replacement therapy compared to baseline, signs of plasma leakage (pleural effusion, ascites, hypo-proteinaemia).

Dengue Shock Syndrome: All the above criteria, plus evidence of circulatory failure manifested by rapid and weak pulse, and narrow pulse pressure (\leq 20 mm Hg) or hypotension for age, cold, clammy skin and altered mental status.

Respond to alert threshold

If a single case is suspected:

- Report case-based information immediately to the next level.
- Conduct active search for additional cases
- Collect specimens for confirming the cases

Respond to action threshold

If a single case is confirmed:

- Report case-based information immediately to the next level.
- Conduct active search for additional cases
- Collect specimens for confirming the cases
- Survey the community to determine the abundance of vector mosquitoes, identify the most productive larval habitats, promote and implement plans for their elimination, management or treatment with appropriate larvicides.

- Educate the public and promote behaviors to remove, destroy or manage mosquito vector larval habitats.
- Manage and provide supportive treatment to dengue fever cases. Implement standard infection control precautions. Prevent access of mosquitoes to patients by using mosquito bed nets.
- Refer suspected DHF/DSS cases to more advanced facilities.

Analyze and interpret data	
<p>Time: Graph cases and deaths weekly/monthly. Construct an epidemic curve during the outbreak.</p> <p>Place: Plot location of case households and work sites using precise mapping.</p> <p>Person: Case-fatality rate. Analyze age and sex distribution. Percentage of DHF / DSS cases and of hospitalizations.</p>	
Laboratory confirmation	
Diagnostic test	<p>Demonstration of IgM and IgG by Antibody Assays. Detection of viral genomic sequences by PCR. Isolation of the dengue virus using cell culture. Antigen detection Assays for acute phase samples when PCR or isolation is negative.</p> <p>Demonstration of dengue virus antigen in autopsy tissue by immunohistochemistry or immunofluorescence or in serum samples by EIA.</p> <p><i>Note: there are several diagnostic techniques available to document an infection by the dengue virus. The IgM ELISA is the basic test for serologic diagnosis.</i></p>
Specimen	<p>ELISA: Whole blood, serum or plasma from acute (0-5 days) and convalescent (6 or more days) depending on each case.</p> <p>PCR: Whole blood or blood clot, serum/ plasma or tissue preferably from acute specimens (0-5 days)</p> <p>The samples should be collected for diagnosing a suspected dengue fatality: A blood sample to attempt PCR, virus isolation and serology. If an autopsy is performed, blood from the heart should be collected.</p>

<p>When to collect the specimen</p>	<p>Collect specimen from the first suspected case.</p> <p>If more than one suspected case, collect until specimens have been collected from 5 to 10 suspected cases.</p> <p>Type of Specimen</p> <ul style="list-style-type: none"> • Acute-phase blood (0-5 days after onset of symptoms) • Convalescent-phase blood (◆ 6 days after onset) <p>Time of collection</p> <ul style="list-style-type: none"> • Collect 2nd sample during convalescence. Between days 6 and 21 after onset. <p>Lab diagnosis of fatal cases is indispensable for understanding the risk factors for severe cases.</p>
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<p>How to prepare, store, and transport the specimen</p>	<p>Transport of specimens should comply with the WHO guidelines for the safe transport of infectious substances and diagnostic specimens.</p> <p><i>For ELISA or PCR:</i></p> <ul style="list-style-type: none"> • Refrigerate serum or clot. For long term storage freeze -20C • Freeze (-20C or colder) tissue specimens for virus isolation <p>If an autopsy has been performed and no fresh tissues are available, tissues fixed in formalin should be submitted for immunohistochemical studies.</p>
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<p>Results</p>	<p>Diagnostic services for Dengue fever and Dengue hemorrhagic fever are not routinely available. Advance arrangements are usually required for VHF diagnostic services. Contact the appropriate National authority or WHO.</p>
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<p>Reference</p>	
<ul style="list-style-type: none"> • WHO Recommended Surveillance Standards WHO/CDS/CSR/ISR/99.2 • Dengue: clinical and Public Health Aspects/CDC 	

Diabetes

Background

- Diabetes mellitus (DM) is a widespread chronic disease that occurs when the pancreas does not produce enough insulin, or when the body cannot effectively use the insulin it produces. Diabetes can cause serious health complications including heart disease, blindness, kidney failure, and lower-extremity amputations.
- The most common form is Type 2 diabetes that represents more than 85% of the cases. Other forms are less common such as Type 1 (10% of cases), specific diabetes and gestational diabetes (5% of cases).
- The risk factors that affect the onset of diabetes are well-known. They comprise non-modifiable factors like old age (over 45 years of age), family history, and the causes of diabetes in pregnancy. Modifiable risk factors for diabetes are obesity, physical inactivity and excessive alcohol consumption.
- The global prevalence in 2000 was estimated at 2.8%, with projections of 4.8% by 2030. The total number of persons affected will rise from 171 million in 2000 to 366 million in 2030 if no action is taken. Annual mortality linked to diabetes worldwide is estimated at more than one million.
- Diabetes is no longer considered rare in Africa. Recent estimates based on the WHO STEP-wise approach for monitoring the risk factors of non-communicable diseases indicate prevalence of between 1% and 20%. In some countries such as Mauritius, it reaches 20%.
- The rate of limb amputations due to diabetes varies from 1.4% to 6.7% of diabetic foot cases. In some African countries, the mortality rate is higher than 40 per 10,000 inhabitants.
- In the African Region, efforts made to create an environment that enhances the fight against diabetes include adoption of resolutions on non communicable diseases in 2000, cardiovascular diseases strategy in 2005, and diabetes mellitus strategy in 2007. The World Health Organization and the International Diabetes Federation (IDF) have also jointly carried out actions to contribute to promoting diabetes awareness in Africa.

Surveillance goal

- Estimate the magnitude of the disease
- Monitor trends and risk factors
- Identify populations at highest risk (e.g.; age groups, urban vs. rural)
- Monitor prevention and control program activities

Standard case definition

Suspected new case:

Any person presenting with the following symptoms:

- Increased thirst
- Increased hunger
- Frequent urination

Confirmed new case:

Any person with a fasting venous plasma glucose measurement of ≥ 7 mmol/L (126 mg/dl) or capillary glucose ≥ 6.1 mmol/L (110 mg/dl)

Or

Any person with a non-fasting venous plasma glucose measurement of ≥ 11.1 mmol/L (200 mg/dl) or capillary glucose ≥ 11.1 mmol/L (200 mg/dl)

**Report only the first lab-confirmed diagnosis of the patient*

Recommended public health action

For people with diabetes:

- Treat confirmed cases according to the standardized case management guidelines (WHOPEN).

District-level Prevention:

- Implement an integrated prevention and control programme for non-communicable diseases focusing on diabetes through community awareness and education activities conducted in accordance with national prevention and control programmes for non-communicable diseases. These activities would include multisectoral strategies and plans of action on diet, weight-reduction, and physical activity.
- Implement clinical preventive measures and treatment interventions using evidence-based guidelines (screening high risk patients, for example).

Analyze and interpret data

Time: Graph cases quarterly to analyze trends.

Place: Compare district trends with national and regional trends.

Person: Analyze the distribution of cases by age and other demographic factors.

**Data for non-communicable diseases is analyzed for long term trends*

Laboratory confirmation

Diagnostic test	<p>Measuring glucose in capillary blood using a reagent strip test and reference meter</p> <p>Measuring glucose in plasma using a glucose-oxidase colorimetric test method</p> <p>Lab case definition (see section 8.0)</p>
Specimen	<p>Plasma</p> <p>Capillary blood</p>
When to collect specimen	<p>Blood glucose measurements must be carried out on the day and at the time requested.</p> <p>Fasting specimen: for adult the fasting time is usually 10 to 16 hours. For children the fasting time is 6 hours.</p> <p>Post-prandial specimen: 2h post-prandial specimen.</p>
How to prepare, store, and transport	<p>Specimen should be examined as soon as possible (before 2 hours) at health facility where the specimen is taken.</p>
Results	<p>Results are ready within few hours.</p>
Reference	
<ul style="list-style-type: none"> • Non-communicable Diseases: A strategy for the African Region, AFR/RC50/10 • Cardiovascular Diseases in the African Region: Current situation and perspectives, AFR/RC55/12 	

- Diabetes prevention and control: a strategy for the African Region, AFR/RC57/7
- Steps manual: <http://www.who.int/chp/steps/en/>
- Gojka R et al, Global prevalence of diabetes, *Diabetes care* 27(5): 1047-1053, 2004.
- IDF, *Diabetes Atlas*, 2nd Edition, Brussels, International Diabetes Federation, 2003.
- WHO, *Preventing chronic diseases: A vital investment*, Geneva, World Health Organization, 2005.
- WHO, *The burden of mortality attributable to diabetes*, Geneva, World Health Organization, 2004.
- WHO-PEN: Protocols for health promotion, prevention and management of NCDs at primary care level <http://www.afro.who.int/en/divisions-a-programmes/ddc/division/2257-who-pen-protocols.html>
- District Laboratory Practice in Tropical countries, Cambridge

Diarrhoea with blood (Shigella)
Background
<ul style="list-style-type: none"> • <i>Shigella dysenteriae</i> type 1 (SD1) is the most common cause of enteric infections and is transmitted from person-to-person through faecal-oral spread. • Large scale outbreaks may be caused by <i>Shigella dysenteriae</i> type 1 (SD1) with up to 30% of populations infected. The case fatality rate may approach 20% among young children and elderly persons with severe dehydration. • The incubation period is from 1 to 4 days. • Clinical illness is characterized by acute fever and bloody diarrhoea, and can also present with systemic symptoms and signs as well as dehydration especially in young children. • Risk factor: overcrowded areas with unsafe water and poor sanitation (for example, refugee and famine populations). • SD1 is frequently resistant to multiple antibiotics including trimethoprim-sulfamethoxazole. • Enterohaemorrhagic and enteroinvasive <i>E. coli</i> and other bacteria or parasites such as <i>Entamoeba histolytica</i> may also cause bloody diarrhoea.
Surveillance goal
<ul style="list-style-type: none"> • Detect and respond to dysentery outbreaks promptly. • Improve percentage of laboratory-confirmed cases and evaluate proportion verified as type 1 (SD1). • Determine antibiotic sensitivity pattern of the agents isolated (especially SD1) both for routine surveillance and during outbreaks.
Standard case definition
<p>Suspected case: A person with diarrhoea with visible blood in stool.</p> <p>Confirmed case: Suspected case with stool culture positive for <i>Shigella dysenteriae</i> type 1.</p>
Respond to alert threshold

If you observe that the number of cases or deaths is increasing over a period of time:

- Report the increase to the next level of the health system.
- Treat the suspected cases with oral rehydration and antibiotics based on recent susceptibility results, if available.
- Obtain stool or rectal swab specimen for confirming the SD1 outbreak.
- Investigate the case to determine risk factors contributing to transmission.

Respond to action threshold

If a suspected outbreak is confirmed:

- Search for additional cases in locality of confirmed cases.
- Strengthen case management and treatment.
- Mobilize community to enable rapid case detection and treatment.
- Identify high risk populations using person, place, and time data.
- Reduce sporadic and outbreak-related cases by promoting hand-washing with soap or ash and water after defecating and before handling food. Strengthening access to safe water supply and storage, and use of latrines and safe disposal of human waste.

Analyze and interpret data

Time: Graph monthly trends in cases and deaths. Construct an epidemic curve for outbreak cases.

Place: Plot location of case households.

Person: Count cases and deaths each month. During an outbreak, count outbreak-related cases by week. Routinely analyze age distribution. Assess risk factors to improve control and prevention of sporadic diseases and outbreaks.

Laboratory confirmation

Diagnostic test	Isolate <i>Shigella dysenteriae</i> type 1 (SD1) in culture to confirm shigella outbreak. If SD1 is confirmed, perform antibiotic sensitivity tests with appropriate drugs.
Specimen	Stool or rectal swab.

<p>When to collect the specimen</p>	<p>For each new area affected by the outbreak, a laboratory confirmation should be done.</p> <p>Collect sample when an outbreak is suspected. Collect stool from 5-10 patients who have bloody diarrhoea and:</p> <ul style="list-style-type: none"> • Onset within last 4 days, and • Before antibiotic treatment has started. <p>Preferably, collect stool in a clean, dry container. Do not contaminate with urine. Sample stool with a swab, selecting portions of the specimen with blood or mucus.</p> <p>If stool cannot be collected, obtain a rectal swab sample with a clean, cotton swab.</p>
<p>How to prepare, store, and transport the specimen</p>	<p>Place stool swab or rectal swab in Cary-Blair transport medium. Transport to laboratory refrigerated.</p> <p>If Cary-Blair not available, send sample to lab within 2 hours in a clean, dry container with a tightly-fitting cap. Specimens not preserved in Cary-Blair will have significant reduction of <i>shigellae</i> after 24 hours.</p> <p>If storage is required, hold specimens at 4°C to 8°C, and do not freeze.</p>
<p>Results</p>	<p>Culture results are usually available 2 to 4 days after receipt by the laboratory.</p> <p>SD1 isolates should be characterized by antibiotic susceptibility.</p> <p>After confirmation of initial 5-10 cases in an outbreak, sample only a small number of cases until the outbreak ends, to monitor cessation of the outbreak, and antibiotic sensitivity patterns, which will guide the definitive treatment.</p> <p>Refer to disease specific guidelines in Section 8.0 for additional information about the epidemic potential of <i>Shigella dysenteriae</i> 1</p>
<p>Reference</p>	
<ul style="list-style-type: none"> • <i>Guidelines for the control of epidemics due to Shigella dysenteriae type 1</i>. WHO/CDR/95.4 • <i>Safe Water Systems for the Developing World: A Handbook for Implementing Household-based Water Treatment and Safe Storage Projects</i>. Department of Health & Human Services. Centers for Disease Control and Prevention. Atlanta. 2000 • "Laboratory Methods for the Diagnosis of Epidemic Dysentery and Cholera". CDC/WHO, 1999 CDC, Atlanta, GA, USA 	
<p>Diarrhoea with dehydration in children less than 5 years of age</p>	
<p>Background</p>	

- Diarrhoea with dehydration in children less than 5 years of age is due to infections of the gastrointestinal tract caused by viruses (especially *Rotavirus*), bacteria (*E. Coli*, *Salmonellae*, *shigellae*, *Campylobacter*, *Yersinia*, and others), and parasites (*Giardia*, *Entamoeba*, cryptosporidia, and cyclospora). These diseases are transmitted through eating contaminated food or water, or through faecal-oral spread.
- Diarrhoeal diseases represent the second leading cause of death among children less than 5 years of age in many African countries, with more than 3 million deaths per year.
- Different epidemiological patterns (for example, seasonality) are observed for different pathogens.
- The WHO and UNICEF advocate that each district team use the Integrated Management of Childhood Illnesses (IMCI) strategy to reduce morbidity and mortality of childhood diarrhoea.

Surveillance goal

- Detect diarrhoea outbreaks promptly. Laboratory confirmation can confirm specific pathogenic agent outbreak, but laboratory confirmation is not necessary for routine surveillance of diarrhoea with dehydration.
- Monitor antimicrobial resistance during outbreaks of bacterial origin.

Standard case definition

Suspected case:

Passage of 3 or more loose or watery stools in the past 24 hours with or without dehydration and:

Some dehydration -- two or more of the following signs: restlessness, irritability; sunken eyes; thirsty; skin pinch goes back slowly, or

Severe dehydration -- two or more of the following signs: lethargy or unconsciousness; sunken eyes; not able to drink or drinking poorly; skin pinch goes back very slowly.

Confirmed case:

Suspected case confirmed with stool culture for a known enteric pathogen. *Note:* Laboratory confirmation of specific agent causing outbreak is not routinely recommended for surveillance

Respond to alert threshold

If you observe that the number of cases or deaths is increasing over a period of time:

- Report the problem to the next level.
- Investigate the cause for the increased number of cases or deaths and identify the problem.
- Make sure that cases are managed according to IMCI guidelines.
- Encourage home-based therapy with oral rehydration.

Respond to action threshold

If the number of cases or deaths increase to two times the number usually seen in a similar period in the past:

- Assess health worker practice of IMCI guidelines for managing cases and improve performance for classifying diarrhoea with dehydration in children less than 5 years of age.
- Teach mothers about home treatment with oral rehydration.
- Conduct community education about boiling and chlorinating water, and safe water

Analyze and interpret data

Time: Graph cases and deaths to compare with same period in previous years. Prepare graphs for outpatient diarrhoea with some dehydration and for diarrhoea with severe dehydration. Construct an epidemic curve when outbreaks are detected.

Place: Plot location of case households.

Person: Report monthly totals due to diarrhoea with some dehydration and also for diarrhoea with severe dehydration from outpatient services. Also report monthly inpatient total cases and deaths due to diarrhoea with severe dehydration.

Laboratory confirmation

Laboratory culture of stools may be used to confirm possible outbreaks of specific agents, but is not necessary for case definition.

Reference

- *Management of childhood illness: Clinical skills training course for first level health facilities.* World Health Organization. WHO/CDR/95.14
- *Integrated Management of Childhood Illness: A WHO/UNICEF Initiative Bulletin of the World Health Organization.* Vol. 75, 1997, Supplement 1, 1997. ISBN 92 4 068750 5

Dracunculiasis
Background
<ul style="list-style-type: none"> • Dracunculiasis is commonly known as Guinea worm disease. It is caused by a large nematode, a disabling parasite that emerges through the skin of the infected person. • This is an old disease, known since antiquity, leaving many patients with unfortunate socio-economic consequences. It is transmitted through ingestion of water containing a crustacean (cyclops) which is infested by an immature form (larvae) of the nematode. The Cyclops is found in stagnant surface water sources (ponds, traditional shallow wells) in rural areas. The female nematode discharges from the host's skin when there is contact with water. The incubation period is between 9 to 12 months There is no treatment or vaccine against the disease. • Successful disease control strategies conducted by the endemic countries and an international coalition of partners has pushed Dracunculiasis towards eradication. By December 2008, 4619 cases of Guinea worm were reported to WHO, worldwide, compared to 892 000 that were reported in 1989, showing a reduction of 99.47%. • In 1989, the disease was endemic in 20 countries, worldwide: Benin, Burkina Faso, Cameroon, Central African Republic, Cote d'Ivoire, Chad Ghana, Ethiopia, India, Pakistan, Kenya, Mali, Mauritania, Niger, Nigeria, Sudan, Senegal, Togo, Uganda and Yemen • Currently, solely Africa remains affected where 6 countries are still endemic in 2009: Sudan, Ghana, Mali, Ethiopia, Nigeria, and Niger.
Surveillance goal
<ul style="list-style-type: none"> • Active detection and investigation of each case at the community level. Monthly reporting of cases to the next level. • In zones where local transmission of the Guinea worm disease has been interrupted, maintain active searches for additional cases or rumors of case. • Report all imported cases to countries or areas of origin. • Integrate into surveillance to confirm absence of transmission.
Standard case definition
<p><i>Suspected case:</i></p> <ul style="list-style-type: none"> • A person presenting a skin lesion with itching or blister living in endemic area of Guinea worm. • <i>Confirmed case:</i> at the last phase of the programme, confirmation of last cases by knowledgeable health staff is required.
Respond to alert threshold

<p>If a single case is suspected:</p> <ul style="list-style-type: none"> • Report the case according to national program guidelines for eradication of Dracunculiasis. • Treat the wound (if any) to decrease disability associated with painful leg lesions. • Conduct case investigation to confirm risk factors. • Improve access to safe water according to national guidelines.
<p>Analyze and interpret data</p> <p>Time: Graph cases monthly.</p> <p>Place: Plot distribution of households and work sites for cases from which cases have been reported.</p> <p>Person: Count monthly cases, and analyze age distribution. Report monthly to next levels.</p>
<p>Laboratory confirmation</p> <p><i>Routine laboratory confirmation for surveillance is not required.</i> Diagnosis is made by visual recognition of the adult worm protruding from a skin lesion (see section 8.0) or by microscopic identification of larvae. Laboratory tests to investigate dracunculiasis are limited because the larvae of <i>D. medinensis</i> are normally washed into water. A diagnosis usually made when the blister has ruptured and the anterior end of the female worm can be seen. If required, laboratory confirmation of the diagnosis can be made as follows: place a few drops of water on the ulcer, collect and transfer the water to a slide and examine microscopically for motile larvae.</p>
<p>Reference</p> <ul style="list-style-type: none"> • <i>Dracunculiasis or guinea-worm</i>, Geneva, World Health Organization, WHO/CDS/CEE/DRA/99.2, 1999 and WHO/WER N°37 September 2003 • Control of Communicable Diseases Manual, 18th Edition • District Laboratory Practice in Tropical countries, Cambridge

Ebola or Marburg virus diseases

Background

- The Ebola and Marburg viruses are both filoviruses.
 - Almost 3,000 cases of Ebola with over 1,900 deaths have been documented since the Ebola virus was discovered in 1976. Major Ebola outbreaks have occurred in Sudan, DRC, Cote d'Ivoire, Gabon, Uganda and Congo.
 - More than 500 cases of Marburg with over 400 deaths were reported during outbreaks of Marburg virus that occurred in DRC (1998-2000), Angola (2004-2005) and Uganda (3 cases in 2007).
- These two viruses are transmitted by direct contact with the blood, secretions, organs or other body fluids of infected persons. The infection of humans with Ebola virus through the handling of infected chimpanzees, gorillas, and forest antelopes (alive and dead) has been documented.
- Ecological studies are in progress to identify the natural reservoirs of both Marburg and Ebola. There is evidence that bats are involved.
- Epidemics can be dramatically amplified in health care facilities with inadequate infection control precautions/barrier nursing procedures.
- Incubation period for Ebola and Marburg is 2 to 21 days.
- Between 20% and 80% of patients have haemorrhagic manifestations depending on the Ebola or Marburg virus strain. Patients become increasingly infectious as their illness progresses.
- High case fatality ratios have been reported during Ebola outbreaks (25% to 90%) and during Marburg outbreaks (25% to 80%)
- There is no specific treatment for either disease. Severe cases require intensive supportive care, as patients are frequently dehydrated and in need of intravenous fluids or oral rehydration with solutions containing electrolytes.
- Close contact with a severely ill patient, during care at home or in hospital, and certain burial practices are common routes of infection. Transmission via contaminated injection equipment or through needle-stick injuries is associated with more severe disease. Infection may also be spread through contact with soiled clothing or bed linens from an infected patient.

Surveillance goals

- Early detection of cases and outbreaks, rapid investigation, and early laboratory verification of the aetiology of all suspected cases.
- Investigation of all suspected cases with contact tracing.
During epidemics, most infected patients do not show haemorrhagic symptoms and a specific case definition according to the suspected or confirmed disease should be used.

Standard case definition (routine surveillance)

Suspected case: Illness with onset of fever and no response to usual causes of fever in the area, and at least one of the following signs: bloody diarrhoea, bleeding from gums, bleeding into skin (purpura), bleeding into eyes and urine.

Confirmed case: A suspected case with laboratory confirmation (positive IgM antibody, positive PCR or viral isolation), or epidemiologic link to confirmed cases or outbreak.

Note: During an outbreak, these case definitions may be changed to correspond to the local event.

Respond to alert threshold

If a single case is suspected:

- Report case-based information immediately to the appropriate levels.
- Suspected cases should be isolated from other patients and strict barrier nursing techniques implemented.
- Standard precautions should be enhanced throughout the healthcare setting.
- Treat and manage the patient with supportive care.
- Collect specimen to confirm the case(s).
- Conduct case-contact follow-up and active case search for additional cases.

Respond to action threshold

If a single case is confirmed:

- Maintain strict VHF infection control practices* throughout the outbreak.
- Mobilize the community for early detection and care of cases and conduct community education about how the disease is transmitted and how to implement infection control in the home care setting and during funerals.
- Conduct case contact follow-up and active searches for additional cases that may not come to the health care setting.
- Request additional help from other levels as needed.
- Establish isolation ward to handle additional cases that may come to the health centre.

Analyze and interpret data

Person: Implement immediate case-based reporting of cases and deaths. Analyze age and sex distribution. Assess risk factors and plan disease control interventions accordingly.

<p>Time: Graph cases and deaths daily/weekly. Construct an epidemic curve during the outbreak.</p> <p>Place: Map locations of cases' households.</p>	
<p>Laboratory confirmation</p>	
<p>Diagnostic test</p>	<p>Presence of IgM antibodies against Ebola, Marburg, CCHF, Lassa or West Nile Fever</p> <p><i>or</i></p> <p>Presence of Ebola in post-mortem skin necropsy</p>
<p>Specimen</p>	<p><i>For ELISA:</i> Whole blood, serum or plasma</p> <p><i>For PCR:</i> Whole blood or blood clot, serum/plasma or tissue</p> <p><i>For immunohisto-chemistry:</i> Skin or tissue specimens from <i>fatal</i> cases.</p>
<p>When to collect</p>	<p>Collect specimen from the first suspected case.</p> <p>If more than one suspected case, collect until specimens have been collected from 5 to 10 suspected cases.</p>
<p>How to prepare, store, and transport</p>	<p>HANDLE AND TRANSPORT SPECIMENS FROM SUSPECTED EBOLA/MARBURG CASES WITH EXTREME CAUTION. WEAR PROTECTIVE CLOTHING AND USE BARRIER PRECAUTIONS.</p> <p><i>For ELISA or PCR:</i></p> <ul style="list-style-type: none"> • Refrigerate serum or clot • Freeze (-20C or colder) tissue specimens for virus isolation <p><i>For Immunohistochemistry:</i></p> <ul style="list-style-type: none"> • Fix skin snip specimen in formalin. Specimen can be stored up to 6 weeks. The specimen is not infectious once it is in formalin. • Store at room temperature. Formalin-fixed specimens may be transported at room temperature.
<p>Results</p>	<p>Diagnostic services for VHF are not routinely available. Advance arrangements are usually required for VHF diagnostic services. Contact the appropriate National authority or WHO.</p>

Reference

- *Interim Infection Control Recommendations for Care of Patients with Suspected or Confirmed Filovirus (Ebola, Marburg) Hemorrhagic Fever. BDP/EPR/WHO, Geneva March 2008.*
- *Infection control for VHF in the African health care setting, WHO, 1998. WHO/EMC*
- *WHO Recommended Surveillance Standards WHO/CDS/CSR/ISR/99.2*
- *WHO Fact Sheet No 103, Ebola haemorrhagic fever, revised December 2008*
- *WHO Fact Sheet, Marburg haemorrhagic fever, revised July 2008*
- *Interim Infection Control Recommendations for Care of Patients with Suspected or Confirmed Filovirus (Ebola, Marburg) Hemorrhagic Fever. BDP/EPR/WHO, Geneva March 2008.*
- *WHO recommended Guidelines for Epidemic Preparedness and Response: Ebola Haemorrhagic Fever (EHF). WO/EMC/DIS/97.7.*

Foodborne Illnesses
Background
<ul style="list-style-type: none"> • Foodborne illnesses are caused by a variety of bacterial, viral, parasitic and bacterial or fungal pathogens or their toxins that enter the body through consumption of food or water. In addition to diseases listed elsewhere in this guideline such as cholera, and shigellosis, surveillance for foodborne illnesses may involve other causes such as salmonellosis, hepatitis A or chemical contamination. • A foodborne illness occurs when two or more people have shared common food or drink followed by an onset of symptoms within a short time period. • Most people with a foodborne illness do not seek medical care, so cases and outbreaks of foodborne illness usually are neither recognized nor reported. • The first symptoms often occur in gastrointestinal tract. Nausea, vomiting, abdominal cramps and <u>diarrhoea</u> are frequent symptoms of foodborne diseases. • Outbreaks may be localized affecting as few as 2 individuals who ate a common meal or product, but large and geographically widespread outbreaks may also occur. Large outbreaks occur when food is contaminated prior to distribution and is widely consumed by many people in many areas. • Surveillance for foodborne illnesses is needed to monitor food safety and target health promotion actions aimed at food handlers for safer food practices and improved personal hygiene.
Surveillance Goal
<ul style="list-style-type: none"> • To promptly identify any unusual cluster of disease potentially transmitted through food, which may need a public health investigation or response. • Monitor the magnitude of foodborne illnesses • Identify high risk foods or food practices. • Monitor risk factors to inform public health interventions and health promotion for targeted foods or food practices.
Standard case definition
<p>A foodborne illness is suspected when 2 or more people present with similar symptoms and who consumed common food or drink</p> <p>A foodborne illness is defined according to the specific agent causing the disease (for example, cholera, hepatitis A, salmonellosis, shigellosis).</p>
<p>A confirmed foodborne illness is a laboratory confirmed case of a specific agent with a link to a common food or drink source.</p>
Respond to alert threshold

If observed that ≥2 people are ill and have eaten food from a common source:

- Immediately report the illness to the next level of the health system
- From patients and from the suspected food items and drinks, collect specimens for laboratory confirmation
- Treat suspected cases

Respond to action threshold

If an outbreak of a foodborne illness is confirmed:

- Search for additional cases in locality of confirmed cases
- Strengthen case management and treatment
- Mobilize community for rapid case detection and treatment
- Identify high risk groups
- Remove from the restaurant menu or the supermarkets shelves, food items from which evidence of unsafe food may be obtained.
- Eventually call for in-depth investigation of the food chains that may be associated with the outbreak
- Reduce sporadic and outbreak-related cases by promoting handwashing with soap and water after defaecating/urinating and before food handling/meals; strengthen access to safe water supply and storage, use of latrines and safe human waste disposal
- Scale-up food safety health promotion activities using the WHO *Five Keys to Safer Food* (see reference below) and the Hazard Analysis Critical Control Point (HACCP) system
- Scale-up food inspection activities

Analyse and interpret data

- Time: Graph monthly trends in cases and deaths; Construct an epidemic curve for outbreak cases.
- Place: Plot location of households for cases and deaths
- Person: Count cases and deaths each month. During an outbreak, count outbreak-related cases by week.
- Routinely review clinical data and laboratory results from food and human analyses to identify clusters of cases in time, place or person. Investigate any suspected foodborne outbreaks detected in the data.
- Investigate all suspected outbreaks of foodborne illnesses.

Reference

- Guidelines for Strengthening Foodborne Disease Surveillance in the WHO African Region
- WHO Five Keys to Safer Food at www.who.int/fsf/Documents/5keys-ID-eng.pdf
- WHO Foodborne disease outbreaks: Guidelines for investigation and control <http://whqlibdoc.who.int/publications/2008/9789241547222>



Human influenza caused by a new subtype

Background

- An influenza pandemic occurs when a new influenza A virus emerges with efficient and sustained human-to-human transmission in populations with limited immunity. Influenza pandemics occurred in 1918, 1957 and 1968. The 1918 pandemic killed an estimated 40-50 million people. It is predicted that a pandemic of equivalent magnitude could kill 62 million people, 96% of them in developing countries.
- Successful containment or control of pandemic influenza is dependent on early recognition of sustained human-to-human transmission. Countries have been encouraged as part of pandemic preparedness planning to enhance surveillance to (i) detect the emergence of new disease; (ii) characterize the disease (epidemiology, clinical manifestations, severity); and (iii) monitor its evolution.
- **Influenza A (H1N1) 2009:** On 11 June 2009, WHO declared a global pandemic due to influenza A (H1N1) 2009 virus and of 8 October 2009, 195 countries, territories and areas had reported cases and/or outbreaks of pandemic (H1N1) virus. The spectrum of disease ranges from non-febrile, mild upper respiratory tract illness to severe or fatal pneumonia.
- **Influenza A (H5N1):** Another influenza subtype, H5N1 has been circulating among birds for more than 10 years. In 2003, infections in people exposed to sick birds were identified. Since 2003, H5N1 has been confirmed in poultry and/or wild birds in 62 countries and 442 confirmed human H5N1 cases with 262 deaths have been reported from 15 countries. One confirmed death from human infection with A (H5N1) was reported from Nigeria in January 2007. Most patients with H5N1 present with symptoms of fever, cough and shortness of breath and radiological evidence of pneumonia. The large majority of cases for which risk factor data are available indicate that direct contact with live or recently dead poultry is the most important risk factor for human H5N1 infection. However, the continued geographical spread of this highly pathogenic avian influenza virus among birds in Asia, Europe, the Middle East and Africa has heightened concerns about the possibility of a global human pandemic of influenza H5N1.
- Under the IHR (2005), a State Party is required to notify WHO of the first occurrence of human influenza caused by a new subtype, including pandemic (H1N1) 2009 virus.

Surveillance goals

- To detect and investigate the first evidence of sustained human-to-human transmission of an influenza virus with pandemic potential.
- To assess the earliest cases of pandemic influenza occurring in a country in order to characterize the new disease including its clinical characteristics, risk factor information, and epidemiological and virological features.
- To monitor the course of the pandemic within the country, regionally and globally.

Standard case definition

Suspected H5N1 case:

Any person presenting with unexplained acute lower respiratory illness with fever (>38 °C) and cough, shortness of breath or difficulty breathing **AND**

one or more of the following exposures within the 7 days prior to symptom onset:

- f)* Close contact (within 1 meter) with a person (e.g. caring for, speaking with, or touching) who is a suspected, probable, or confirmed H5N1 case;
- g)* Exposure (e.g. handling, slaughtering, de-feathering, butchering, preparation for consumption) to poultry or wild birds or their remains or to environments contaminated by their faeces in an area where H5N1 infections in animals or humans have been suspected or confirmed in the last month;
- h)* Consumption of raw or undercooked poultry products in an area where H5N1 infections in animals or humans have been suspected or confirmed in the last month;
- i)* Close contact with a confirmed H5N1 infected animal other than poultry or wild birds;
- j)* Handling samples (animal or human) suspected of containing H5N1 virus in a laboratory or other setting.

Confirmed H5N1 case: A person meeting the criteria for a suspected case **AND** positive laboratory results from a laboratory whose H5N1 test results are accepted by WHO as confirmatory.

Suspected pandemic (H1N1) 2009 virus infection: An individual presenting with influenza-like-illness (sudden onset of fever > 38 °C and cough or sore throat in the absence of another diagnosis) with a history of exposure to a pandemic (H1N1) 2009 virus.

Confirmed pandemic (H1N1) 2009 virus infection: An individual with a laboratory-confirmed pandemic (H1N1) 2009 virus infection by one or more of the following tests: PCR; viral culture; 4-fold rise in pandemic (H1N1) 2009 virus-specific neutralizing antibodies.

Respond to alert threshold

Respond to a suspected case of human influenza caused by a new subtype or to an usual event of severe acute respiratory infection:

- Report case-based information immediately to the appropriate levels.
- Implement acute respiratory disease infection control precautions immediately and enhance Standard Precautions throughout the health care setting.
- Treat and manage the patient according to national guidelines.
- Collect laboratory specimens from case-patient and from symptomatic contacts and arrange for laboratory testing***.
- Review clinical and exposure history during 7 days before disease onset.
- Identify and follow-up close contacts of case-patient.
- Search for additional cases
- Conduct epidemiological investigation to identify risk factors for infection and populations at risk for severe disease.
- Plan and implement prevention and control measures.

Respond to action threshold

If a single case of human influenza caused by a new subtype is confirmed or if another acute respiratory disease of epidemic or pandemic potential is confirmed:

- Maintain strict acute respiratory disease infection control precautions and establish an isolation ward to manage additional cases who may present for care.
- Treat and manage the patient according to national guidelines.
- Implement active surveillance of case-patient contacts.
- Conduct active searches for additional cases.
- Distribute laboratory specimen collection kits to health care facilities.
- Identify high risk populations.
- Mobilize the community to enable rapid case detection and treatment.
- Conduct community education on how influenza is transmitted and on how to implement infection measures in home and community settings.

Analyze and interpret data

Time: Graph weekly cases and deaths, construct an epidemic curve

Place: Plot location of case households and work sites using precise mapping.

Person: Count weekly total cases and deaths for sporadic cases and during outbreaks. Analyze age and sex distribution. Characterize the illness in terms of clinical presentation, the spectrum of disease, the proportion of cases requiring hospitalization, clinical outcomes, case fatality ratio, attack rates by age/occupation/blood relation.

Laboratory confirmation

Diagnostic test

- Identification of human influenza virus infections by:
- 1) Detection of influenza-specific RNA by reverse transcriptase- polymerase chain reaction
 - 2) Isolation in cell culture (BSL3 lab required for suspected new subtype)
 - 3) Direct antigen detection (low sensitivity)

Specimen

A variety of specimens are suitable for the diagnosis:

- Throat swab
- Nasopharyngeal swab
- Nasal swab
- Nasopharyngeal aspirate
- Intubated patients: tracheal swab or broncholavage fluid
- Blood

Specimens should be collected in the following order of priority:

- Throat swab/Nasopharyngeal aspirate
- Acute serum
- Convalescent serum

<p>When to collect the specimen</p>	<p>Obtained specimen within 3 days of the onset of symptoms, Initial specimens (respiratory or blood) should ideally be collected from suspected patients before antiviral therapy is begun but treatment must not be delayed in order to take specimens.</p> <p>Optimally, paired sera (3-5 ml of whole blood), collected first during the acute phase of illness and then 14 days or later after the onset of illness, should be tested simultaneously.</p> <p>Specimens should be collected from deceased patients as soon as possible after death</p>
<p>How to prepare, store, and transport the</p>	<p>Respiratory specimens should be transported in virus transport media. Media that could be used for a variety of viruses are commercially available.</p> <p>Specimens in viral transport medium for viral isolation should be kept at 4°C and transported to the laboratory promptly. If specimen is within 2 days, it may be kept at 4°C; otherwise should be frozen at or below -70 °C until transported to the laboratory. Repeated freezing and thawing must be avoided to prevent loss of infectivity.</p> <p>Sera may be stored at 4°C for approximately one week, but thereafter should be frozen at -20°C.</p> <p>Transport of specimens should comply with the WHO guidelines for the safe transport of infectious substances and diagnostic specimens</p>
<p>Results</p>	<ul style="list-style-type: none"> • Laboratory results should be confirmed by an approved laboratory. • Any specimen with a positive result for influenza A virus and suspected of avian influenza infection/new subtype should be further tested and verified by a designated WHO CC/ WHO H5 Reference laboratory. Laboratories that lack the capacity to perform specific influenza A subtype identification procedures are requested to: <ul style="list-style-type: none"> ○ Forward specimens or virus isolates to a National Influenza Centre or to a WHO CC/WHO H5 Reference Laboratory for further identification or characterisation. ○ Inform the WHO Office in the country that specimens or virus isolates are being forwarded to other laboratories for further identification or further characterization
<p>References</p>	

- WHO guidelines for global surveillance during an influenza pandemic, April 2009.
- WHO updated interim guidance on global surveillance of human infection with pandemic (H1N1) 2009 virus, July 2009.
- WHO guidelines for investigation of human cases of avian influenza A(H5N1), 2007
- WHO interim guidelines on infection prevention and control of epidemic- and pandemic-prone acute respiratory diseases in health care, June 2007.
- Collecting, preserving and shipping specimens for the diagnosis of avian influenza A (H5N1) virus infection. Guide for field operations, October 2006
- WHO Rapid Advice Guidelines on pharmacological management of humans infected with avian influenza A (H5N1) virus, May 2006.
- WHO interim guidelines on clinical management of humans infected by influenza A(H5N1), August 2007.
- WHO guidelines for clinical management of human infection with new influenza A (H1N1) virus: Initial Guidance, May 2009.
- WHO Guidelines for pharmacological management of pandemic (H1N1) 2009 influenza and other influenza viruses, 20 August 2009.
- Recommended laboratory tests to identify avian influenza virus A in specimens from humans, WHO, revised August 2007.
- Collecting, preserving and shipping specimens for the diagnosis of avian influenza A (H5N1) virus infection. Guide for field operations, October 2006

Hypertension
Background
<ul style="list-style-type: none"> • Hypertension or high blood pressure (HBP) is a chronic condition in which the blood pressure in the arteries is elevated. It is classified as either primary (essential) or secondary. 'Primary' Hypertension is elevated blood pressure where no medical cause is found. 'Secondary' Hypertension is caused by other conditions that affect the arteries, heart, endocrine system or kidneys. • Hypertension is a major risk factor for cardiovascular diseases such as heart attack or stroke. According to The World Health Report 2001, cardiovascular disease related deaths are increasing in the African Region, and in 2000 accounted for 9.2% of the total deaths in the African Region. Prevalence ranges from 25% to 35% in adults aged 25 to 64 years. • Hypertension affects approximately 1 billion worldwide and it is estimated that more than 20 million people in the African Region are affected. • Major risk factors for hypertension are ageing, lack of physical activity, obesity, and a diet high in salt and fat. Other risk factors include; tobacco and alcohol use. • Lifestyle modifications shown to lower BP include; weight reduction for individuals who are overweight or obese, reducing the amount of fat and salt in the diet, and eating more fresh fruits and vegetables, increased physical activity, and reduction of alcohol and tobacco consumption.
Surveillance goal
<ul style="list-style-type: none"> • Prevention of secondary illness by early detection and standardized treatment • Estimation of disease burden and reduction of identified risk factors • Monitor control and prevention activities
Standard case definition
<p>Suspected new case at first visit:</p> <p>Any individual presenting with a resting blood pressure measurement (based on the average of 3 readings) at or above 140 mm Hg for systolic pressure, or greater than or equal to 90 mm Hg for diastolic pressure.</p> <p>Confirmed case:</p> <p>Any individual presenting on at least two occasions with a resting blood pressure measurement (based on the average of 3 readings) at or above 140 mm Hg for systolic pressure, or greater than or equal to 90 mm Hg for diastolic pressure.</p> <p><i>* Report only the first diagnostic of the case in the health centre</i></p>

Recommended public health action

- Health promotion for non-communicable diseases focusing on HBP should be established, including community-based education on behavior change and adoption of healthy lifestyles
- Promote secondary prevention and treatment interventions at health facilities according to national guidelines.

Analyze and interpret data

Time: Graph cases quarterly to analyze trends.

Place: Compare district trends with national and regional trends.

Person: Analyze the distribution of cases by age and other demographic factors.

**Data for non-communicable diseases is often analyzed for long term trends*

Laboratory confirmation

Diagnostic is clinical.

Reference

- WHO, Atlas of heart disease and stroke, Geneva, World Health Organization, 2004.
- Non communicable Diseases: A strategy for the African Region, AFR/RC50/10
- Cardiovascular Diseases in the African Region: Current situation and perspectives, AFR/RC55/12
- <http://www.who.int/chp/steps/en/>
- http://www.afro.who.int/dnc/databases/afro_infobase/index.html
- WHO CVD-risk management package for low-and medium resource settings.
- "The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure" U.S. Department of health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute, NIH Publication No. 03-5233, December 2003
- Handbook of Hypertension, Vol 20. Editor; C.J. Bulpitt, 2000
- <http://www.cdc.gov/bloodpressure/>

Influenza-like Illness (ILI)
Background
<ul style="list-style-type: none"> • Respiratory infections are a significant cause of infectious disease morbidity and mortality in the world. The mortality rates are particularly high among infants, children and the elderly. However, the burden of disease is not well characterized in Africa. • The most common pathogens causing respiratory infections are; Streptococcus pneumoniae, Haemophilus influenzae type b (Hib), Staphylococcus aureus and other bacterial species, Respiratory Syncytial Virus (RSV), measles virus, human parainfluenza viruses type 1, 2, and 3 (PIV-1, PIV-2 and PIV-3), influenza virus and varicella virus. • An improved understanding of the epidemiology and seasonality of respiratory infections in Africa is essential for optimizing public health strategies for their prevention and control (e.g., vaccines and antivirals for prophylaxis and treatment, infection control). • The threat of respiratory infections due to novel organisms that have epidemic or pandemic potential warrants special precautions and preparedness. Respiratory disease events that may constitute a public health emergency of international concern include; Severe Acute Respiratory Syndrome (SARS); human influenza caused by a new subtype, including human episodes of avian influenza; pneumonic plague; and novel agents that can cause large-scale SARI outbreaks with high morbidity and mortality. • Surveillance for respiratory infections is based on the Influenza-like Illness (ILI) case definition. Lab-based surveillance or investigations using the ILI case definition is used to identify the disease causing pathogen.
Surveillance goals
<ul style="list-style-type: none"> • Early detection of unusual events that might indicate a shift in the severity or pattern of disease associated with influenza, or emergence of a new influenza strain. • Establish and monitor baseline rates of severe respiratory disease, including monitoring the severity and impact of influenza, • Describe and monitor vulnerable groups at highest risk of severe disease • Detection of antigenic or genetic changes in circulating viruses or the appearance of antiviral resistance.
Standard case definition
Influenza-like Illness
<p>A person child or adult with:</p> <ul style="list-style-type: none"> • Sudden onset of fever > 38 °C AND • Cough or sore throat in the absence of other diagnoses
<p>A confirmed case of influenza is a case that meets the clinical case definition and is laboratory confirmed (laboratory results must be positive for influenza virus).</p>
Respond to an alert threshold

If there is an unusual event (a cluster of deaths, for example) of respiratory infection, or if a single case of pandemic-prone acute respiratory disease is suspected:

- Unusual cases of influenza-like illness.
- Health-care workers with only occupational exposure risks develop ILI after providing care to patients with ILI.
- Two or more children and/or adults presenting with a respiratory infection or who died from a respiratory infection with onset of illness in a two-week period and in the same geographical area and/or are epidemiologically linked.
- Persons who have contact with birds/animals present with ILI;
- Any rumor of clusters of acute respiratory infections or of atypical respiratory infections

Respond to a suspected case of an epidemic- or pandemic-prone acute respiratory disease or to an usual event of severe acute respiratory infections:

- Report case-based information immediately to the appropriate levels.
- Practice infection control precautions for an acute respiratory disease with epidemic/pandemic potential (e.g., Standard plus Contact plus Droplet Precautions) immediately and enhance Standard Precautions throughout the health care setting.
- Treat and manage the patient according to national guidelines.
- Collect and transport laboratory specimens from case-patient and from symptomatic contacts and arrange for laboratory testing
- Review clinical history and exposure history during 7 days before disease onset.
- Identify and follow-up close contacts of case-patient.
- Conduct active searches for additional cases.
- Conduct risk assessment to guide decision-making
- Public health measures related to international border and travel should be implemented under the framework of the international health regulations (2005)

Analyze and interpret data

Time: Graph cases and deaths weekly. Describe changes in the level of respiratory activity compared to the previous week. Construct an epidemic curve throughout the year and describe transmission patterns.

Person: Characterize the illness in terms of clinical presentation, the spectrum of disease

including severity of illness, count and report cases and deaths, the proportion of cases requiring hospitalization, clinical outcomes, case fatality ratio, attack rates by age/occupation/blood relation, laboratory confirmed cases. Describe the overall level of respiratory disease activity. Immediate case-based reporting of cases and deaths. During the outbreak, Analyze age and sex distribution. Assess risk factors immediately

Place: Describe the degree of disruption of schools, health care infrastructure, workplace and point of entry (PoE). Ascertain whether any evidence exists that the virus may have increased its ability to cause human disease or improved its transmissibility. Also use trends of flu remedies and painkillers sales

Laboratory confirmation

Further technical information on the role of laboratory can be found in the WHO guideline on sentinel surveillance of influenza viruses

Reference

- World Health Organization - Acute Respiratory Infections
http://www.who.int/vaccine_research/diseases/ari/en/index.html
- World Health Organization - Influenza resources
<http://www.who.int/csr/disease/influenza/inforesources/en/index.html>
- World Health Organization - Influenza Fact Sheet
<http://www.who.int/mediacentre/factsheets/2003/fs211/en/>
- World Health Organization - Interim guidelines on infection prevention and control of epidemic- and pandemic-prone acute respiratory diseases in health care, June 2007
http://www.who.int/csr/resources/publications/WHO_CD_EPR_2007_6/en/index.html
- World Health Organization - Guidelines for investigation of human cases of avian influenza A (H5N1), January 2007.
http://www.who.int/csr/resources/publications/influenza/WHO_CDS_EPR_GIP_2006_4/en/index.html
- World Health Organization - Collecting, preserving and shipping specimens for the diagnosis of avian influenza A (H5N1) virus infection. Guide for field operations, October 2006.
http://www.who.int/csr/resources/publications/surveillance/WHO_CDS_EPR_ARO_2006_1/en/index.html

Injuries (Road traffic accidents)

Background

- Injury is a physical damage resulting when the human body is briefly or suddenly subjected to levels of energy exceeding its physiological tolerance or the impairment in function resulting from the lack of one or more vital elements (water, air, warmth) .The energy causing the injury can be mechanical, electrical, thermal, radiant or chemical. Injury is classified as intentional and unintentional.
- All injuries account for 10% of the world's deaths. 5.8 million People die each year as a result of different types of injuries. Of the all systems that people have to deal with on a daily basis; road transport is the most complex and the most dangerous.
- Road traffic accidents result in unintentional injury.
- A traffic collision (motor vehicle collision, motor vehicle accident, car accident, or car crash) occurs when a road vehicle collides with another vehicle, pedestrian, animal, road debris, or other geographical or architectural obstacle. Traffic collisions can result in injury, property damage, and death.
- Worldwide, the number of people killed in road traffic crashes each year is estimated at 1.2 million, while the number of injured could be as high as 50 million.
- Road traffic injuries are a major but neglected global public health problem, requiring concerted efforts for effective and sustainable prevention.
- Road traffic injuries continue to be among the leading causes of death and disability among young people aged between 5 and 44 years and the leading cause of death in the category of people between 15-29 years. The majority of such deaths are currently among "vulnerable road users"-pedestrians, pedal cyclists and motorcyclists.
- Without increased efforts and new initiatives, the total number of road traffic deaths worldwide and injuries is forecast to rise by some 67% by 2020, and in low income and middle-income countries deaths are expected to increase by as much as 83%
- The African region has the highest fatality rate for road traffic crashes at 32/100 000 population
- Road traffic injuries are preventable. Very substantial reductions in injuries can be achieved by implementing measures which address risk factors (excessive and inappropriate speed, driving under the influence of alcohol, non-use of seat belts and child restraints, non- use of helmets for cyclists)

Surveillance goal

- Estimate and monitor incidence of road traffic injuries and related outcomes
- Identify risk factors and high risk areas to inform prevention policy and programs
- Evaluate programmes aimed at preventing road traffic injuries

<ul style="list-style-type: none"> • Establish alert thresholds for fatalities to allow health facility personnel review care and services provided to injured persons • Establish incidence alert thresholds and monitor trends to enable district health personnel inform relevant stakeholders
<p>Standard case definition</p>
<p>Road traffic injury: Any person who has sustained an injury as a result of a road traffic crash presenting for the first time.</p> <p>Road traffic fatality: Any person killed immediately or dying within 30 days as a result of an injury crash.</p>
<p>Respond to alert threshold</p>
<ul style="list-style-type: none"> • Promote primary prevention by supporting interventions to address risk factors • Review and monitor care and services provided to injured persons • Review arrangements for mass casualty management
<p>Respond to action threshold</p>
<ul style="list-style-type: none"> • Step up enforcement of measures to address risk factors • Activate mass casualty management system
<p>Analyze and interpret data</p>
<p>Person: Analyze the distribution of cases by sex, age and other demographic factors</p> <p>Time: Graphs to show monthly figures of cases and deaths, curves for the year to depict trends</p> <p>Place: Plot location of cases and identify high risk areas</p>
<p>Laboratory confirmation</p>
<p>Imaging of the injured person - when required</p>
<p>Reference</p>

- WHO-2004, World Health report
- WHO- 2010 Status report on Road Safety in Africa
- WHO, 2004-Peden,M.; et al (eds) World report on Road Traffic Injury prevention
- WHO,2001- Holder Y., Peden M., Krug E. et al(eds) Injury Surveillance Guidelines, Geneva
- Harvey A,(Ed).*Data systems*, Geneva, World Health Organisation,2010

Lassa and Crimean-Congo Haemorrhagic Fevers

Background

- Crimean-Congo haemorrhagic fever (CCHF) belongs to the Bunyaviridae virus family and Lassa fever belongs to the Arenaviridae virus family.
 - CCHF is endemic in Africa and outbreaks have been reported from Uganda, Mauritania, and South Africa. Mauritania reports a few cases each year and South Africa reported 165 laboratory-confirmed cases between 1981 and March 2006.
 - Lassa fever is known to be endemic in Guinea, Liberia, Nigeria and Sierra Leone, but probably exists in other West African countries as well. Some studies indicate that 300,000 to 500,000 Lassa fever cases with 5,000 deaths occur each year in West Africa.
- CCHF spreads to humans either by tick-bites, or through contact with viraemic animal tissue immediately post-slaughter.
- The animal reservoir of the Lassa virus is a rodent of the genus *Mastomys*. *Mastomys* infected with Lassa virus do not become ill but shed the virus in their excreta (urine and faeces) and humans usually become infected through aerosol or direct contact with excreta of infected rodents. Lassa fever can also be spread between humans through direct contact with the blood, pharyngeal secretions, urine, faeces or other body secretions of an infected person.
- Person-to-person transmission of both CCHF and Lassa fever has occurred in health care settings after exposure to blood and secretions of infected patients.
- The incubation period for CCHF following a tick bite is usually 1-3 days (max 9 days) and following contact with blood or tissues is usually 5-6 days (max 13 days). The incubation period for Lassa fever ranges from 6-21 days.
- The onset of symptoms among CCHF patients is sudden with fever, myalgia and other signs and symptoms. The reported case fatality ratio for CCHF is between 3% and 30%.
- About 80% of human Lassa fever infections are mild or asymptomatic; the remaining cases have severe multi-system disease. The onset of disease in symptomatic patients is usually gradual starting with fever, general weakness and malaise. Lassa fever is difficult to distinguish from many other diseases which cause fever, including malaria, shigellosis, typhoid fever, yellow fever and other VHFs. The overall case fatality ratio is 1-15% among hospitalized patients.

General supportive therapy is the mainstay of patient management in CCHF. Intensive monitoring to guide volume and blood component replacement is required. The antiviral drug, ribavirin, has been used in the treatment of established CCHF infection. Both oral and intravenous formulations seem to be effective. Ribavirin is effective treatment for Lassa fever is

Surveillance goal

- Early detection of cases and outbreaks, rapid investigation, and early laboratory verification of the aetiology of all suspected cases.
- Investigation of all suspected cases with contact tracing.
- Assess and monitor the spread and progress of epidemics and the effectiveness of control measures.

Standard case definitions

Suspected case of CCHF: Illness with sudden onset of fever, malaise, weakness, irritability, headache, severe pain in limbs and loins and marked anorexia. Early development of flush on face and chest and conjunctival infection, haemorrhagic enanthem of soft palate, uvula and pharynx, and often fine petechial rash spreading from the chest and abdomen to the rest of the body, sometimes with large purpuric areas.

Confirmed case of CCHF: A suspected case with laboratory confirmation (positive IgM antibody, PCR, viral isolation or IgG seroconversion by ELISA or IFA) or epidemiologic link to confirmed cases or outbreak.

Suspected case of Lassa Fever: Illness with gradual onset with one or more of the following: malaise, fever, headache, sore throat, cough, nausea, vomiting, diarrhoea, myalgia, chest pain hearing loss and a history of contact with excreta of rodents or with a case of Lassa Fever

Confirmed case of Lassa Fever: A suspected case that is laboratory confirmed (positive IgM antibody, PCR or virus isolation) or epidemiologically linked to a laboratory confirmed case.

Respond to alert threshold

If a single case is suspected:

- Report case-based information immediately to the appropriate levels.
- Suspected cases should be isolated from other patients and strict barrier nursing techniques implemented.
- Standard infection control precautions should be enhanced throughout the healthcare setting.
- Treat and manage the patient with supportive care.
- Collect specimen to confirm the case(s).
- Case-contact follow-up and active case search for additional cases.

Respond to action threshold

If a single case is confirmed:

- Maintain strict VHF infection control practices* throughout the outbreak.
- Mobilize the community for early detection and care and conduct community education about how the disease is transmitted and how to implement infection control in the home care setting. For CCHF, educate the public about the mode of tick transmission and enhance rodent control activities for Lassa fever.

Conduct active searches for additional cases.

Request additional help from other levels as needed.

- Establish an isolation ward to handle additional cases that may come to the health centre.

Analyze and interpret data

Person: Implement immediate case-based reporting of cases and deaths. Analyze age and sex distribution. Assess risk factors and plan disease control interventions accordingly.

Time: Graph cases and deaths daily/weekly. Construct an epidemic curve during the outbreak.

Place: Map locations of cases' households.

Laboratory confirmation

Diagnostic test	Presence of IgM antibodies against CCHF, or Lassa Fever
Specimen	<p><i>For ELISA:</i> Whole blood, serum or plasma</p> <p><i>For PCR:</i> Whole blood or blood clot, serum/plasma or tissue</p> <p><i>For immunohisto-chemistry:</i> Skin or tissue specimens from <i>fatal</i> cases.</p>
When to collect the specimen	<p>Collect specimen from the first suspected case.</p> <p>If more than one suspected case, collect until specimens have been collected from 5 to 10 suspected cases.</p>

<p>How to prepare, store, and transport the specimen</p>	<p>HANDLE AND TRANSPORT SPECIMENS FROM SUSPECTED VHF PATIENTS WITH EXTREME CAUTION. WEAR PROTECTIVE CLOTHING AND USE BARRIER PRECAUTIONS.</p> <p><i>For ELISA or PCR:</i></p> <ul style="list-style-type: none"> • Refrigerate serum or clot • Freeze (-20C or colder) tissue specimens for virus isolation <p><i>For Immunohistochemistry:</i></p> <ul style="list-style-type: none"> • Fix skin snip specimen in formalin. Specimen can be stored up to 6 weeks. The specimen is not infectious once it is in formalin. • Store at room temperature. Formalin-fixed specimens may be transported at room temperature.
<p>Results</p>	<p>Diagnostic services for VHF are not routinely available. Advance arrangements are usually required for VHF diagnostic services. Contact the appropriate National authority or WHO.</p>
<p>References</p>	
<ul style="list-style-type: none"> • Interim Infection Control Recommendations for Care of Patients with Suspected or Confirmed Filovirus (Ebola, Marburg) Hemorrhagic Fever. BDP/EPR/WHO, 2008. • Infection control for VHF in the African health care setting, WHO, 1998. WHO/EMC • Ergonul O. Crimean-Congo haemorrhagic fever. Lancet Infect Dis 2006;6:203-14. • WHO Recommended Surveillance Standards WHO/CDS/CSR/ISR/99.2 • WHO Fact Sheet No 208, Crimean-Congo Haemorrhagic Fever, revised November 2001 • WHO Fact Sheet No 179, Lassa Fever, revised April 2005 	

Leprosy
Background
<ul style="list-style-type: none"> • Leprosy is a chronic mycobacterial disease of the skin, the peripheral nerves and upper airway mucous membranes. The disease is transmitted mainly through airborne spread from nasal secretions of patients infected by Hansen's bacillus and also through inoculation into broken skin. Leprosy is endemic in several tropical areas around the world, including Africa. • Patients are classified into two groups, depending on presence of skin and nerve signs: <ul style="list-style-type: none"> ○ Multibacillary patients (MB) with more than 5 skin patches and several nerve enlargements. ○ Paucibacillary patients (PB) with one to five skin patches and a single nerve enlargement. • Leprosy control has improved greatly through use of WHO recommended multidrug therapy (MDT). Multiple drug therapy combining two or three drugs (rifampicin, clofazimine and dapson) is very effective in curing leprosy. At the end of 1999, leprosy point prevalence in African countries was 1.6 cases per 10 000 population with about 70 000 registered cases. • Incubation period is 6 months to 20 years or more. Infection is probably frequent but clinical disease is rare, even among the closest contacts of patients. Multibacillary patients are most contagious, but infectiousness is reduced rapidly as soon as multiple drug therapy begins. Leprosy can be complicated by neuritis and leprosy reactions, resulting in impairment and disabilities of hands, feet, and eyes. • Leprosy has historically been associated with social isolation and psychosocial consequences. This social stigma still persists in some countries in Africa. • Some skin diseases such as tinea versicolor, mycosis, vitiligo, Scleroderma, psoriasis, systemic lupus erythematosus and Von Recklinghausen disease may be mistaken for leprosy.
Surveillance goal
<ul style="list-style-type: none"> <input type="checkbox"/> Observe national trends towards the leprosy elimination target, defined as a reduction in prevalence to less than 1 case per 10 000 population. <input type="checkbox"/> Monitor resistance of Hansen's bacillus to drugs used for multi-drug therapy (MDT) on an ongoing basis. <input type="checkbox"/> As leprosy nears elimination, supplement routine surveillance with community-based
Standard case definition
<p>Suspected case: A person showing one of three cardinal signs of leprosy: hypo-pigmented or reddish skin lesion, loss or decrease of sensations in skin patch, enlargement or peripheral nerve.</p> <p>Confirmed case: A person showing at least two cardinal signs of leprosy and who has not completed a full course of treatment with multidrug therapy (MDT).</p>
Respond to alert threshold

If a single case is suspected:

- Report the suspected case to the appropriate level of the health system.
- Investigate case for risk factors.
- Begin appropriate case management:
 - MB patients must be treated for 12 months with a three-drug regimen (12 MB blister packs to be taken in a period of 18 months).
 - PB patients must be treated for 6 months with a two drugs MDT regimen (6 PB blister packs to be taken in a period of 9 months)

Respond to action threshold**If a suspected case is confirmed:**

- Examine patients for skin and nerve signs at each contact patient with a health worker to diagnose and care for leprosy reactions and impairments.
- Examine risk factors for treatment interruption (for example, inadequate supplies of MDT in the health centre, poor accessibility of patients' villages, and so on). Give sufficient blister packs for a full course of treatment to patients unable to attend a health centre monthly.
- Identify any fast increase or decrease of new cases during a period. Assess adequacy of surveillance in areas where under- or over-reporting is suspected. Monitor distribution of MDT drugs.

Analyze and interpret data

Time: Graph cases by date diagnosed and treatment begun.

Place: Plot cases by location of households and disease classification (MB or PB)

Person: Count newly detected cases monthly by the type of leprosy (MB or PB). Analyze age and disability distribution and treatment outcomes (cases cured, defaulted, relapsed).

Laboratory confirmation

Routine laboratory confirmation for surveillance is not required.

Reference

- *Enhanced global Strategy for Further Reducing the Disease Burden due to Leprosy (SEA-GLP-2009.3)*
- WHO Recommended Surveillance Standards WHO/CDS/CSR/ISR/99.2

Lymphatic Filariasis

Background

- Lymphatic filariasis is the second leading cause of permanent and long-term disability worldwide. It affects over 120 million persons in 80 countries, and over 40 million persons are seriously incapacitated by the disease; 20% of the world population is at risk of infection. Of those infected, roughly 1/3 are in India, 1/3 in Africa, and the rest in the Americas, Asia, and the Pacific. In 1997, resolution WHA50.29 called for the elimination of lymphatic filariasis as a global public health problem. The strategy adopted is based on:
 - Reducing transmission below a threshold where new infection ceases to occur
 - Treatment of the problems associated with disability control and prevention.
- Causal agents: in Africa only the filariae *Wuchereria bancrofti*, *Brugia malayi*, and *Brugia timori*
- Modes of transmission: transmitted by various species of mosquitoes, these parasitic filarial worms lodge in the human lymphatic system, producing millions of immature microfilariae that circulate in the blood. Microfilariae appear in the peripheral blood after 3 to 6 months for *Brugia malayi*, 6 to 12 months for *Wuchereria bancrofti*, often with nocturnal periodicity. When a mosquito thereafter bites the infected person, the microfilariae are picked up and the infection may be transmitted to others after about 2 weeks.
- Clinical description:
 - Filarial infection may be clinically asymptomatic (even in the presence of laboratory evidence of lymphatic and kidney damage); the disease may also present as one or more acute manifestations (fever, local swellings, tropical pulmonary eosinophilia syndrome, lymphangitis).
- Chronic complications include:
 - Lymphoedema or elephantiasis of the limbs
 - Damage to the genital organs (including hydrocoele in men)
 - Damage to the kidney (including chyluria) and lymphatic system.

Surveillance goal

There are currently 3 options and the choice will depend on the local situation:

1. Routine monthly reporting of aggregated data on probable and confirmed cases from periphery to intermediate level and to central level
2. Sentinel population surveys (standardized and periodical),
3. Active case-finding through surveys of selected groups or through mass surveys.

International: Annual reporting from central level to WHO (for a limited number of countries).

Standard case definition

Suspected case:

Resident of an endemic area with a clinical sign of hydrocoele or lymphoedema for which other causes of these findings have been excluded.

Confirmed case:

A person with positive laboratory diagnosis of microfilaremia in blood smear, filarial antigenaemia or positive ultrasound test.

Respond to alert threshold

- Confirm community prevalence of infection by surveys

Respond to action threshold**Case management**

Hygiene measures for the affected body parts (and, when necessary, antibiotics and antifungal agents) can decrease the risk of adenolymphangitis:

- Washing the affected parts twice daily with soap and water
- Raising the affected limb at night
- Exercising to promote lymph flow
- Keeping nails short and clean
- Wearing comfortable footwear
- Using antiseptic or antibiotic creams to treat small wounds or abrasions, or in severe cases systemic antibiotics.

For the treatment of filarial carriers, the regimen recommended by the country is to be followed:

- In areas where there is neither Onchocerciasis nor loiasis: DEC 6 mg/kg single dose.
- In areas where Onchocerciasis has been excluded but not loiasis: individual clinical decision.

The current strategy for Filariasis control rests essentially on anti-parasitic measures. To interrupt transmission, the entire at risk population must be given a yearly, 1-dose regimen of the following:

Areas with concurrent onchocerciasis:

- 400 mg of albendazole + ivermectin 150 micrograms per kg of body weight once a year for 4-6 years

Areas with no concurrent Onchocerciasis

- Diethylcarbamazine 6 milligrams per kg of body weight + albendazole 400 mg once a year, or
- Diethylcarbamazine fortified salt for daily use for at least 6-12 months.

NOTE: In areas with *concurrent loiasis* (sub-Saharan Africa rain forest), mass interventions cannot at present be envisaged systematically (unless Onchocerciasis is a severe public health problem), because of the risk of severe adverse reactions in patients with high-density *Loa* infections (about 1 in 10,000 treatments).

It is important to educate the population on the importance of compliance during mass chemotherapy.

Special efforts for vector control are not required as regards Lymphatic Filariasis. They should be carried out under other existing vector control programmes such as anti-malaria vector control operations.

Analyze and interpret data

- Map the distribution of Lymphatic Filariasis and identify implementation units that will require mass drug administration
- Analyze the drug coverage in implementation units
- Assess the decline of parasitological indices microfilaraemia before starting MDA and after at least four rounds of MDA till the criteria of less than 1% microfilaraemia in the population and less than 0.1% antigenaemia in school entry children is achieved

Laboratory confirmation

Diagnostic test	<ul style="list-style-type: none"> • Night blood smear • Filarial antigen test
Specimen	Blood smear
When to collect the specimen	Night between 10pm and 2am Any time of the day

How to prepare, store, and transport	Spread three drops of blood on a glass slide and spread across the slide to make three lines. After fixing with heat stain with Geimsa stain and examine under microscope Either a rapid ICT card test or by an lab based ELISA test
Results	Positive test is when microfilariae of <i>W.bancrofti</i> is seen under the microscope Positive if filarial antigen is detected
Reference	
<ul style="list-style-type: none"> • WHO. Monitoring and epidemiological assessment of the programme to eliminate lymphatic filariasis at implementation unit level WHO/CDS/CPE/CEE/2005.50 • WHO. <i>Lymphatic filariasis</i>. WHO/CDS/CPE/SMT/2001.7 • WHO. <i>Training module on lymphatic filariasis for drug distributors (in countries where onchoerciasis is not co-endemic)</i>. WHO/CDS/CPE/CEE/2000.10 (Parts 1 &2) • WHO. <i>Training module on lymphatic filariasis for drug distributors (in countries where onchoerciasis is co-endemic)</i>. WHO/CDS/CPE/CEE/2000.11 (Parts 1 & 2) • WHO. <i>The programme to eliminate lymphatic filariasis – essential elements for medical personnel (in countries where onchoerciasis is not co-endemic)</i>. WHO/CDS/CPE/CEE/2000.12 • WHO. <i>The programme to eliminate lymphatic filariasis – essential elements for medical personnel (in countries where onchoerciasis is co-endemic)</i>. WHO/CDS/CPE/CEE/2000.13 • WHO. <i>Preparing and implementing a national plan to eliminate filariasis (in countries where onchoerciasis is not co-endemic)</i>. WHO/CDS/CPE/CEE/2000.15 • WHO. <i>The programme to eliminate lymphatic filariasis (in onchoerciasis co-endemic countries)</i>. WHO//CDS/CPE/CEE/2000.16 Webpage: www.who.int/lymphatic_filariasis 	

Malaria
Background
<ul style="list-style-type: none"> • Malaria is a highly prevalent tropical illness with fever following the bite of infected female Anopheles mosquitoes which transmit a parasite, <i>Plasmodium falciparum</i>, <i>P. ovale</i>, <i>P. vivax</i>, or <i>P. malariae</i>. Serious malarial infections are usually due to <i>P. falciparum</i> which may result in severe anaemia and vital organ involvement. Over 95% of the malaria infections in Uganda are due to <i>P. falciparum</i>. • Malaria is one of the leading causes of illness and death in Uganda. Malaria contributes 30% Of all outpatients and 10% of the mortality in Uganda. The groups at higher risk of contracting malaria and getting severe disease are pregnant women, children under 5, patients with HIV/AIDS, as well as non-immune migrants, mobile populations and travelers from non-endemic countries. • Incubation period from the time of being bitten to onset of symptoms is 7 to 30 days. The incubation period may be longer, especially with non- <i>P. falciparum</i> species.
Surveillance goal
<ul style="list-style-type: none"> • Have a system that ensures early warning, forecasting, detection and prompt response to malaria epidemics, especially in areas prone epidemics
Standard case definition
<p><i>Uncomplicated malaria</i> Any person living in area at risk of malaria with fever or history of fever within 24 hours; without signs of severe disease (vital organ dysfunction) is diagnosed clinically as malaria.</p> <p><i>Confirmed uncomplicated malaria</i> Any person with fever or history of fever within 24 hours; and with laboratory confirmation of diagnosis by malaria blood film or other diagnostic test for malaria parasites.</p> <p><i>Unconfirmed severe malaria</i> Any patient living in area at risk of malaria hospitalized with severe febrile disease with accompanying vital organ dysfunction diagnosed clinically</p> <p><i>Confirmed Severe malaria</i> Any patient hospitalized with <i>P. falciparum</i> asexual parasitaemia as confirmed by laboratory tests with accompanying symptoms and signs of severe disease (vital organ dysfunction) diagnosed through laboratory.</p>
Preparedness, Forecasting and early warning

This entails use of climatic data, rainfall, humidity or temperature to predict malaria epidemics. Other indicators that are useful include mosquito and larval densities, nutritional status, drug and insecticide resistance, loss of immunity because of a recent reduction in population exposure and human population movements in and out of endemic areas

The following actions should be taken during this period;

- Ensure adequate stock of malaria diagnostics and drugs for the peak transmission season
- LLIN distribution (mass/routine) and ensure functionality of health facilities and community health workers providing malaria case management
- Inform district authorities and Health workers of increased risk
- Reactivating epidemic Response Task Forces at district and lower levels

Respond to alert threshold

If there is an unusual increase in the number of new malaria cases or deaths as compared to the same period in previous non-epidemic years:

- Verify the epidemic (an observed increase in cases can be due to errors in data, improved case management, improved surveillance/diagnostic tools)
- Report suspected epidemic to the next level
- Treat with appropriate anti-malarial drugs according to national treatment guidelines
- Investigate the cause for the increase in new cases
- Make sure new cases in children age 2 months up to 5 years are managed according to national treatment guidelines.

Respond to action threshold

If the number of new cases exceeds the upper limit of cases seen in a previous non-epidemic period in previous years:

Evaluate and improve, as needed coverage and uptake of prevention strategies, such as mosquito nets, Malaria case management, Social Behavioural change and community mobilization, test and treat outreaches, Indoor Residual spraying for all at risk of malaria.

Analyze and interpret data

In order to confirm the existence of a malaria epidemic at an early stage there is a need to monitor **malaria cases** and to compare the observed numbers to what can be considered “EXPECTED” for a particular health facility or district during a similar period of the year based on the data from the recent past. In order to do this, one has to obtain the data on malaria cases for the **most recent non epidemic 5 years**. These data are then used to determine the expected cases also commonly referred to as **the “NORMAL CHANNEL”**.

Two methods are proposed;

- A) Computerised & statistical for the national, district and HSD level and
- B) Simple & non statistical for the HCII and III level

A) Computerised & statistical for the national, district and HSD level

1. Using MS EXCEL tabulate the malaria cases for each of the 52 weeks in a year for the most recent five (5) years.
2. Plot the 75th percentile for each of the week for the past 5 years using the function =PERCENTILE(A1:A4,0.75). This is the upper normal
3. Plot the 25th percentile for each of the week for the past 5 years using the function =PERCENTILE(A1:A4,0.25). This is the lower normal
5. The area between the two lines is the expected number of malaria cases (NORMAL CHANNEL)
6. Plot the weekly malaria cases observed in the current year to present
7. If the observed weekly malaria cases are above the upper plot of the Normal channel an epidemic alert exists and should be investigated within 24-48 hours.

B) Epidemic threshold alert for the health centre II and III

1. Tabulate the observed weekly malaria cases at the health facility for the most recent five (5) years for each of the 52 weeks in a year.
2. Sort the weekly cases in ascending order i.e. from the lowest to highest.
3. The number in the middle of the list is the median.
4. The fourth highest number [the fourth from the bottom], represents the 3rd quartile (75th percentile). This is considered as the upper limit of the expected normal number of cases.
5. Plot the 3rd quartile (75th percentile) for each week and connect the points with a line. This forms the upper normal limit.
6. The second highest number [the second from the bottom], represents the 1st quartile (25th percentile). This is considered as the lower limit of the expected normal number of cases. (Although the desired situation is to have zero cases i.e below the 25th percentile, as malaria interventions are scaled up and epidemiology changes towards pre-elimination and elimination levels)
7. The area between the two lines is the expected (Normal Channel).

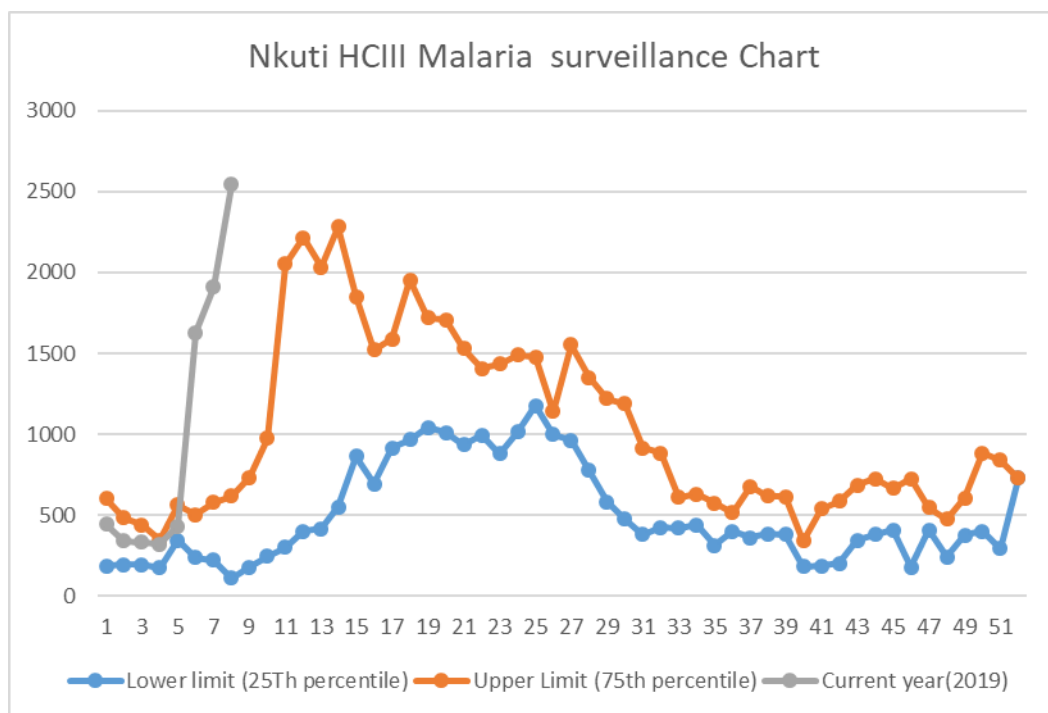
If the number of currently observed cases falls between the two lines, this is considered normal. If, however, the number is above the line of the 3rd quartile [upper limit] for 2 consecutive weeks this may be an indication of an epidemic and must therefore be reported within 24-48 hours to the District Health Office. One of the ways to detect early the existence of a malaria epidemic is to monitor the number of malaria cases and compare the present numbers to what can be considered “normal” for a particular health facility based on the data from the past.

A malaria normal channel graph is a malaria surveillance chart that shows the number of expected malaria cases seen per week.

Since malaria epidemics tend to be localised, to be more useful, this chart should be filled in at the health facility and interpreted by the health facility itself. The interpretation will trigger action by the health facility in-charge

In order to construct the graph, data on malaria cases from at least the last consecutive 5 years should be used.

Figure 1: Example of Malaria a Malaria surveillance Chart for Nkuti HCII. Dataset in Annex



There are many variants of the surveillance chart, you must also monitor malaria related deaths and stock of antimalarial on the same chart: see template for such a chart in annex

Time:	Graph the number of cases by month/week. Construct an epidemic curve during epidemics.
Place:	Identify the most affected villages. Plot location of households for new cases and deaths
Person:	Count the number of new malaria cases and deaths by month and analyze age groups and time of onset.

Laboratory confirmation

Diagnostic test	<ul style="list-style-type: none"> • Microscopy: Presence of malarial parasites in blood films for suspected cases • Malaria Rapid diagnostic test: Positive or negative test
Specimen	<p>Blood</p> <p>Usually finger-stick sample for all ages or other accepted method for collecting blood from very young children</p>

When to collect	<i>For blood smear:</i> prepare blood film for all suspected cases admitted to inpatient facility, or according to national malaria case management guidelines
How to prepare, store, and transport	<p><i>Blood smear:</i></p> <ul style="list-style-type: none"> <input type="checkbox"/> Collect blood directly onto correctly cleaned and labeled microscope slides and prepare thick and thin smears. <input type="checkbox"/> Allow smears to dry thoroughly <input type="checkbox"/> Stain using the appropriate stain and technique <input type="checkbox"/> Store stained and thoroughly dried slides at room temperature out of direct sunlight. <p><i>For rapid diagnostic test:</i></p> <ul style="list-style-type: none"> <input type="checkbox"/> <i>Collect specimen and perform test according to manufacturers' instructions.</i>

Results	<p>Thick and thin smear results can be available the same day as preparation.</p> <p>Microscopic examination of malarial slides may also reveal the presence of other blood-borne parasites.</p> <p>RDT result is obtained immediately. Note: In the inpatient setting, perform a hemoglobin estimation laboratory test to confirm severe anaemia, in children 2 months to 5 years in age.</p>
Reference	
<ul style="list-style-type: none"> • <i>Malaria epidemics: Detection and control, forecasting and prevention</i>. Geneva. World Health Organization. WHO/MAL/98.1084 • "Basic Laboratory Methods in Medical Parasitology" WHO, Geneva, 1991 • 'Guidelines for Malaria Epidemic Preparedness and Response' Ministry of Health, Uganda 2012 • 'Malaria Surveillance Monitoring and Evaluation: A reference manual', Geneva, World Health Organization 2018 	

Malaria Continued.

Note: Setting an epidemic threshold:

The national Malaria Control Program can assist districts and health centres with determining appropriate thresholds for detecting possible epidemics. In the absence of a threshold set by the national program, the following method can be used to determine the threshold level for a malaria epidemic. The threshold is determined using the median and the 3rd Quartile of a period of time (for example, 5-year data from a health facility or district by month/week):

1. Look at the number of malaria cases at a specific health facility or district by month/week for the past 5 years.
2. Determine the median for each month/week (for example, each January for the last 5 years). Rank the monthly/weekly data for each month/week for the five years in ascending order. Identify the number in the middle of each month's/week's series for the five years. This is the median. Repeat this process for each month/week in the five years.
3. Determine the 3rd Quartile for the monthly/weekly series by identifying the 4th highest number from the bottom in each data series (since data is ranked in ascending order). This is the 3rd Quartile representing the upper limit of the expected normal

number of malaria cases.

4. Plot the 3rd Quartile for each data series by month/week for the five year period and join the points with a line. The line represents the upper limit of the expected number of cases.
5. Plot the median for each data series by month/week for the five year period and join the points with a line. This line represents the lowest limit of expected number of cases.
6. The area between the two lines (the median and the 3rd Quartile) represents the "normal channel". If the number of currently observed cases of malaria falls between the two lines, the number of new cases for that month/week is assumed to be "normal". If the number is above the 3rd Quartile (upper limit), this is an indication of a possible malaria epidemic.

Please note that to ensure early detection and control of malaria epidemics, it is preferable to use weekly surveillance data in Malaria epidemic prone areas.

Source: WHO/AFRO Regional Malaria Program

Malnutrition
Background
<ul style="list-style-type: none"> • Globally, maternal and child under-nutrition are underlying causes for 3.5 million deaths, including 35% of the disease burden in children younger than 5 years. Of the 40 countries with a child stunting prevalence of 40% or more, 23 are in Africa. • Severe malnutrition may act as a direct cause of death or an indirect cause by increasing dramatically the number of deaths in children suffering from common childhood illnesses such as diarrhea and pneumonia. • Despite the above, the burden of child mortality due to severe malnutrition remains largely absent from the international health agenda and few countries, even in high prevalence areas, have specific national policies aimed at addressing it comprehensively. • The most vulnerable are children under five and pregnant and lactating women. The poor nutritional status and nutritional intake of pregnant women may contribute to newborns with low birth weight (a weight measured immediately after birth). A newborn weighing less than 2500 grams (2.5 kilos or 5.5 pounds) is considered a newborn with low birth weight (LBW). LBW is a major determinant of death, illness and disability in infancy and childhood and also impacts health outcomes in adult life. • Socio-economic conditions, poor water and sanitation, mothers' nutritional education on how to feed babies and young children, and repeated infections are the main causes of malnutrition. • Programmes elaborated to eradicate malnutrition are on food security, water and sanitation, promotion of infant and young children feeding practices, micronutrient supplementation programmes, management of severe cases of malnutrition in the communities and in the health facilities, management of infections mainly diarrhoeal disease. • Many sporadic surveys are being organized, but nutrition surveillance is currently poorly implemented and does not allow for interventions related to prevention and management of malnutrition.
Surveillance goal
<ul style="list-style-type: none"> • Early warning and problem identification. • Policy-making and planning. • Programme management and evaluation. • Assess effectiveness of public health response that address causes of low birth weight, malnutrition in children and malnutrition in pregnant women
Standard case definition

Low birth weight newborns:

Any new born with a birth weight less than 2500 grams (or 5.5 lbs)

Malnutrition in children:

- 5 Children under five who are underweight (indicator: weight for age < -2 ZScore)
- 6 Children 6 to 59 months with MUAC < 11.5 cm (high risk of mortality)
- 7 Bilateral pitting edema

Malnutrition in pregnant women:

Pregnant women given birth to low birth weight babies (birth weight < 2.5 Kg) (poor nutritional and health status of the women, can predict which population groups may benefit from improved antenatal care of women and neonatal care for infants).

Response to alert threshold**If more than 20% of children are underweight:**

Programme emphasis on

- Breastfeeding support
- Nutrition education
- Supplementation of child and mother
- Prevention and treatment of diarrhoea
- Prevention and treatment of severe malnutrition
- Socio-economic support

As soon as one case with MUAC less than 11.5 cm is detected or presence of bilateral edema identified:

Alert, further investigation should be conducted. In addition, refer the child to a therapeutic feeding programme.

If more or equal than 15% of low birth weight are less than 2.5 Kg:

Targeting interventions for improved antenatal care for women and neonatal care of infants including nutritional care (anti-smoking and anti-alcohol campaigns, nutritional care for women before and during antenatal and during lactating period, malaria prophylaxis, new-born care facilities, etc.) to those at risk of poor pregnancy outcomes and treat new born to prevent morbidity and death.

Analyze and interpret data

Time: Graph cases monthly to analyze trends and weekly in emergency

Place: Plot location of households/community with cases

Person: Count monthly/weekly cases and analyze age and gender distribution

Laboratory confirmation

Routine laboratory confirmation for surveillance is not required.

Reference

- Maternal and child undernutrition: global and regional exposures and health consequences: Black R.E. et al :The Lancet, Volume 371, Issue 9608, Pages 243 - 260.
- Gross R, Webb P, Wasting time for wasted children: severe child undernutrition must be resolved in non-emergency settings. Lancet 2006; 367: 1209-1211.
- Physical status: the use and interpretation of anthropometry. Report of a WHO Expert Committee. WHO Technical Report Series, 1995, No 854: 81, 128-130, 198-208.
- WHO child growth standards and the identification of severe acute malnutrition in infants and children. A Joint Statement by the World Health Organization and the United Nations Children's Fund

Maternal Deaths
Background
<ul style="list-style-type: none"> • Deaths during pregnancy, childbirth or termination of pregnancy, and deaths up to 6 weeks (42 days) after childbirth or termination of pregnancy related to pregnancy are considered Maternal Deaths. • Globally, about 80% of maternal deaths are due to; severe bleeding (mostly bleeding postpartum), infections (also mostly soon after delivery), hypertensive disorders in pregnancy (eclampsia) and obstructed labor. Complications after unsafe abortion cause 13% of maternal deaths. • Across the developing world, maternal mortality levels remain too high, with more than 500,000 women dying every year as a result of complications during pregnancy and childbirth. About half of these deaths occur in sub-Saharan Africa where a woman's lifetime risk of maternal death is 1 in 22, compared with 1 in 8,000 in industrialized countries. • Hemorrhage is the leading cause of maternal death in sub-Saharan Africa, and unattended births are a particular risk, especially in rural areas where transport to health care facilities is a problem.
Surveillance goal
<ul style="list-style-type: none"> • Estimate and monitor maternal mortality rates. • Identify risk factors and high risk areas for maternal mortality to inform program decisions. • Evaluate programs aimed at reducing maternal mortality.
Standard case definition
<p>The death of a woman while pregnant or within 42 days of the delivery or termination of the pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.</p>
Recommended public health action
<ul style="list-style-type: none"> • Establish alert thresholds to allow health facility or district health personnel determine when special targeted interventions are necessary. • Monitor trends and respond to alert thresholds • Increase availability and use of antenatal care • Provide specialized training to traditional and profession birth attendants • Support interventions to improve recognition and response to high-risk pregnancies at the community level
Analyze and interpret data

Time: Graph cases to construct an epidemic curve throughout the year in order to identify trends.

Place: Plot the location of cases and analyze the distribution.

Person: Analyze the distribution of cases by age and other demographic factors.

Laboratory confirmation

Routine laboratory confirmation for surveillance is not required.

Reference

- <http://www.who.int/making pregnancy safer/topics/maternal mortality/en/index.html>
- <http://www.unicef.org/index.php>

Measles
Background
<ul style="list-style-type: none"> • Measles is a febrile rash illness due to paramyxovirus (<i>Morbillivirus</i>) transmitted human-to-human via airborne droplet spread. It is the fourth leading cause of death in children less than 5 years of age in many African countries. • The incubation period is 7 to 18 days from exposure to onset of fever. • Among children with vitamin A deficiency and malnutrition, measles may result in severe illness due to the virus itself and associated bacterial infections, especially pneumonia; only the minority of cases are severe. • Measles is among the most transmissible of human infections. Large outbreaks occur every few years in areas with low vaccine coverage and where there is an accumulation of persons who have never been infected or vaccinated. The true incidence of measles far exceeds reported cases. • Risk factors include low vaccine coverage (<85 to 90%) which allows accumulation of susceptible persons at high risk for measles. Outbreaks can be explosive in areas of high population density. • Other viral illnesses such as rubella may cause or contribute to similar outbreaks.
Surveillance goal
<ul style="list-style-type: none"> • Detect outbreaks of fever with rash illness promptly: <p><i>In countries with a measles elimination target:</i> immediate case-based reporting of suspected cases and deaths of fever with rash illness; confirm all suspected measles cases with laboratory test (usually serum IgM).</p> <p><i>In countries with accelerated measles control programs:</i> Summary reporting of cases and deaths for routine surveillance and outbreaks; confirm the first five cases of suspected measles in a health facility per week with laboratory test (usually serum IgM). Uganda's target is to achieve measles elimination by 2020.</p>
Standard case definition
<p>Suspected case:</p> <p>Any person with fever and maculopapular (non-vesicular) generalized rash and cough, coryza or conjunctivitis (red eyes) or any person in whom a clinician suspects measles.</p>

Confirmed case:

A suspected case with laboratory confirmation (positive IgM antibody) or epidemiological link to confirmed cases in an outbreak.

Respond to alert threshold

If an outbreak is suspected:

- Report suspected case to the next level.
- Collect blood samples from the first five cases to confirm the outbreak.
- Line list the other cases without collecting any blood samples
- Treat cases with oral rehydration, vitamin A, and antibiotics for prevention of bacterial super-infection. Use airborne isolation precautions where feasible.
- Investigate the case or outbreak to identify causes for outbreak.

Respond to action threshold

If an outbreak is confirmed:

- Improve routine vaccine coverage through the EPI, and lead supplemental vaccination activities in areas of low vaccine coverage.
- Mobilize the community early to enable rapid case detection and treatment.

Analyze and interpret data

Time: Graph weekly cases and deaths. Construct epidemic curve for outbreak cases.

Place: Plot location of case households.

Person: Count total cases and analyze by age group and immunization status.

Laboratory confirmation

Diagnostic test

Presence of IgM antibodies to measles virus in serum.

Specimen

Serum
Whole
blood

<p>When to collect the specimen</p>	<p>Collect specimens within the first 30 days of rash onset</p> <p>Collect blood samples on 5 suspected measles cases when the number of cases exceeds the measles outbreak threshold (that is more than 5 cases in a district in a month).</p> <p>In countries with an elimination target:</p> <ul style="list-style-type: none"> • Collect specimen from every suspected case of measles • Collect serum for antibody testing at first opportunity or first visit to the health facility.
<p>How to prepare, store, and transport the specimen</p>	<ul style="list-style-type: none"> • For children, collect 1 to 5 ml of venous blood depending on size of child. Collect into a test tube, capillary tube or microtainer. • Separate blood cells from serum. Let clot retract for 30 to 60 minutes at room temperature. Centrifuge at 2000 rpm for 10-20 minutes and pour off serum into a clean glass tube. • If no centrifuge, put sample in refrigerator overnight (4 to 6 hours) until clot retracts. Pour off serum the next morning. • If no centrifuge and no refrigerator, let blood sit at an angle for at least 60 minutes (without shaking or being driven in a vehicle). Pour off serum into a clean tube. • Store serum at 4°C. • Transport serum samples using appropriate packaging to prevent breaking or leaks during transport. • Do not freeze whole blood

<p>Results</p>	<p>The specimen should arrive at the laboratory within 3 days of being collected.</p> <p>Results are usually available after 7 days.</p> <p>If as few as 3 out of 5 suspected measles cases are laboratory confirmed, the outbreak is confirmed.</p> <p>Avoid shaking of specimen before serum has been collected.</p> <p>To prevent bacterial overgrowth, ensure that the serum is poured into a clean glass test tube. The test tube does not need to be sterile, just clean.</p> <p>Transport the serum in a specimen carrier at 4°C to 8°C to prevent bacterial overgrowth (up to 7 days). If not refrigerated, serum stored in a clean tube will be good for at least 3 days.</p>
<p>Reference</p>	
<ul style="list-style-type: none"> • <i>Field guide for training operational level health workers on vaccine preventable disease surveillance</i>, MoH/ UNEPI (Revised edition 2012) • <i>Using surveillance data and outbreak investigations to strengthen measles immunization programs</i>, Geneva, World Health Organization. WHO/EPI/GEN/96.02 • WHO Guidelines for Epidemic Preparedness and Response to Measles Outbreaks WHO/CDS/CSR/ISR/99.1 	

Meningococcal Meningitis

Background

- *Neisseria meningitidis*, *Haemophilus influenzae* type b (Hib), and *Streptococcus pneumoniae* constitute the majority of all cases of bacterial meningitis and 90% of bacterial meningitis in children.
- Meningococcal meningitis is the main form of meningitis to cause epidemics and remains a major public health challenge in the African meningitis belt, an area that extends from Senegal to Ethiopia. In these countries, large outbreaks may occur during the dry season (e.g., November through May). Outside of the meningitis belt, smaller outbreaks may occur year-round.
- Epidemics in the meningitis belt are traditionally associated with *Neisseria meningitidis* serogroup A although in 2002 an epidemic due to Nm serogroup W135 occurred in Burkina and in 2006 Nm serogroup X was isolated in Niger.
- Human-to-human disease transmission is via large respiratory droplets from the nose and throats of infected people.
- Incubation period is 2 to 10 days.
- Attack rates are highest among children aged less than 15 years. Case fatality rates are usually 8-15% among treated patients, and >70% among untreated cases. Many survivors suffer long-term sequelae including mental retardation, hearing loss and loss of limb use.
- Oily chloramphenicol is the drug of choice during epidemics because a single dose of this long-acting formulation has been shown to be effective. Antimicrobial resistance to chloramphenicol has not yet been detected in Africa, however, resistance to sulphonamides is widespread.
- The current response to meningitis epidemics consists of reactive mass vaccination campaigns with bivalent (A and C) and/or trivalent polysaccharide vaccine (A, C, and W135) as soon as possible after an epidemic has been declared. Polysaccharide vaccines do not protect very young children and only provide protection for up to three years resulting in repetitive meningitis outbreaks.
- A meningococcal A conjugate vaccine has been developed which is immunogenic in both infants and adults and is expected to confer long-term protection. It is expected that introduction of this conjugate vaccine into meningitis belt countries is likely to dramatically reduce the circulation of Nm A and eliminate Nm A epidemics.

Surveillance goals

- To promptly detect meningitis outbreaks and to confirm aetiology of meningitis outbreaks.
- To use the data to plan for treatment and vaccination supplies and other prevention and control measures.
- To assess and monitor the spread and progress of the epidemic and the effectiveness of control measures.
- To monitor the situation including serogroup shifts throughout the year.
- To perform periodic susceptibility testing for penicillin and chloramphenicol.

Standard case definition

Suspected case: Any person with sudden onset of fever (>38.5°C rectal or 38.0°C axillary) and one of the following signs: neck stiffness, altered consciousness or other meningeal signs.

Confirmed case: A suspected case confirmed by isolation of *N. meningitidis* from CSF or blood.

Respond to alert threshold

Alert threshold:

- For populations between 30 000 and 100 000 inhabitants, an attack rate of 5 cases per 100 000 inhabitants per week.
- For populations less than 30 000 inhabitants, 2 cases in 1 week or an increase in the number compared to the same time in previous non-epidemic years.

Respond to alert threshold:

- Inform next level of health system
- Record cases on a line listing form
- Investigate and laboratory confirm the cases
- Treat all suspected cases with appropriate antibiotics as recommended by National protocol.
- Intensify surveillance for additional cases in the area
- Prepare to conduct a mass vaccination campaign

Respond to action threshold

Epidemic threshold:

- For populations between 30 000 and 100,000: an attack rate of 15 cases per 100 000 inhabitants per week. When the risk of an epidemic is high (no epidemic during last 3 years, alert threshold reached in dry season), epidemic threshold is 10 cases per 100 000 inhabitants per week.
- For populations less than 30 000 inhabitants: 5 cases in 1 week or the doubling of the number of cases over a 3-week period

Respond to epidemic threshold:

- Immediately vaccinate the epidemic district as well as any contiguous districts in alert phase.
- Mobilize community to permit early case detection and treatment, and improve vaccine coverage during mass vaccination campaigns for outbreak control.
- Continue data collection, transmission and analysis.
- Maintain regular collection of 5-10 CSF specimens per week throughout the epidemic season in all affected districts to detect possible serogroup shift.
- Treat all cases with appropriate antibiotics as recommended by National protocol.

Analyze and interpret data

Time: In meningitis belt countries during epidemic season, graph weekly cases and deaths. Otherwise, graph monthly trends in cases and deaths. Construct an epidemic curve for outbreak cases.

Place: In epidemics (not in endemic situations), plot location of case households and estimate distance to the nearest health facility.

Person: Count total sporadic and outbreak cases. Analyze age distribution.

Target case fatality rate: <10%

Laboratory confirmation

Diagnostic test	Microscopic examination of CSF for Gram negative diplococci Culture and isolation of <i>N. meningitidis</i> from CSF
Specimen	Cerebral spinal fluid (CSF) Note: CSF is the specimen of choice for culture and microscopic exam. If CSF not available, collect blood (10 ml adults, 1-5 ml for children) for culture.
When to collect the specimen	Collect specimens from 5 to 10 cases once the alert or epidemic threshold (see "Meningitis" in Section 8.0) has been reached.

<p>How to prepare, store, and transport the specimen</p>	<ul style="list-style-type: none"> • Prepare the patient and aseptically collect CSF into sterile test tubes with tops. • Immediately place 1 ml of CSF into a pre-warmed bottle of trans-isolate medium. • Incubate at body temperature (36C to 37C). • Never refrigerate specimens that will be cultured. <p>Keep CSF for microscopic exam and chemistry in the original syringe (replace cap). Refrigerate the capped syringe and send it to the laboratory as soon as possible.</p>
<p>Results</p>	<p>Isolation of <i>Neisseria meningitidis</i>, a fastidious organism, is expensive, and difficult. It requires excellent techniques for specimen collection and handling and expensive media and antisera.</p> <p>Initial specimens in an outbreak or for singly occurring isolates of <i>N. meningitis</i> should be serotyped and an antibiogram performed to ensure appropriate treatment.</p> <p>Trans Isolate medium (TI) is stable. If properly stored at temperature (4°C) it can be kept for up to two years after preparation. In the refrigerator, the liquid phase turns gelatinous but reliquifies at room temperature. Unused TI bottles should be kept tightly sealed. If there is any colour change (yellowing or clouding of the liquid medium) or drying or shrinkage of the agar slant, the medium should not be used.</p>
<p>Reference</p>	
<ul style="list-style-type: none"> • Weekly Epidemiological Record N 38, September 2000 (http://www.who.int/wer/pdf/2000/wer7538.pdf) • WHO Regional Office for Africa Standard Operating Procedures for Enhanced Meningitis Surveillance in Africa, August 2009 • Control of epidemic meningococcal disease. WHO Practical Guidelines, 2nd Edition. WHO/EMC/BAC/98.3. • "Laboratory Methods for the Diagnosis of Meningitis Caused by <i>Neisseria meningitidis</i>, <i>Streptococcus pneumoniae</i> and <i>Haemophilus influenzae</i>." WHO document WHO/CDS/EDC/99.7 WHO, Geneva 	

Mental Illness (Epilepsy)
Background
<ul style="list-style-type: none"> • Epilepsy is defined as the recurrence of, at least, two epileptic seizures with sudden occurrence of abnormal signs which could be: motor, tonic, sensitive, sensorial, neuro-vegetative, or psycho-behavioral. These symptoms could or could not be associated to a loss of conscience. It can appear at any age. • Epilepsy is the most common result of brain cells disturbance that lead to excessive nerve-cell discharges. According to the disturbance on some or many groups of cells, seizures could be partial or generalized. • Seizures with tonic-clonic muscle movements are named convulsion or fit or attack. Convulsion can appear at any age; all convulsions are not systematically epilepsy. • Epilepsy is frequent in the Region and its prevalence rate range from 2.2 to 58 per 1000. Studies from five sub-Saharan African countries showed an incidence ranging from 64 to 156 per 100,000 person/year. • This higher incidence may be a consequence of many risk factors which are related with predisposing factors such as poor perinatal care, head trauma, consanguinity. • Many etiological factors are related with communicable diseases (malaria, tuberculosis, meningitis, neurocysticercosis and HIV), non communicable diseases (high blood pressure, diabetes, alcoholism and illicit drug use), poorer medical facilities, poorer general health and a lower standard of living. Misunderstanding linked to cultural beliefs, stigma and exclusion do not facilitate appropriate care. • Epilepsy substantially increases mortality risk, particularly in conditions of later detection due to lack of well trained health workers to diagnose and treat neurological disorders. • Death and injury occur primarily due to status epilepticus (especially in the case of abrupt medication withdrawal), burns and drowning. • It has been estimated that in developing countries, up to 80% of people with epilepsy are not receiving treatment, or are often not even identified. While the etiological diagnosis of the epilepsies may be more difficult in developing countries, due to limited investigative resources, many can be diagnosed on the basis of simple clinical and epidemiological knowledge.
Surveillance goal
<ul style="list-style-type: none"> • Early detection and immediate intervention to prevent morbidity and mortality rates associated with epilepsy • Register and monitor epilepsy cases
Standard case definition

Suspected case: Any person with one epileptic seizure

Suspected new case: Report only the first diagnostic of the case in the health centre

Confirmed case:

Any person with recurrence of, at least, two epileptic seizures. A positive response to treatment with any AED strengthens the hypothesis of a confirmed case. Epileptic seizures can last for 30 seconds to 3 minutes. When they are intricate without a pause, they can lead to *status epilepticus*.

Respond to alert threshold

Suspected cases

- All health personnel should check for early signs of epilepsy. Diagnosis should include good interviews (describing as precisely as possible the seizure type) and clinical examination.
- Once diagnosed, search for underlying and associated causes. Check for abnormal increases on number of cases and propose appropriate environmental measures if needed.

Confirmed cases

- Immediate treatment should be ensured starting with low doses of any anti epileptic drug then increasing progressively until an effective steady state. In case of poor seizure control management strategies must be: increase the dose or try an alternative drug, refer to an upper level health structure.
- Referral to higher level health structure should be done if seizures continue regardless of pharmacological treatment or if first seizure occurs in an adult aged 30 and above.

Respond to action threshold

All cases: Information and education measures on epilepsy and risk factors at community level

Analyze and interpret data

Person: Analyse sex and age distribution (by age group from 6 years onwards)

Time: Graph quarterly cases

Place: Plot the distribution by area of residence

Laboratory confirmation

Diagnostic test	<ul style="list-style-type: none"> • Blood glucose(random capillary blood, and venous blood sugar), electrolytes to exclude other conditions such as diabetes, kidney pathology • Exclude other conditions such as Cerebral Malaria, meningitis, toxoplasmosis; cerebro calcifications follow tuberculosis (tuberculoma), parasitic diseases and others by conducting appropriate medical investigations.
Specimen	Blood, and cerebro-spinal fluid
When to collect the specimen	<p>Glucose - During the emergency admission of the patient (random blood glucose)</p> <p>Confirmed subsequently (fasting blood glucose)</p>
How to prepare, store, and transport the	Use universal precautions to minimize exposure to sharps and any body fluid
Results	Results are always available within 1 to 3 hours from arrival in the laboratory
References:	
<ul style="list-style-type: none"> • WHO, Epilepsy in the WHO African Region: Bridging the Gap, WHO Regional Office for Africa, Congo, 2004. • WHO, Epilepsy: a manual for medical and clinical officers in Africa, World health, Geneva 2002 	

Neonatal tetanus
Background
<ul style="list-style-type: none"> • A neuromuscular toxin-mediated illness caused by the anaerobic spore-forming soil bacterium <i>Clostridium tetani</i>. The disease is transmitted when spores enter open wounds (injections, cutting the umbilical cord) or breaks in the skin. • While tetanus may occur in adults, infection primarily affects newborns. Neonatal tetanus has decreased dramatically in countries with improved maternal tetanus immunization rates. As a result, tetanus is targeted for elimination in many African countries. • Incubation period is 3 to 21 days, with an average of approximately 6 days. • Risk factors: Unclean cord care practices during delivery for neonates. Lack of antibody protection in incompletely immunized mothers.
Surveillance goal
<ul style="list-style-type: none"> • Detect cases of neonatal tetanus immediately to confirm the case and prevent additional cases by immunizing at least pregnant women in area around the confirmed case. • Identify high risk areas and target tetanus toxoid campaigns to women of childbearing age.
Standard case definition
<p>Suspected case: Any newborn with a normal ability to suck and cry during the first two days of life, and who, between the 3rd and 28th day of age, cannot suck normally, and becomes stiff or has convulsions or both.</p> <p>Confirmed case: No laboratory confirmation recommended.</p>
Respond to alert threshold
<p>If a single case is suspected:</p> <ul style="list-style-type: none"> • Report case-based information immediately to the next level. • Conduct an investigation to determine the risk for transmission • Treat and manage the case according to national recommendations, usually with supportive care and, if feasible, in intensive care. No routine isolation precautions are needed.
Respond to action threshold

If a case is confirmed through investigation:

- Immunize the mother and other pregnant women in the same locality as the case with at least 2 doses of tetanus toxoid.
- Conduct a supplemental immunization activity for women of childbearing age in the locality.
- Improve routine vaccine coverage through EPI and maternal immunization program activities.
- Educate birth attendants and women of childbearing age on the need for clean cord cutting and care. Increase the number of trained birth attendants.

Analyze and interpret data

Time: Graph cases and deaths monthly. Target should reflect elimination target for each district.

Place: Plot location of case households and location of birth attendants.

Person: Count monthly cases and deaths. Analyze each case of NNT by cord care practices.

Laboratory confirmation

Laboratory confirmation is not required.

Reference

- *Field guide for training operational level health workers on vaccine preventable disease surveillance*, MoH/ UNEPI (Revised edition 2012)
- *Field manual for neonatal tetanus elimination*. Geneva, World Health Organization. WHO/V&B/99.14

New AIDS Cases
Background
<ul style="list-style-type: none"> • AIDS is an infection of human lymphocytes (types of white blood cells) and other organs. It is caused by a retrovirus, human immunodeficiency virus (HIV). Sexual intercourse, needle injections, transfusions, trans-placental or trans-vaginal routes, breast milk or other direct contact with infected human body fluids transmits the virus from human to human. • Acquired immunodeficiency syndrome (AIDS) results in late-stage HIV infection and immuno-suppression, with reduced numbers and function to T-lymphocytes. Primary HIV-related organ involvement and a variety of opportunistic infections result in death unless the growth of the virus is stopped by drugs that can kill the virus (antiretroviral therapy). When HIV infection progresses to illness, the symptoms are usually due to the failure of the immune system to resist other infectious diseases called opportunistic infections (OI). These include tuberculosis, bacterial pneumonia or sepsis, oro-pharyngeal candidiasis, chronic diarrhoea, chronic skin infections, recurrent herpes zoster, and others. • Twenty-four million Africans, close to one in ten adults between the ages of 15 and 49 years of age, are living with HIV/AIDS. The impact of the epidemic is already measurable in greatly increased adult and child morbidity and mortality. HIV/AIDS is now the leading cause of adult mortality in the African Region. • Incubation period is approximately 1 to 3 months from the time of infection to the time that antibodies can be detected in a laboratory process. The time from HIV infection to the onset of AIDS is generally 7 to 9 years. • Risk factors: populations at high risk of acquiring HIV are commercial sex workers with or without other sexually transmitted infections (STIs). Some STIs may increase HIV transmission. Others at risk include intravenous drug users (IDU), recipients of unscreened blood products and neonates born to HIV-infected mothers. • Tuberculosis, visceral leishmaniasis, trypanosomiasis, and other subacute or chronic bacterial, parasitic, and viral infections may cause similar syndromes.
Surveillance goal
<ul style="list-style-type: none"> • Monitor the impact of HIV/AIDS interventions in trends of incidence and prevalence of HIV infections, AIDS and STIs through sentinel sites, surveys and special studies (according to guidelines for second generation surveillance of HIV/AIDS). • Estimate the burden of HIV/AIDS in the district using available information from HIV sentinel populations so that each new AIDS case is counted. • Monitor local STI epidemiology as possible cofactor for HIV transmission. • Monitor local opportunistic infection epidemiology, including TB • Improve percentage of suspected HIV/AIDS cases confirmed via serology. • Improve HIV/AIDS screening
Standard case definition

WHO/AFRO recommends that countries use either Bangui or Abidjan HIV/AIDS case definitions. A positive ELISA for confirming HIV and a rapid test for confirming the positive results are sufficient for an epidemiologic case definition for HIV infection.

Public health actions

- Monitor local STI and opportunistic infections, including TB, as possible cofactor for HIV.
- Improve percentage of suspected HIV/AIDS cases confirmed via serology.
- Monitor use of condoms by commercial sex workers.
- Provide voluntary counselling and testing services at district and sub-district levels.
- Treatment of individual cases with antiretroviral therapy is not yet widely available in most African countries. Rapid diagnosis and treatment of AIDS-related opportunistic infection (OI) may prolong life expectancy but this has not been widely evaluated in developing countries.
- Promote condom use, especially among high-risk individuals.
- Treat STIs, especially syphilis, chancroid diseases, and other ulcerative processes.
- Mobilize non-paid blood donors and promote appropriate use of blood.
- Promote good infection control practices within health facilities in the district.
- Educate patients and their sexual partners to refrain from donating blood, tissues, semen or breast milk.

Analyze and interpret data

Time: Count new AIDS cases and report monthly. Analyze by number of cases confirmed with serology. At the end of the year, calculate the total number of cases and include trends for HIV sero-surveillance, STI surveillance and results of any special studies (socio-behavioural studies, drug sensitivity to antimicrobial agents, and so on).

Laboratory confirmation

Diagnostic test	<p>Adults and children 18 months or older:</p> <p>HIV infection is diagnosed based on:</p> <ul style="list-style-type: none"> - Positive HIV antibody testing (rapid or laboratory- based enzyme immunoassay). This is confirmed by a second HIV antibody test (rapid or laboratory-based enzyme immunoassay) relying on different antigens or of different operating characteristics; AND/OR - Positive virological test for HIV or its components (HIV-RNA or HIV-DNA or ultrasensitive HIV p24 antigen) confirmed by a second virological test obtained from a separate determination
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	<p>Children younger than 18 months:</p> <p>HIV infection is diagnosed based on positive virological test for HIV or its components (HIV-RNA or HIV-DNA or ultrasensitive HIV p24 antigen) confirmed by a second virological test obtained from a separate determination taken more than four weeks after birth.</p> <p>Positive HIV antibody testing is not recommended for definitive or confirmatory diagnosis of HIV infection in children until 18 months of age.</p>
Specimen	Serum
When to collect the	Obtain specimens according to national HIV/AIDS program strategy for clinical or epidemiological sampling.
How to prepare, store, and transport the	<p>Use universal precautions to minimize exposure to sharps and any body fluid.</p> <p><i>ELISA:</i> Collect 10 ml of venous blood.</p> <ul style="list-style-type: none"> • Let clot retract for 30 to 60 minutes at room temperature or centrifuge to separate serum from red blood cells. • Aseptically pour off serum into sterile, screw capped tubes. • Store serum at 4°C. <p>Transport serum samples using appropriate packaging to prevent breakage or leakage.</p>
Results	<p>HIV testing is highly regulated with strict controls on release of information.</p> <p>Results are usually available within one week from arrival in the laboratory.</p>
Reference	
<ul style="list-style-type: none"> • <i>Guidelines for Sexually Transmitted Infections Surveillance</i>. Geneva. UNAIDS and World Health Organization. WHO/CDS/CSR/EDC/99.3. UNAIDS/99.33E • WHO Case definitions of HIV for surveillance and revised clinical staging and immunological classification of HIV-Related disease in adults and children. • WHO Recommended Surveillance Standards WHO/CDS/CSR/ISR/99.2 • Guidelines for Second Generation HIV Surveillance, WHO and UNAIDS, 2000 WHO/CDC/CSR/EDC/2000.5 • Consultation on technical and operational recommendations for clinical laboratory testing harmonization and standardization, Jan 2008, WHO, CDC 	

Noma

Background

- Noma (*cancrum oris, stomatitis gangrenosa*) is an opportunistic bacterial infection affecting children 1-4 years characterized by quickly spreading orofacial gangrene, evolving from a gingival inflammation.
- Noma results from complex interactions between risk factors such as poor sanitation, malnutrition, recurrent illnesses, and compromised immunity. Diseases that commonly precede noma include measles, malaria, severe diarrhea, and necrotizing ulcerative gingivitis.
- Noma occurs worldwide, but is most common in sub-Saharan Africa. In 1998, WHO estimated that worldwide 140 000 children contract noma each year, and 79% of them die from the disease and associated complications.
- In Africa the highest prevalence of Noma occurs in countries bordering the Sahara desert, where a recent report estimates an annual incidence of 25,000. However, Noma can occur wherever there is extreme poverty.
- Early detection and treatment with antibiotics is key to preventing severe disfigurement or death. In the acute stage, death can be prevented with high doses of penicillin; however disfigurement can only be treated with costly surgery.
- Prevention should focus on education and awareness of the disease, improved nutrition and household hygiene, promotion of exclusive breastfeeding in the first 3-6 months of life, access to prenatal care, and immunizations against common childhood diseases.
- Clinical features include soreness of the mouth, pronounced halitosis (bad smelling breath), fetid taste, tenderness of the lip or cheek, cervical lymphadenopathy, a foul-smelling purulent oral discharge, and a blue-black discoloration of the skin and swelling in the affected area.
- Health workers should recognize risk factors for Noma:
 - Severe growth failure in first 6 months of life
 - Evidence of malnutrition and poor dietary habits;
 - Persistent diarrhea
 - Oral ulcers in children from high risk areas
 - Prominent bad smelling breath

Surveillance goal

- Early detection and treatment of cases
- Identification of high risk communities and families
- Estimation of disease incidence and identification of risk factors

<p>Standard case definition</p> <p>Suspected new case: Any child with a mouth ulcer and other warning signs such as; malnutrition, poor hygiene, recent illness from; measles, persistent diarrhoea, or malaria should be regarded as a potential noma case.</p> <p>Confirmed new case: Any person with a gangrenous disease which starts as gingival ulceration and spreads rapidly through the tissues of the mouth and face, destroying the soft and hard tissues.</p>
<p>Recommended public health action</p> <p>When a suspected case is detected:</p> <ul style="list-style-type: none"> • Treat the case with nationally recommended antibiotic • Conduct health promotion activities in the community for: <ul style="list-style-type: none"> ○ Awareness of Noma among the community and in the household ○ Improved environmental sanitation and personal hygiene ○ Separation of livestock from areas where humans live ○ Exclusive breast feeding for the first 6 months of life ○ Improved nutrition and food preparation techniques • Increase vaccination coverage in the district • Improve sources of drinking water in at-risk communities • Train public health personnel on early recognition of oral lesions that can lead to Noma.
<p>Analyze and interpret data</p> <p>Time: Monitor number of cases detected in time for treatment and use of standardized treatment. Monitor cases over time to estimate burden of disease and identify trends.</p> <p>Place: Plot the location of case households and analyze the distribution.</p> <p>Person: Analyze the distribution of cases by age and other demographic factors.</p>
<p>Laboratory confirmation</p> <p>Routine laboratory confirmation for surveillance is not required.</p>
<p>Reference</p>

- Enwonwu, C. (2006). "Noma--the ulcer of extreme poverty." New England Journal of Medicine, The **354**(3): 221-224
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Onchocerciasis
Background
<ul style="list-style-type: none"> • Filarial infection of the skin and eye caused by <i>Onchocerca volvulus</i> transmitted by the bite of female <i>Simulium</i> black flies. • Nearly the entire world's estimated 18 million infected persons (of whom more than 250 000 are blind) live within 26 African countries. Onchocerciasis is the second leading infectious cause of blindness worldwide. It causes debilitating skin problems, leading to significant decreases in productivity in areas where it is endemic. Entire villages have relocated away from the fertile lands near rivers where black flies breed. • Incubation period is years to decades since repeated infection is necessary for disease manifestations. Clinical illness is unusual in children even in endemic areas. • Other filaria (for example, <i>Loa loa</i> and <i>Mansonella</i>) and other chronic skin and eye disease can produce similar clinical findings.
Surveillance goal
<ul style="list-style-type: none"> • Early detection with goal of reducing the recurrence of transmission of the parasite in areas where it has been eradicated (zones covered by the Onchocerciasis Program). • Conduct periodic surveillance in sentinel villages: screen using diethylcarbamazine (DEC); in case of a positive reaction to DEC, confirm with a microscopic examination of a skin biopsy from each suspected case.
Standard case definition
<p>Suspected case: In an endemic area, any person with fibrous nodules in subcutaneous tissues.</p> <p>Confirmed case: A suspected case that is laboratory confirmed by presence of one or more of the following: microfilariae in skin snips, adult worms in excised nodules, or typical ocular manifestations (such as slit-lamp observations of microfilariae in the cornea, the anterior chamber, or the vitreous body).</p>
Respond to alert threshold
<p>If a suspected case is detected:</p> <ul style="list-style-type: none"> • Report the case according to national guidelines • Collect specimen for confirming the case • Investigate the case to determine the cause of the case • Treat the case according to national guidelines.
Respond to action threshold

<p>If a case is confirmed:</p> <ul style="list-style-type: none"> • Conduct a migration investigation to identify the origins of infection and initiate control activities. • Carry out vector control activities according to OCP guidelines. • Conduct periodic mass treatment with ivermectin in areas with endemic onchocerciasis during the last 10 years. • Conduct active case finding via population-based surveys and skin snips. 	
<p>Analyze and interpret data</p>	
<p>Time: Graph cases quarterly.</p> <p>Place: Plot distribution of patients' household and workplaces</p> <p>Person: Count quarterly cases and analyze age distribution.</p>	
<p>Laboratory confirmation</p>	
<p>Diagnostic test</p>	<p>Microscopy.</p> <p>Laboratory criteria for confirmation: One or more of the following:</p> <ul style="list-style-type: none"> - presence of microfilariae in skin snips taken from the iliac crest - presence of adult worms in excised nodules <p>presence of typical ocular manifestations, such as slit-lamp observations of microfilariae in the cornea, the anterior chamber, or the vitreous body</p>
<p>Specimen</p>	<p>Skin snips from:</p> <ul style="list-style-type: none"> - Nodule fluids - Iliac crests - Scapula area
<p>When to collect</p>	<p>Take snips and nodule fluids from suspected cases 1 hour after administration of Diethyl carbomazine</p>
<p>How to prepare, store, and transport the specimen</p>	<p>Put the sample in a general container. Add a few drops of normal saline. Close tightly before transporting it to the laboratory. Transported at ambient temperature.</p>

Results	Result should be ready within 1 day.
Reference	
<ul style="list-style-type: none">• WHO Recommended Surveillance Standards. Second edition. WHO/CDS/CSR/ISR/99.2• WHO Recommended Surveillance Standards WHO/CDS/CSR/ISR/99.2	

Perinatal Deaths
Background
<ul style="list-style-type: none"> • Perinatal mortality refers to the number of stillbirths and deaths in the first week of life (early neonatal mortality). • The perinatal period commences at 28 completed weeks of gestation and ends seven completed days after birth. • Perinatal and maternal health are closely linked. • About 80% of perinatal deaths are due to births asphyxia, complications due to prematurity and infections. Other factors underlying prenatal deaths are maternal conditions such as poor obstetric care, malaria, HIV. • In 2009, there were 2.6 million stillbirths globally with more than 8200 deaths a day. At least half of all stillbirths occurred in the intrapartum period. • Among the 133 million babies born alive each year, 2.8 million die in the first week of life. The patterns of these deaths are similar to the patterns for maternal deaths; the majority occurring in developing countries. • In Uganda, the perinatal deaths are estimated to be 29 per 1000 live births (UDHS, 2011). • Quality skilled care during pregnancy and childbirth are key for the health of the baby
Surveillance goal
<ul style="list-style-type: none"> • Estimate and monitor perinatal deaths including still births • Identify risk factors and high risk area for perinatal death including still births to inform program decisions • Evaluate programmes aimed at reducing perinatal/newborn deaths
Standard case definition
<p>Death of a baby that occurred around the time of birth, including both:</p> <ul style="list-style-type: none"> – Death of a newborn occurring during the first seven days of life – Stillbirth (death prior to the complete expulsion or extraction from its mother of a fetus/baby of 28 or more weeks of gestation; indicated by failure to breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles after such separation of the fetus).
Recommended public health action

- Monitor trends of perinatal deaths including still births.
- Promote public awareness and educate the community about predisposing factors and how to prevent them.
- Advocate for and implement low cost maternal newborn high impact interventions along the continuum of care and contribute to social economic growth and the attainment of human right.
- Identify high risk areas and communities

Analyze and interpret data

Time: Graph cases to construct an epidemic curve throughout the year in order to identify trends.

Place: Plot the location of cases and analyze the distribution.

Person: Analyse the distribution of cases by age and or weight and other demographic factors

Laboratory confirmation

Routine laboratory confirmation for surveillance is not required.

Reference

- http://www.who.int/maternal_child_adolescent/topics/maternal/maternal_perinatal/en/

Plague
Background
<ul style="list-style-type: none"> • Zoonotic systemic bacterial infection caused by <i>Yersinia pestis</i> (plague bacillus) usually transmitted to humans by rodents and their fleas. • Main disease forms: bubonic, pneumonic, and septicaemic; large-scale epidemics may occur in urban or rural settings. • Incubation period is 1 to 7 days. • Case fatality rate (CFR) may exceed 50-60% in untreated bubonic plague and approaches 100% in untreated pneumonic or septicaemic plague, but is usually <1% with appropriate treatment. • Risk factor: rural residence. Exposure to infected populations of wild or domesticated rodents and their fleas.
Surveillance goal
<ul style="list-style-type: none"> • Detect outbreaks of plague promptly. Verify aetiology of all suspected non-outbreak-related cases and the first 5 to 10 outbreak-related cases.
Standard case definition
<p><i>Suspected case:</i> Any person with sudden onset of fever, chills, headache, severe malaise, prostration and very painful swelling of lymph nodes, or cough with blood stained sputum, chest pain, and difficulty in breathing.</p> <p><i>Confirmed case:</i> Suspected case confirmed by isolation of <i>Yersinia pestis</i> from blood or aspiration of buboes, or epidemiologic link to confirmed cases or outbreak.</p>
Respond to alert threshold
<p>If a single case is suspected:</p> <ul style="list-style-type: none"> • Report case-based information to the next level. • Collect specimen for confirming the case. • Investigate the case. • Treat the patient with streptomycin, gentamicin or chloramphenicol, and administer chemoprophylaxis of close contacts with tetracycline for seven days from time of last exposure.
Respond to action threshold

If the suspected case is confirmed:

- Isolate patients and contacts of pneumonic plague with precautions against airborne spread (wear masks, for example) until at least after 48 hours of appropriate antibiotic therapy.
- Mobilize community to enable rapid case detection and treatment, and to recognize mass rodent die-off as a sign of possible impending epidemic.
- Identify high risk population groups through person, place, and time analysis.
- Reduce sporadic and outbreak-related cases via improved control of rodent populations (remove trash, food sources, and rat harbourages) and protect against fleas with insect repellent on skin and clothing and environmental flea control (especially in homes and seaports and airports).

Analyze and interpret data

Time: Graph monthly trends in cases and deaths. Construct epidemic curve for outbreak cases.

Place: Plot the location of case households.

Person: Immediate case-based reporting of cases and deaths for routine surveillance. Count weekly cases and deaths for outbreaks. Analyze age distribution and assess risk factors to improve control of sporadic disease and outbreaks.

Laboratory confirmation**Diagnostic test**

Isolation of *Yersinia pestis* from bubo aspirate or from culture of blood, CSF or sputum.

Identification of antibodies to the *Y. pestis* F1 antigen from serum.

Specimen

Aspirate of buboes, blood, CSF, sputum, tracheal washes or autopsy materials for culture

Blood for serological tests

<p>When to collect the specimen</p>	<p>Collect specimen from the first suspected plague case. If more than one suspected case, collect until specimens have been collected on 5 to 10 suspected cases before the administration of antibiotics. With buboes, a small amount of sterile saline (1-2 ml) may be injected into the bubo to obtain an adequate specimen</p> <p>If antibiotics have been started, plague can be confirmed by seroconversion (4-fold or greater rise in titer) to the F1 antigen by passive haemagglutination using paired sera. Serum should be drawn within 5 days of onset then again after 2-3 weeks.</p>
<p>How to prepare, store, and transport the specimen</p>	<ul style="list-style-type: none"> • Specimens should be collected using aseptic techniques. Materials for culture should be sent to the laboratory in Cary Blair transport media or frozen (preferably with dry ice (frozen CO₂). Unpreserved specimens should reach the laboratory the same day. • Liquid specimens (aspirates) should be absorbed with a sterile cotton swab and placed into Cary-Blair transport medium. Refrigerate. • If transport will require 24 or more hours and Cary Blair transport is not available, freeze the specimen and transport it frozen with cool packs.
<p>Results</p>	<p>Cultures should only be sent to a laboratory with known plague diagnostic capabilities or to a WHO Collaborating Centre for Plague.</p> <p>Plague culture results will take a minimum of 3 to 5 working days from reception in the laboratory.</p> <p>Antibiotic treatment should be initiated before culture results are obtained. Plague patients seroconvert to the F1 <i>Y. pestis</i> antigen 7-10 days after onset.</p>
<p>Reference</p>	
<ul style="list-style-type: none"> • <i>Plague Manual: Epidemiology, Distribution, Surveillance and Control/ Manuel de la Peste: Epidémiologie, Répartition, Surveillance et Lutte.</i> WHO/CDS/CSR/EDC/99.2 • "Laboratory Manual of Plague Diagnostic tests." CDC/WHO publication, 2000, Atlanta, GA 	

Poliomyelitis (Acute flaccid paralysis)**Background**

- Poliovirus (genus Enterovirus) serotypes 1, 2, and 3 are transmitted from person-to-person via faecal-oral spread.
- Incubation period is 7 to 14 days for paralytic cases and the range is approximately 3 to 35 days. The virus may be shed for several years by immuno-compromised persons.
- Infection is usually asymptomatic, but may cause a febrile syndrome with or without meningitis. In less than 5% of infections paralysis results, often of a single leg.
- Polio infection occurs almost exclusively among children. Infection may occur with any of 3 serotypes of Poliovirus. Immunity is serotype-specific and lifelong.
- Paralytic polio, though not fatal, has devastating social and economic consequences among affected individuals.
- The Polio Eradication Program has nearly halted ongoing wild-type polio transmission worldwide through use of oral poliovirus (OPV) vaccine. Globally, poliovirus type 2 appears to have been eliminated. Serotypes 1 and 3 polioviruses still circulate in three endemic countries including Nigeria in Africa and surveillance is not yet adequate to assure eradication in many countries.
- Areas with low vaccine coverage may allow ongoing wild-type transmission.
- Other neurological illnesses may cause AFP, for example, Guillain-Barre syndrome and transverse myelitis.

Surveillance goal

- Immediate case-based reporting of all Acute Flaccid Paralysis cases. Weekly summary reporting of cases for routine surveillance and outbreaks.
- Detect cases of acute flaccid paralysis (AFP) and obtain laboratory confirmation of the aetiology of all suspected AFP cases. Obtain two stool specimens within 14 days of the onset of paralysis for viral isolation.
- Surveillance for AFP is used to capture all true cases of paralytic poliomyelitis. Target for surveillance performance to provide certification of polio eradications is 4 cases of AFP per year per 100 000 population aged less than 15 years.

Standard case definition

Suspected case:

Any child under 15 years of age with acute flaccid paralysis or any person with paralytic illness at any age in whom the clinician suspects poliomyelitis.

Confirmed case: A suspected case with virus isolation in stool.

Respond to alert threshold

If a single case is suspected:

- Report the suspected case immediately according to the national polio eradication program guidelines.
- Conduct a case-based investigation. Include a vaccination history for the patient.
- Collect two stool specimens. Collect the first one when the case is investigated. Collect the second one from the same patient 24 to 48 hours later. See laboratory guidelines for information on how to prepare, store and transport the specimen.
- If identified beyond 14 days of onset of paralysis collect two stool specimens from at least 3- 5 contacts of the AFP case
- Obtain virological data from reference laboratory to confirm wild-type poliomyelitis or VAPP.

Respond to action threshold

If a case is confirmed:

- If wild polio virus is isolated from stool specimen, refer to national polio eradication program guidelines for recommended response actions. The national level will decide which actions to take. They may include the following:
 - Specify reasons for non-vaccination of each unvaccinated case and address the identified deficiencies.
 - Immediately conduct "mopping-up" vaccination campaign around the vicinity of the case.
 - Conduct surveys to identify areas of low OPV coverage during routine EPI activities, and improve routine vaccine coverage of OPV and other EPI antigens.
 - Lead supplemental vaccination campaigns during National Immunization Days (NIDs) or Sub-National Immunization Days (SNIDs). Focus supplemental vaccination activities in areas of low vaccine coverage during EPI. Consider use of house-to-house vaccination teams in selected areas.

Analyze and interpret data

Time: Graph weekly cases (which should be zero to very few cases per area per year), or weekly cases during an outbreak. Evaluate the percent of suspected cases reported within 48 hours and the percentage with adequate laboratory evaluation.

Place:	Plot location of case households. Investigate the circumstances of poliovirus transmission in each case thoroughly. Examine the possibility of other potential areas of transmission.
Person:	Count monthly routine and outbreak-related cases. Analyze age distribution. Assess risk factors for low vaccine coverage.
Laboratory confirmation	
Diagnostic test	Isolation of polio virus from stool
Specimen	Stool <i>Note: If no specimen is collected, re-evaluate patient after 60 days to confirm clinical diagnosis of polio (AFP).</i>
When to collect the specimen	Collect a sample from every suspected AFP case. Collect the first specimen when the case is investigated. Collect a second specimen on the same patient 24 to 48 hours later.
How to prepare, store, and transport the specimen	<ul style="list-style-type: none"> • Place stool in clean, leak-proof container and label clearly. • Immediately place in refrigerator or cold box not used for storing vaccines or other medicines. • Transport specimens so they will arrive at designated polio laboratory within 72 hours of collection <p>When there is a delay, and specimen will not be transported within 72 hours, freeze specimen at -20°C or colder. Then transport frozen specimen with dry ice or cold packs also frozen at -20°C or colder.</p>
Results	Confirmed results are usually available within 21 after receipt of specimen by the laboratory. If wild or vaccine derived polio virus is detected, the national program will plan appropriate response actions
Reference	

- *Field guide for training operational level health workers on vaccine preventable disease surveillance*, MoH/ UNEPI (Revised edition 2012)
- *Field Guide for Supplementary Activities Aimed at Achieving Polio Eradication*. World Health Organization.
- WHO global action plan for laboratory containment of wild polio viruses. WHO/V&B/99.32, Geneva, 1999
- Manual for the virological investigation of polio, WHO/ EPI/GEN/97.01, Geneva, 2004
- Supplement to the Manual for the virological investigation of Polio- WHO/EPI 2007

Rabies
Background
<ul style="list-style-type: none"> • Rabies is a zoonotic disease (a disease that is transmitted to humans from animals) that is caused by a virus. Rabies infects domestic and wild animals, and is spread to people through close contact with infected saliva (via bites or scratches). • The rabies virus infects the central nervous system, causing disease in the brain and, eventually, death. Early symptoms in people include: fever, headache, and general weakness or discomfort. As the disease progresses, symptoms include; insomnia, anxiety, confusion, slight or partial paralysis, excitation, hallucinations, increase in saliva, difficulty swallowing, and fear of water. • In unvaccinated humans, rabies is almost always fatal if post-exposure prophylaxis is not administered before the onset of severe symptoms. Death usually occurs within days of the onset of neurological symptoms. • Dogs are the main carrier of rabies in Africa and are responsible for most (approximately 97%) of the human rabies deaths worldwide. • WHO estimates approximately 55,000 human deaths worldwide due to rabies each year; in Africa the annual death toll is 24,000. • People most at risk of rabies live in rural areas, and children are at highest risk of dog rabies. About 30% to 60% of the victims of dog bites (the primary mode of virus transmission) are children less than 15 years of age. Children often play with animals and are less likely to report bites or scratches. • Control of rabies in dog populations and access to human rabies post exposure prophylaxis can substantially reduce the burden of rabies in human populations • Rapid and accurate laboratory diagnosis of rabies in humans and other animals is essential for timely administration of post-exposure prophylaxis. Within a few hours, a diagnostic laboratory can determine whether or not an animal is rabid and inform the responsible medical personnel.
Surveillance goal
<ul style="list-style-type: none"> • Detect and respond promptly and appropriately to cases and outbreaks of rabies. • Identify high-risk areas • Estimation of disease burden • Immediate reporting of cases and routine monthly summary reports
Standard case definition
<p><i>Suspected</i> A person with one or more of the following: headache, neck pain, nausea, fever, fear of water,</p>

anxiety, agitation, abnormal tingling sensations or pain at the wound site, when contact with a rabid animal is suspected.

Confirmed

A suspected case that is laboratory confirmed

Recommended Public Health Action

For a single case:

- Post exposure prophylaxis to prevent rabies
- Isolate patient if rabies develops to prevent infection of others
- Immunize contacts if patient develops rabies
- Vaccinate local dogs and cats to prevent outbreaks

General preventive measures:

- Promote public awareness of rabies
- Target immunization campaign for domestic or wild animals in high-risk areas
- Maintain active surveillance of rabies in animals

Analyze and interpret data

Time: Plot cases monthly.

Place: Plot the location of case households and animal exposures.

Person: Analyze distribution of cases by age, exposing animal, and circumstances of infection. Assess risk factors to improve control of cases

Laboratory confirmation

Diagnostic test

Detection of rabies viral antigens by direct fluorescent antibody (FA) in clinical specimens, preferably brain tissue (collected post mortem)

- Detection by FA on skin or corneal smear (collected ante mortem)
- FA positive after inoculation or brain tissue, saliva or CSF in cell culture, in mice or in suckling mice
- Detectable rabies-neutralizing antibody titre in the CSF of an unvaccinated person

- Identification of viral antigens by PCR on fixed tissue collected post mortem or in a clinical specimen (brain tissue or skin, cornea or saliva)
- Isolation of rabies virus from clinical specimens and confirmation of rabies viral antigens by direct fluorescent antibody testing.

Specimen	<ul style="list-style-type: none"> • Brain tissue (collected post mortem) • Skin biopsy (usually from the neck) • corneal • Saliva • CSF • Head of suspected rabid animal (dogs)
When to collect the specimen	<p>When a person is bitten by a pet that appears sick or by a wild animal, the biggest concern is rabies. No test can determine whether the rabies virus has been transmitted to the person immediately after the bite. So the animal is evaluated to determine whether the person requires treatment. A wild animal that has bitten a person is killed if possible, so that its brain can be examined.</p> <p>If a person who has been bitten by an animal becomes increasingly confused and agitated or paralyzed, the diagnosis is probably rabies. At this point, tests can detect the rabies virus.</p> <p>Post mortem: within 4-6hrs after death of patient, as soon as the suspected animal dies or is killed</p>
How to prepare, store, and transport the specimen	<p>Safety precautions in handling rabies virus should be taken to avoid infection.</p> <p>Remove the head of the suspected animal, wrap head completely such that no blood is oozing out. Where possible, request a veterinarian to assist in the collection and preservation of the specimen.</p> <p>Sample should be sent to Reference Lab for Rabies virus.</p>
Results	<p>The treatment should never await the results of laboratory diagnosis. A laboratory diagnosis may be delayed for a variety of reasons. Results can be obtained from the reference lab within 1-2days.</p>

Reference

- WHO Recommended Surveillance Standards WHO/CDS/CSR/ISR/99.2
- Laboratory techniques in rabies, Fourth Edition, WHO, edited by F.-X. Meslin and all
- World Health Organization, Rabies Fact Sheet
<http://www.who.int/mediacentre/factsheets/fs099/en/>
- Council of State and Territorial Epidemiologists (CSTE). National Surveillance for Human Rabies. CSTE position statement 09-ID-70. Atlanta: CSTE; June 2009. Available from: <http://www.cste.org>.
- Centers for Disease Control and Prevention (CDC). Human Rabies Prevention – United States, 2008: Recommendations of the Advisory Committee on Immunization Practices. MMWR 2008; 57(RR03):1-26, 28. Available from: <http://www.cdc.gov/mmwr/>
- Bleck TP, Rupprecht CE. Chapter 160 - Rhabdoviruses. In: Mandell GL, Bennett JE, Dolin R, editors. Principles and Practice of Infectious Diseases, 6th edition. Philadelphia:

Rift Valley Fever (RVF)
Background
<ul style="list-style-type: none"> • Rift Valley Fever (RVF) is a viral disease that affects mainly animals and occasionally humans. The virus is a member of the <i>Phlebovirus</i> genus, one of the five genera in the family <i>Bunyaviridae</i>. The disease is frequently reported following heavy rainfall and floods. It was first isolated in Rift Valley Province of Kenya in 1930. The disease was reported in Kenya after the El Nino flooding of 1997/98 and more recently in 2006 to 2007. In 2007 and 2010, Tanzania and South Africa respectively were also affected. Other outbreaks have previously been reported in Somalia, Egypt, Saudi Arabia and Yemen. • RVF is mainly transmitted from animals (sheep, cattle, goats, camels) to humans through close contact with infected animals (such as handling meat and body fluids and consumption of raw milk). During established RVF outbreaks in animals humans can also get infected through bites of infected mosquitoes and other biting insects. • The incubation period of RVF varies from 2 to 6 days. The clinical symptoms include an influenza-like illness, with sudden onset of fever, headache, myalgia and backache. These symptoms usually last from 4 to 7 days. Most of the infected people recover on their own. However a small proportion (about 1%) get complications such as vomiting blood, nose bleeding and passing bloody stool. Other severe types of the disease are eye disease and meningo-encephalitis. • Management of RVF in humans is mainly supportive as there is no definitive treatment for RVF. Early detection and management of the disease is important. Human control of RVF is through control of the disease in animals through a sustained vaccination program and limiting human-animal contact. Use of insecticide treated nets and mosquito repellants can also reduce infections in human. In addition to human suffering and death, RVF has far reaching economic implications to the Livestock industry. In outbreak settings, the disease manifestation includes non-hemorrhagic febrile syndromes, and laboratory testing should be considered among persons with milder symptoms suggestive of viral illness. • Immediate Notification to WHO is formally required by IHR (Annex)
Surveillance goal
Detect, confirm aetiology and respond to outbreaks promptly of all cases of suspected VHF
Standard case definition
Suspected case:
Early disease :
<ul style="list-style-type: none"> • Acute febrile illness (axillary temperature >37.5 °C or oral temperature of >38.0°C) of more than 48 hours duration that does not respond to antibiotic or antimalarial therapy, and is associated with:

- Recent travel (during last week) to, or living in an area where, after heavy rains, livestock die or abort, and where RVF virus activity is suspected/confirmed **AND / OR:**
- Abrupt onset of any 1 or more of the following: exhaustion, backache, muscle pains, headache (often severe), discomfort when exposed to light, and nausea/vomiting **AND / OR:**
- Nausea/vomiting, diarrhoea OR abdominal pain with 1 or more of the following:
 - Severe pallor (or Hb < 8 gm/dL)
 - Low platelets (thrombocytopenia) as evidence by presence of small skin and mucous membrane haemorrhages (petechiae) (or platelet count < 100x10⁹ / dL)
 - Evidence of kidney failure (edema, reduced urine output) (or creatinine > 150 mol/L) **AND / OR:**
 - Evidence of bleeding into skin, bleeding from puncture wounds, from mucous membranes or nose, from gastrointestinal tract and unnatural bleeding from vagina **AND / OR:**
 - Clinical jaundice (3-fold increase above normal of transaminases)

Late stages of diseases or complications (2-3 weeks after onset)

- Patients who have experienced, in the preceding month a flu-like illness, with clinical criteria, who additionally develop the following:
- CNS manifestations which resemble meningo-encephalitis **AND/OR:**
- Unexplained visual loss **OR:**
- Unexplained death following sudden onset of acute flu-like illness with haemorrhage, meningo-encephalitis, or visual loss during the preceding month.

Confirmed case

Any patient who, after clinical screening, is positive for anti-RVF IgM ELISA antibodies (typically appear from fourth to sixth day after onset of symptoms) or tests positive on Reverse Transcriptase Polymerase Chain Reaction (RT-PCR).

Respond to alert threshold

If a single case is suspected:

- Report case-based information immediately to the appropriate levels.
- Enhance the usual standard precautions throughout the health care setting.
- Treat and manage the patient with supportive care.
- Collect specimen safely to confirm the case.

Respond to action threshold

If a single case is confirmed:

- Mobilize the community for early detection and care.
- Conduct community education about the confirmed case, how the disease is transmitted, and how to prevent contact with tissues of infected animals and avoid mosquito bites.

<ul style="list-style-type: none"> • Provide information about prevention in the home and when to seek care. • Provide supportive treatment to all cases identified • Request additional help from national levels as needed. • Collaborate with the animal health specialists to search and document cases among animals as well. 	
Analyze and interpret data	
<p>Time: Graph cases and deaths monthly. Construct an epidemic curve during the outbreak.</p> <p>Place: Plot location of case households and work sites using precise mapping.</p> <p>Person: Immediate case-based reporting of cases and deaths. During the outbreak, count and report cases and deaths. Analyze age and sex distribution. Assess risk factors immediately and consider request for assistance to improve outbreak control.</p>	
Laboratory confirmation	
Diagnostic test	<p>Acute RVF can be diagnosed using several different methods. Serological tests such as ELISA may confirm the presence of specific IgM antibodies to the virus. The virus itself may be detected in blood during the early phase of illness or in post-mortem tissue using a variety of techniques including, antigen detection tests by ELISA, RT-PCR, virus propagation (in cell cultures), Immunohistochemistry in formalin-fixed tissues.</p> <p>ELISA IgG can be used for retrospective diagnostic.</p> <p>Same test can be used for animal diagnosis</p>
Specimen	<p>ELISA (serology)</p> <ul style="list-style-type: none"> • Whole blood • Serum or plasma • Whole blood or clot • Tissues (fresh frozen) <p>RT-PCR -</p> <p>Virus isolation</p> <ul style="list-style-type: none"> • Blood • Serum/plasma • Liver biopsy from fatal cases <p>Pathology</p> <ul style="list-style-type: none"> • Tissue biopsy from fatal cases <p>Identical specimen can be collected from animal</p>

When to collect the specimen	<p>Collect specimen from the first suspected case.</p> <p>If more than one suspected case, collect until specimens have been collected from 5 to10 suspected cases.</p>
How to prepare, store, and transport the specimen	<p>Laboratory workers are at risk. Samples taken from suspected human cases of RVF for diagnosis should be handled by trained staff and processed in suitably equipped laboratories.</p> <p>ELISA/PCR/ISOLATION</p> <ul style="list-style-type: none"> • Preparation and storage (freeze of refrigerate/as cold as possible) • Shipping : frozen on dry ice or ice packs or both <p><i>Note: if dry ice or ice packs are not available, sample may be shipped at room temperature and still provide valid results in most cases.</i></p> <p>Immunohistochemistry:</p> <ul style="list-style-type: none"> • Preparation and storage :Fix in formalin (can be stored up to 6 wks) • Shipping: Room temperature (do not freeze). <p><i>Same shipping conditions for animal specimens</i></p>
Results	<p>Diagnostic services for RVF are not routinely available. Advance arrangements are usually required for RVF diagnostic services. Contact the appropriate National authority or WHO.</p> <p>Contact national Veterinary Services for animal diagnostic.</p>
Reference	
<ul style="list-style-type: none"> • <i>WHO/EMC Infection control for VHF in the African health care setting, WHO, 1998.</i> • <i>WHO Recommended Surveillance Standards WHO/CDS/CSR/ISR/99.2</i> • Fact sheet N°207 Revised September 2007. • Infection Control for VHF in the African Health Care Setting /CDC (Annexes 11-12) 	

Severe Acute Respiratory Infections (SARIs)
Background
<ul style="list-style-type: none"> • Severe acute respiratory infections (SARIs) are a significant cause of infectious disease morbidity and mortality in Africa. The mortality rates are particularly high among infants, children and the elderly. • An improved understanding of the epidemiology and seasonality of SARIs in Africa is essential for optimizing public health strategies for their prevention and control (e.g., vaccines and antivirals for prophylaxis and treatment, infection control). • The threat of SARIs due to novel organisms that have epidemic or pandemic potential warrants special precautions and preparedness. Respiratory disease events that may constitute a public health emergency of international concern¹ include severe acute respiratory syndrome (SARS); human influenza caused by a new subtype, including human episodes of avian influenza; pneumonic plague; and novel agents that can cause large-scale SARI outbreaks with high morbidity and mortality.
Surveillance goals
<ul style="list-style-type: none"> • To detect, in a timely manner, unusually severe morbidity and mortality caused by both known and unknown respiratory pathogens that have the potential for large scale epidemics or pandemics. • To characterize and monitor trends in illnesses and deaths attributable to SARIs.
Standard case definition
<p>Severe acute respiratory infection (persons 2: 5 years old)</p> <p>Any severely ill person presenting with manifestations of acute lower respiratory infection with:</p> <ul style="list-style-type: none"> • Sudden onset of fever (>38°C) AND • Cough or sore throat AND • Shortness of breath, or difficulty breathing • With or without Clinical or radiographic findings of pneumonia OR <p>Any person who died of an unexplained respiratory illness.</p>
Respond to a alert threshold
<p>If a single case of an epidemic- or pandemic-prone acute respiratory disease is suspected. OR If there is an unusual event (deaths, outbreak) of severe acute</p>

- Atypical cases of influenza-like illness (ILI) or severe acute respiratory infection (SARI).
- Two or more persons presenting with a SARI or who died from a SARI are detected with onset of illness in a two-week period and in the same geographical area and/or are epidemiologically linked.
- Health-care workers with only occupational exposure risks develop SARI after providing care to patients with SARI.
- Persons who have contact with birds/animals present with SARI;
- Any rumor of clusters of severe acute respiratory infections or of atypical respiratory infections

Respond to a suspected case of an epidemic- or pandemic-prone acute respiratory disease or to an usual event of severe acute respiratory infections:

- Report case-based information immediately to the appropriate levels.
- Practice infection control precautions for an acute respiratory disease with epidemic/pandemic potential⁴ (e.g., Standard plus Contact plus Droplet Precautions) immediately and enhance Standard Precautions throughout the health care setting.
- Treat and manage the patient according to national guidelines.
- Collect and transport laboratory specimens from case-patient and from symptomatic contacts and arrange for laboratory testing^{5,6}.
- Review clinical history and exposure history during 7 days before disease onset.
- Identify and follow-up close contacts of case-patient.
- Conduct active searches for additional cases.

Analyze and interpret data

Time: Estimate incubation period; describe transmission patterns.

Person: Characterize the illness in terms of clinical presentation, the spectrum of disease, the proportion of cases requiring hospitalization, clinical outcomes, case fatality ratio, attack rates by age/occupation/blood relation.

Place: Describe risk factors, possible exposures. Ascertain whether any evidence exists that the virus may have increased its ability to cause human disease or improved its transmissibility.

Laboratory confirmation

Routine laboratory confirmation for surveillance is not required.

References

- International Health Regulations, IHR (2005)
- AFRO Technical Guidelines for Integrated Disease Surveillance in the African Region, May 2002
- WHO guidelines for investigation of human cases of avian influenza A(H5N1), January 2007.
- WHO interim guidelines on infection prevention and control of epidemic- and pandemic-prone acute respiratory diseases in health care, June 2007
- WHO guidelines for the collection of human specimens for laboratory diagnosis of avian influenza infection, 12 January 2005
- Collecting, preserving and shipping specimens for the diagnosis of avian influenza A(H5N1) virus infection. Guide for field operations, October 2006.

Severe Acute Respiratory Syndrome (SARS)

Background

- Severe acute respiratory syndrome (SARS) was first recognized as a global threat in 2003 when international spread resulted in 8,098 SARS cases in 26 countries, with 774 deaths.
- Nosocomial transmission of SARS-CoV was a striking feature of the SARS outbreak.
- The majority of the cases were adults. The case fatality ratio of SARS is estimated to range from 0% to more than 50% depending on the age group affected and reporting centre, with a crude global CFR of approximately 9.6%.
- The mean incubation period is 5 days, with the range of 2-10 days. Patients initially develop influenza-like prodromal symptoms including fever, malaise, myalgia, headache and rigors. Cough (initially dry), dyspnoea and diarrhoea may be present in the first week but more commonly reported in the second week of illness. Severe cases develop rapidly progressing respiratory distress. Up to 70% of the patients develop diarrhoea.
- Disease transmission occurs mainly during the second week of illness.
- The SARS coronavirus (SARS-CoV) which causes SARS is believed to be an animal virus that crossed the species barrier to humans recently.
- In the inter-epidemic period, all countries must remain vigilant for the recurrence of SARS and maintain their ability to detect and respond to the possible re-emergence of SARS
- Immediate Notification to WHO is formally required by IHR (Annex 2, IHR).

Surveillance goals

- Early detection and investigation of individuals with clinically apparent SARS-CoV.

Standard case definition

Suspected case of SARS is an individual with:

1. A history of fever, or documented fever $\geq 38^{\circ}\text{C}$ **AND**
2. One or more symptoms of lower respiratory tract illness (cough, difficulty breathing, shortness of breath) **AND**
3. Radiographic evidence of lung infiltrates consistent with pneumonia or ARDS or autopsy findings consistent with the pathology of pneumonia or ARDS without an identifiable cause **AND**
4. No alternative diagnosis can fully explain the illness.

Confirmed case of SARS: An individual who tests positive for SARS-CoV infection by the WHO recommended testing procedures.

Respond to suspected case

- Report case-based information immediately to the appropriate levels.
- Practice infection control precautions for an acute respiratory disease with epidemic/pandemic potential immediately and enhance Standard Precautions throughout the health care setting.
- Treat and manage the patient according to national guidelines.
- Collect and transport laboratory specimens from case-patient and from symptomatic contacts and arrange for laboratory testing.
- Review clinical history and exposure history during 2-10 days before disease onset.
- Identify and follow-up close contacts of case-patient.
- Conduct active searches for additional cases.
- Expedite the diagnosis. (*WHO will assist in the investigation of SARS alerts as appropriate, including facilitating access to laboratory services*)

Respond to alert threshold

Response to SARS alert is same as response to suspected case (see above).

SARS ALERT:

- 1) **An individual** with clinical evidence of SARS **AND** with an epidemiological risk factor for SARS-CoV infection in the 10 days before the onset of symptoms **OR**
- 2) **Two or more health-care workers** with clinical evidence of SARS in the same health-care unit and with onset of illness in the same 10-day period **OR**

3 Three or more persons (health-care workers and/or patients and/or visitors) with clinical evidence of SARS with onset of illness in the same 10-day period and epidemiologically linked to a health-care facility.

Analyze and interpret data

Time: Graph cases and deaths daily/weekly/monthly. Construct an epidemic curve during the outbreak.

Place: Plot locations of case households and work sites using precise mapping.

Person: Immediate case-based reporting of cases and deaths. During the outbreak, count and report cases and deaths. Analyze age and sex distribution. Assess risk factors immediately.

Laboratory confirmation	
Diagnostic test	<p>Confirmed positive PCR for SARS virus:</p> <ul style="list-style-type: none"> • At least 2 different clinical specimens (eg nasopharyngeal and stool) OR • The same clinical specimen collected on 2 or more days during the course of the illness (eg 2 or more nasopharyngeal aspirates) OR • 2 different assays or repeat PCR using the original clinical sample on each occasion of testing <p>Seronconversion by ELISA or IFA:</p> <ul style="list-style-type: none"> • Negative antibody test on acute serum followed by positive antibody test on convalescent serum OR • Four-fold or greater rise in antibody titre between acute and convalescent phase sera tested in parallel. <p>Virus isolation: Isolation in cell culture of SARS-Cov from any specimen; plus PCR confirmation using a validated method</p>
Specimen	<p>Nasopharyngeal wash/aspirate specimen of choice for respiratory viruses. Nasopharyngeal swabs or oropharyngeal swabs Stool Serum</p>
When to collect	<p>The respiratory tract specimen can be collected at any time, but are best taken during the acute phase of illness.</p> <p>The time collection of paired blood samples is very important:</p> <ul style="list-style-type: none"> • Collect an acute illness sample at first contact with the patient at days 7, 14, 28 and 90 after onset where possible. • Collect blood on discharge if collection of a convalescent sample is unlikely.

<p>How to prepare, store, and transport</p>	<ul style="list-style-type: none"> • SARS specimens should be handled according to appropriate biosafety practices in order to avoid laboratory-related infections and spread of disease to close contacts. • Clinical samples from patients should be collected by trained personnel. <p>Nasopharyngeal wash/aspirate: have the patient sit with the head tilted slightly backward. Instil 1.5 ml non-bacteriostatic sterile saline (Ph 7.0) into one nostril. Flush a plastic catheter or tubing (e.g. mucus trap tubing) with 2-3 ml of saline. Insert the tubing into the nostril parallel to the palate. Aspirate nasopharyngeal secretions. Repeat for the other nostril. Collect aspirates in sterile vial or mucus trap. Remove tubings and discard in plastic bag.</p> <p>Nasopharyngeal or oropharyngeal swabs: use only sterile Dacron or rayon swab with plastic shafts. Place each swab immediately in a tube containing Virus Transport Media (VTM).</p> <p>Serum collection: Collect 5-10 ml of whole blood in a serum separator tube. Allow blood to clot</p> <p>Respiratory / stool / blood/serum specimens: Refrigerate immediately (4°C). If transport/shipping will be international or will occur > 5 days after collection of last specimen, freeze the specimens at - 20 °C (serum), -20/-70 °C (respiratory specimens) for planned shipping with dry ice if available.</p> <p>Fixed tissues (formalin fixed) from all major organs. Store and ship fixed</p>
<p>Results</p>	<p>Diagnostic services for SARS are not routinely available. Advance arrangements are usually required for SARS diagnostic services. Contact the appropriate National authority or WHO. If there is a high level of suspicion, WHO will support countries to contact a reference laboratory if necessary.</p>
<p>Reference</p>	
<ul style="list-style-type: none"> • <i>WHO Guidelines for the Global Surveillance of SARS, Updated Recommendations, October 2004</i> • <i>WHO Interim Guidelines, Infection Prevention and Control of Epidemic- and Pandemic- Prone Acute Respiratory Diseases in Health Care, June 2007. WHO/CDS/EPR/2007.6.</i> • Use of laboratory methods for SARS diagnosis, WHO • WHO Biosafety guidelines for handling of SARS specimens • A practical Guide for SARS laboratories: from samples collection to shipment. WHO, 29 Dec 2003. 	
<p>Severe Pneumonia in Children under 5 years of age</p>	
<p>Background</p>	

- Infection of the lower airways caused by bacteria or viruses transmitted person-to-person via aerosolized respiratory droplet spread. The main bacterial causes of pneumonia among children are *Streptococcus pneumoniae* (the pneumococcus) and *Haemophilus influenzae* type b (Hib).
- Acute respiratory infections (ARIs) and pneumonia represent the number one cause of mortality among children less than 5 years of age.
- Incubation period is usually less than 7 days, depending on the aetiology.
- WHO and UNICEF recommend use of Integrated Management of Childhood Illness (IMCI) strategy to reduce morbidity and mortality attributable to childhood pneumonia. Early antimicrobial therapy has been shown to reduce mortality.
- Resistance of the pneumococcus and Hib to beta-lactams (for example, ampicillin), sulfonamides (for example, trimethoprim-sulfamethoxazole) and other antimicrobials is increasing.
- Viruses such as respiratory syncytial virus (RSV) may also cause ARI and pneumonia.

Surveillance goal

- Early identification of pneumonia cases and epidemics using clinical definitions.
- Monitor antimicrobial resistance routinely and during outbreaks.
- Reducing the proportion of severe pneumonia cases compared to non-severe pneumonia cases to monitor quality of interventions.

Standard case definition

Clinical case definition (IMCI) for pneumonia:

A child presenting with cough or difficult breathing and:

- 50 or more breaths per minute for infant age 2 months up to 1 year
- 40 or more breaths per minute for young child 1 year up to 5 years.

(Note: A young infant age 0 up to 2 months with cough and fast breathing is classified in IMCI as “serious bacterial infection” and is referred for further evaluation.)

Clinical case definition (IMCI) for severe pneumonia:

A child presenting with cough or difficult breathing and any general danger sign, or chest indrawing or stridor in a calm child. General danger signs for children 2 months to 5 years are: unable to drink or breast feed, vomits everything, convulsions, lethargy, or unconsciousness.

Confirmed case:

Radiographic or laboratory confirmation of pneumonia will not be feasible in most districts.

Respond to alert threshold**If you observe that the number of cases or deaths is increasing over a period of time:**

- Report the problem to the next level.
- Investigate the cause for the increase and identify the problem.
- Make sure that cases are managed according to IMCI guidelines.
- Treat cases appropriately with recommended antimicrobial drugs

Respond to action threshold**If the number of case or deaths increases to two times the number usually seen during a similar period in the past:**

- Assess health worker practices of IMCI guidelines for assessing, classifying and treating children with pneumonia and severe pneumonia.
- Identify high risk populations through analysis of person, place and time.
- Conduct community education about when to seek care for pneumonia.

Analyze and interpret data

Time: Conduct month-to-month analysis for unexpected or unusual increases. Graph cases and deaths by month. Construct epidemic curve for outbreak cases. Plot month-to-month data and compare to previous periods.

Place: Plot location of case households.

Person: Count monthly pneumonia and severe pneumonia cases. Count pneumonia deaths.
Analyze age distribution.

Laboratory confirmation

Routine laboratory confirmation for surveillance is not required.

Reference

- *Integrated Management of Childhood Illnesses*. World Health Organization. WHO/CDR/95.14.1

Sexually transmitted infections
Background
<ul style="list-style-type: none"> • Infections of the human genito-urinary and reproductive systems transmitted via human sexual contact (sexually transmitted disease, STIs). The most common causes of male urethral discharge are a) the gonococcus <i>Neisseria gonorrhoea</i> and b) <i>Chlamydia trachomatis</i>. The most common causes of male and female genital ulcer are c) syphilis (<i>Treponema pallidum</i>), d) herpes simplex virus (HSV1 or 2) and e) chancroid (<i>Haemophilus ducreyi</i>). • STIs are endemic in most countries of the world, including countries in Africa. Multiple simultaneous STIs are common (for example, gonorrhoea plus <i>Chlamydia</i>). STIs may be most highly prevalent in areas where HIV occurs and may facilitate HIV transmission. STIs may be primary or from repeated attacks of urethral discharge. • STIs are a leading cause of abortion and stillbirth, prematurity, and congenital infections. They may lead to pelvic inflammatory disease (PID), a major cause of decreased fertility. • Incubation periods for gonorrhoea are 2 to 7 days; <i>Chlamydia</i> 7 to 14 days (or longer); syphilis, 10 days to 12 weeks (usually around 3 weeks), and chancroid, 3 to 14 days. • STIs may be more commonly diagnosed in men, in whom clinical evidence of infection
Surveillance goal
<ul style="list-style-type: none"> • Early detection and treatment of STI reduces transmission rates. Active efforts to diagnose latent syphilis may prevent significant disability. • Improve early and effective treatment of STIs using simple algorithms based on syndromic diagnosis for index cases and partners. • Carry out laboratory-based anti-microbial sensitivity monitoring and modify treatment guidelines accordingly at the national level. • Compare surveillance data for both STIs and HIV/AIDS since STIs may reflect co-presence of HIV.
Standard case definition
<p>Genital ulcer syndrome (non-vesicular):</p> <p>Suspected case: Any male with an ulcer on the penis, scrotum, or rectum, with or without inguinal adenopathy, or any female with ulcer on labia, vagina, or rectum, with or without inguinal adenopathy.</p> <p>Confirmed case: Any suspected case confirmed by a laboratory method.</p> <p>Urethral discharge syndrome:</p> <p>Suspected case: Any male with urethral discharge with or without dysuria.</p> <p>Confirmed case: <i>Urethral discharge syndrome:</i> A suspected case confirmed by a laboratory method (for example Gram stain showing intracellular Gram-negative diplococci).</p>
Public health action

- Conduct active case finding for specific target groups.
- Conduct primary prevention activities such as promotion of safer sexual behaviours and provision of condoms.
- Assess use of algorithms for detection and treatment of STIs. And improve health worker practice with algorithms.
- Include STI prevention and care services in maternal and child health, and family planning services.
- Target acceptable and effective STI prevention and care services to populations identified as vulnerable to STI transmission.
- Promote early STI health seeking behaviour.

Analyze and interpret data

Time: Graph cases each quarter.

Place: No recommendation for analysis of place.

Person: Count quarterly cases and analyze age distribution.

Laboratory confirmation

Routine laboratory confirmation for surveillance is not required.

Reference

- *Guidelines for Sexually Transmitted Infections Surveillance*. Geneva. UNAIDS and World Health Organization. WHO/CDS/CSR/EDC/99.3. UNAIDS/99.33E

Smallpox (Variola)

Background

- Smallpox is an acute contagious disease caused by variola virus, a member of the orthopoxvirus family. Other members of the genus include cowpox, camelpox, and monkeypox. Monkeypox virus has caused the most serious recent human poxvirus infections.
- Smallpox killed as many as 30% of those infected. In 1967, when WHO launched an intensified plan to eradicate smallpox, the disease threatened 60% of the world's population and killed every fourth patient.
- The global eradication of smallpox was certified by a commission of eminent scientists in December 1979 and subsequently endorsed by the World Health Assembly in 1980.
- Smallpox had two main forms: variola major and variola minor. The disease followed a milder course in variola minor, which had a case-fatality rate of less than 1 per cent. The fatality rate of variola major was around 30%. There are two rare forms of smallpox: haemorrhagic and malignant. In the former, invariably fatal, the rash was accompanied by haemorrhage into the mucous membranes and the skin. Malignant smallpox was characterized by lesions that did not develop to the pustular stage but remained soft and flat. It was almost invariably fatal.
- The incubation period of smallpox is usually 12-14 days (range 7-17), during which there is no evidence of viral shedding. During this period, the person looks and feels healthy and cannot infect others.
- The incubation period is followed by the sudden onset of influenza-like symptoms. Two to three days later, the temperature falls and the patient feels somewhat better, at which time the characteristic rash appears, first on the face, hands and forearms and then after a few days progressing to the trunk. Lesions also develop in the mucous membranes of the nose and mouth, and ulcerate very soon after their formation, releasing large amounts of virus into the mouth and throat. The centrifugal distribution of lesions, more prominent on the face and extremities than on the trunk, is a distinctive diagnostic feature of smallpox and gives the trained eye cause to suspect the disease. Lesions progress from macules to papules to vesicles to pustules. All lesions in a given area progress together through these stages. From 8 to 14 days after the onset of symptoms, the pustules form scabs which leave depressed depigmented scars upon healing.
- Varicella (chickenpox) can be distinguished from smallpox by its much more superficial lesions, their presence more on the trunk than on the face and extremities, and by the development of successive crops of lesions in the same area.
- Smallpox is transmitted from person to person by infected aerosols and air droplets spread

- The frequency of infection is highest after face-to-face contact with a patient after fever has begun and during the first week of rash, when the virus is released via the respiratory tract.
- In the absence of immunity induced by vaccination, humans appear to be universally susceptible to infection with the smallpox virus.
- Vaccine administered up to 4 days after exposure to the virus, and before the rash appears, provides protective immunity and can prevent infection or ameliorate the severity of the disease.
- Immediate Notification to WHO is formally required by IHR (2005).

Surveillance goal

- To detect and immediately respond to any suspected case of smallpox.

Standard case definition

Suspected case: An illness with acute onset of fever $\geq 38.3^{\circ}\text{C}$ (101°F) followed by a rash characterized by vesicles or firm pustules in the same stage of development without other apparent cause.

Probable case: A case that meets the clinical case definition, is not laboratory confirmed, but has an epidemiological link to a confirmed or probable case.

Confirmed case: A clinically compatible case that is laboratory confirmed.

Respond to alert threshold

If a single case is suspected:

- Report case-based information immediately to the appropriate levels.
- Implement airborne infection control precautions.
- Treat and manage the patient with supportive care.
- Collect specimen safely to confirm the case.
- Implement contact tracing and contact management.
- Conduct active surveillance to identify additional cases.
- Notify WHO.

Respond to action threshold

If a single case is confirmed:

- Maintain strict infection control measures practices throughout the duration of the outbreak.
- Mobilize the community for early detection and care.
- Conduct community education about the confirmed case, how the disease is transmitted, and how to implement infection control in the home care setting and during funerals.
- Conduct active searches for additional cases.
- Request additional help from national and international levels.
- Establish isolation ward to handle additional cases that may be admitted to the health facility.

Analyze and interpret data

Time: Graph cases and deaths daily/weekly/monthly. Construct an epidemic curve.

Place: Map location of case households.

Person: Immediate case-based reporting of cases and deaths. During the outbreak, count and report cases and deaths. Analyze age and sex distribution. Assess risk factors immediately.

Laboratory confirmation**Diagnostic test**

Isolation of smallpox (Variola) virus from a clinical specimen Or
Polymerase chain reaction (PCR) assay identification of Variola DNA in a clinical specimen

Note: Level C or D laboratories only.

Specimen	<p>Biopsy specimens*</p> <p>Scabs*</p> <p>Vesicular fluid*</p> <p>Lesion skin (roof)*</p> <p>Pustule material*</p> <p>Blood samples</p> <p><i>Note: blood samples from person where severe, dense rash may be difficult to draw as the skin may slough off. A central line may be needed for access in cases where a peripheral blood draw is difficult.</i></p> <p>* preferred specimens for diagnosis of acute illness during rash phase</p>
When to collect	<p>A suspected case of smallpox is a public health and medical emergency. Collect samples from every suspected case at available times to achieve specimen types recommended.</p>
How to prepare, store, and transport	<p>Typical practices associated with collection of patient specimens are appropriate for collection of orthopoxvirus lesions as well. These include wearing personal protective equipment, including gloves and sanitizing the site prior to collection. If alcohol is used to prepare the lesion for collection it is important to allow the lesion to dry before it is collected.</p> <p>Biopsy specimens: Aseptically place two to four portions of tissue into a sterile, leak-proof, container. Storage -20 °C to - 70 °C. Transport -6h at 4 °C. <i>Note: package non-formalin lesion biopsy for shipping on dry ice, leave fixed biopsy at room temperature. Do not freeze formalin fixed biopsy sample.</i></p> <p>Scabs: Aseptically place scrapings/material into a sterile, leakproof, freezable Storage -20 °C to - 70 °C. Transport -6h at 4 °C.</p>

	<p>Vesicular fluid: Collect fluid from separate lesions onto separate sterile swabs. Be sure to include cellular material from the base of each respective vesicle. Storage -20 °C to - 70 °C. Transport -6h at 4 °C. Draw 10 cc of blood into a plastic marble-topped tube, or a plastic yellow-topped serum separator tube. <i>Note: approval must be obtained prior to the shipment of potential smallpox patient clinical specimens to a Reference laboratory.</i></p>
Results	<p>Diagnostic services for smallpox are not routinely available. Advance arrangements are usually required for smallpox diagnostic services. Contact the appropriate National authority or WHO.</p>
Reference	
<ul style="list-style-type: none"> • WHO Fact Sheet, Smallpox. http://www.who.int/mediacentre/factsheets/smallpox 	

Trachoma
Background
<ul style="list-style-type: none"> • Trachoma is the leading cause of preventable blindness worldwide. It is caused by infection with <i>Chlamydia trachomatis</i> bacteria, and is both treatable and preventable. • Infections often begin during infancy or childhood and can become chronic. If left untreated, the infection eventually causes the eyelid to turn inwards, which in turn causes the eyelashes to rub on the eyeball, resulting in intense pain and scarring of the front of the eye. This ultimately leads to irreversible blindness, typically between 30 and 40 years of age. • Trachoma is easily spread through direct personal contact, shared towels and cloths, and flies that have come in contact with the eyes or nose of an infected person. • WHO estimates that approximately 6 million cases of blindness due to trachoma and 11 million cases of trichiasis occur worldwide each year. Prevalence of active disease in children varies from 10-40% in some African countries. • The infection primarily affects young children, with blindness occurring later in life. Females are three times more likely than males to suffer from trichiasis, the in-turning of the eyelashes that can lead to blindness. People are most at risk for trachoma infection in areas where there is poor sanitation, lack of latrines, poor sources of clean water, and the presence of flies. • Primary interventions advocated for preventing trachoma infection include improved sanitation, reduction of fly breeding sites and increased facial cleanliness (with clean water) among children at risk of disease. The scarring and visual change for trachoma can be reversed by a simple surgical procedure performed at village level which reverses the in-
Surveillance goal
<ul style="list-style-type: none"> • Prevention of blindness by early detection • Identification of high risk areas and epidemiologic trends • Estimation of disease burden • Monitoring of control programs
Standard case definition
<p><i>Suspected case:</i> Any patient with red sticky eyes who complains of pain and itchiness of the eyes.</p> <p><i>Confirmed case:</i> Any patient with red sticky eyes who complains of pain and itchiness of the eyes where examination of the eyes confirms one of the stages of Trachoma infection according to the WHO Simplified Trachoma Grading System. (see reference below).</p>
Recommended public health action

The World Health Organization has developed a series of interventions to control trachoma known by the acronym SAFE: Surgery, Antibiotics, Facial cleanliness, and Environmental improvement.

Effective Trachoma control has four main components:

- Eye lid surgery for those at immediate risk of blindness
- Antibiotics to treat individual cases and to reduce infection in a community
- The promotion of facial cleanliness and hygiene to reduce transmission
- Environmental improvements such as provision of water and household sanitation

Analyze and interpret data

Time: Monitor epidemiologic trends over time.

Place: Plot the location of case households and analyze the distribution.

Person: Analyze the distribution of cases by age and other demographic factors.

Lab confirmation

Routine laboratory confirmation for surveillance is not required.

Diagnostic test	Detection of specific antigen . Nucleic acid tests and tissue culture techniques. Occasionally, in epithelial cells in Giemsa or iodine stained smears by direct microscopy.
Specimen	Collection of conjunctival scrapings
When to collect the specimen	
How to prepare, store, and transport the	After anaesthetizing the conjunctiva with anesthetic eye drops, blot away any discharge and using a spatula with a thin blunt end, scrape the whole of the conjunctiva. Spread the specimen evenly on a slide. As soon as the preparation is air-dry , fix it with methanol for 2-3 minutes if the preparation is to be Giemsa stained.

Results	Outside of specialist laboratories, most ocular infection is diagnosed clinically (see annex 8 on the recommended case definition for the confirmed case) or immunologically.
Reference	
<ul style="list-style-type: none"> • WHO Trachoma Page http://www.who.int/topics/trachoma/en/ • World Health Organization. Trachoma control: A guide for program managers. Geneva: World Health Organization, 2006. • World Health Organization. Achieving Community Support for Trachoma Control. Geneva: World Health Organization, 2006. • World Health Organization. Primary Health Care Level Management of trachoma. Geneva: World Health Organization, 2006. • World Health Organization. Trachoma epidemiologic survey protocol. Geneva: World Health Organization, 2006. • CDC Trachoma http://www.cdc.gov/healthywater/hygiene/disease/trachoma.html • The Carter Center http://www.cartercenter.org/health/trachoma/index.html 	

Trypanosomiasis
Background
<ul style="list-style-type: none"> • Trypanosomiasis is an infection of blood, lymphatics and central nervous system. In Africa it is caused by the protozoan <i>Trypanosoma brucei rhodesiense</i> and <i>T. b. gambiense</i>, which are transmitted by the bite of infected <i>Glossina</i> (tsetse) flies. • Trypanosomiasis is endemic in over 30 African countries in West, Central and East Africa. It is highly epidemic in the Democratic Republic of Congo, Angola, and other areas of civil conflict, where 80% of some village populations may be infected. Cattle are the major reservoir of <i>Trypanosoma brucei rhodesiense</i>, and humans are the major reservoir for <i>T. b. gambiense</i>. • Incubation period is usually days to weeks with <i>T. b. rhodesiense</i>, and months to years with <i>T. b. gambiense</i> infections. Without treatment, both forms are usually fatal. • Trypanosomiasis control strategies include human and cattle population surveys to treat infected persons and diminish cattle reservoirs, and tsetse fly habitat control (for example, removal of bushes and tall grasses near villages, and use of residual insecticides). • Tuberculosis, malaria, bacterial meningitis, HIV/AIDS, and other central nervous system or systemic infections can produce similar clinical findings.
Surveillance goal
<ul style="list-style-type: none"> • Increase percentage of cases confirmed by laboratory methods. • Use population-based surveys and serologic screening for active case finding in endemic areas. • Conduct human and cattle screening in trypanosomiasis-free areas.
Standard case definition
<p>Suspected case:</p> <p><i>Early stage:</i> a painful chancre originating as a papule and then evolving into a nodule at the primary fly bite site. There may be fever, intense headache, insomnia, painless lymphadenopathy, anaemia, local edema and rash.</p> <p><i>Late stage:</i> cachexia, somnolence, and central nervous system signs.</p> <p>Confirmed case:</p> <p>A suspected case confirmed by card agglutination trypanosomal test (CATT) or by isolation of trypanosomes in blood lymph nodes or cerebrospinal fluid.</p>
Respond to alert threshold

If you observe that the number of cases or deaths is increasing over a period of time:

- Report the problem according to national guidelines.
- Treat any individual suspected and confirmed cases with appropriate therapy in closely monitored setting.
- Collect specimen for laboratory confirmation.
- Investigate cause of increasing number of cases to identify problems with prevention activities.

Respond to action threshold

If the number of cases or deaths increases to two times the number usually seen in a similar period in the past:

- Assess prevention activities in the area around the cases and take action to improve them as indicated.
- Conduct active case finding activities if it is an endemic area.
- Conduct vector control activities specified by national guidelines.

Analyze and interpret data

Time: Graph quarterly cases.

Place: Plot the distribution of case households.

Person: Count monthly cases, and analyze age distribution.

Laboratory confirmation

Diagnostic test

Presumptive:

Serological: card agglutination trypanosomiasis test (CATT)

Confirmation:

Parasitological: detection (microscopy) of trypanosomes in blood, lymph nodes aspirates or CSF

Specimen

Whole blood

Lymph nodes aspirates

Cerebrospinal fluid

When to collect the specimen	<p>Suspects from endemic places with fever</p> <p>Any patient with fever and may have come into contact with tsetse flies.</p>
How to prepare, store, and transport the specimen	<p>For slides: Put the slides in a slide box and close properly. Store at room temperature in a dust-free place. In case there is no slide box, the slides can be wrapped in soft tissue paper (filter papers, serviettes, toilet paper, etc.)</p> <p>For blood in anticoagulant bottles, refer to reference lab.</p>
Results	<p>Results should be available the same day.</p>
Reference	
<ul style="list-style-type: none"> • <i>Control and Surveillance of African Trypanosomiasis</i>. Report of a WHO Expert Committee, Geneva, World Health Organization, 1998 (WHO Technical Report Series, No. 881). • WHO Recommended Surveillance Standards WHO/CDS/CSR/ISR/99.2 	

Tuberculosis
Background
<ul style="list-style-type: none"> • Infection of the lungs and other organs usually caused by <i>Mycobacterium tuberculosis</i> transmitted person-to-person by droplet infection through coughing, sneezing or spitting. Clinically, the pulmonary form of the disease is more common than the extra-pulmonary form. The cardinal symptoms of pulmonary TB are chronic cough, weight loss, fever, loss of appetite and night sweats. • Tuberculosis (TB) is a leading cause of infectious illness and death worldwide with over 8 million new cases and 3 million deaths per year. In African countries, approximately 1.6 million of the new cases and over 600 000 cases occur each year. It is also estimated that between 30 and 50% of all new TB cases detected are infected with HIV and 40% of all AIDS deaths are due to TB. Those who are at highest risk of dying from TB include people with HIV/AIDS, malnutrition and other immuno-compromising conditions, the very young, and the very old. • The global HIV pandemic has been a major cause of increasing TB cases, especially in African countries. • Incubation period is approximately 1 to 3 months. • WHO recommends the Directly Observed Therapy, Short-course (DOTS) strategy to maximize compliance and treatment efficacy and to reduce development of drug-resistant strains. The DOTS strategy has been implemented by at least 40 of 46 Member States in the African Region. Varying degrees of success have been achieved in controlling TB where resources and motivation for diagnosis, treatment, and patient follow up are adequate. • Clinically, bacterial pneumonia, malaria, trypanosomiasis, HIV/AIDS and a variety of other bacterial, parasitic, and viral infections may cause similar syndromes of fever, cough, fatigue, and weight loss, or may themselves precipitate active TB in an already infected individual. Abdominal or other extra-pulmonary sites of infection may occur after ingestion of un-pasteurized cow's milk (<i>M. bovis</i>).
Surveillance goal
<ul style="list-style-type: none"> • Early detection of persons with infectious lung disease to improve chances of clinical improvement and reduce transmission of TB. <p>Improve percentage of TB cases confirmed by microscopy</p>
Standard case definition

Suspected case:

Any person with a cough of 3 weeks or more.

Confirmed case:

Smear-positive pulmonary TB: a) a suspected patient with at least 2 sputum specimens positive for acid-fast bacilli (AFB), or b) one sputum specimen positive for AFB by microscopy and radiographic abnormalities consistent with active PTB as determined by the treating medical officer, or c) one positive sputum smear by microscopy and one sputum specimen positive on culture for AFB.

Smear negative PTB: a patient who fulfils all the following criteria: a) two sets taken at least 2 weeks apart of at least two sputum specimens negative for AFB on microscopy, radiographic abnormalities consistent with PTB and a lack of clinical response despite one week of a broad spectrum antibiotic, a decision by a physician to treat with a full course of anti-TB chemotherapy, or b) a patient who fulfils all the following criteria: severely ill, at least two sputum specimens negative for AFB by microscopy, radiographic abnormalities consistent with extensive pulmonary TB (interstitial and miliary), a decision by a physician to treat with a full course of anti-TB chemotherapy, or c) a patient whose initial sputum smears were negative, who had sputum sent for culture initially, and whose subsequent sputum culture result is positive.

Respond to alert threshold

If you observe that the number of cases or deaths is increasing over a period of time:

- Report problem to the next level, or according to national guidelines.
- Treat individual cases with direct observation (DOTS) including a treatment supporter.
- Where feasible, isolate persons using respiratory infection control practices, especially if multi-drug resistant TB is suspected.
- Investigate cause of increase, including performance of DOTS program in your area.

Respond to action threshold

If the number of cases or deaths increases to two times the number usually seen in a similar period in the past:

- Assess health worker performance with detection and treatment of smear-positive PTB and improve practices as needed.
- Assess DOTS program and take action to make identified improvements.
- Conduct drug susceptibility tests to establish patterns of resistance.

Analyze and interpret data

Time:	Graph cases and deaths monthly.
Place:	Plot distribution of case households and workplaces.
Person:	Count monthly cases and deaths. Analyze age and sex distribution quarterly.
Laboratory confirmation	
Diagnostic test	<p>Microscopy: Presence of acid fast bacillus (AFB) in Ziehl Neelsen (ZN) stained smears</p> <p>Culture and identification</p> <p>Drug susceptibility test : Anti-tuberculosis drug resistance occurs when a strain of <i>Mycobacterium tuberculosis</i> isolate is resistant to one or more antimicrobial agents as evidenced by internationally recommended methods for susceptibility tests)</p> <p>MDR =Resistance to Isoniazid and Rifampicin;</p> <p>X-DR= Resistance to Isoniazid and Rifampicin (MDR); plus additional resistance to a fluoroquinolone and a second-line injectable agent</p>
Specimen	<p>Deep-chest sputum</p> <p>Aspirates</p>
When to collect the specimen	Collect sputum (not saliva) for direct smear microscopy and examine at least two stained specimens taken on different days.
How to prepare, store, and transport the specimen	<p>Smear should be examined at health facility where the specimen is taken.</p> <p>TB cultures should be packaged in leak proof containers, wrapped in cotton wool. Transport in waterproof container to reference lab.</p>

Results	<p>TB microscopy is read daily. Quantification of observed mycobacterium are reported using various reporting methods. Refer to the criteria used by the examining laboratory.</p> <p>Culture : after 6 - 8 weeks</p> <p>Anti-tuberculosis drug resistance :The national reference laboratory should be linked to an Supranational reference laboratory by strain exchange to ensure quality control</p>
Reference	
<ul style="list-style-type: none"> • <i>Treatment of Tuberculosis: Guidelines for National Programs.</i> WHO/TB/97.230 • <i>Policy Statement of Prevention Therapy Against TB in People Living with HIV,</i> WHO/TB/98.255 • Laboratory Services in Tuberculosis Control, Parts I, II and III. WHO publications WHO/TB/98.258 • Guidelines to surveillance of drug resistance in tuberculosis 4th ed. WHO/HTM/TB/2009.422 	

Typhoid Fever
Background
<ul style="list-style-type: none"> • Typhoid fever is a bacterial disease, caused by <i>Salmonella typhi</i>. Symptoms usually develop 1-3 weeks after exposure, and may be mild or severe. They include high fever, malaise, headache, constipation or diarrhoea, rose-coloured spots on the chest, and enlarged spleen and liver. Healthy carrier state may follow acute illness. • Typhoid fever remains a serious public health problem throughout the world, with an estimated 16-33 million cases and 500 000 to 600 000 deaths annually. In the last outbreak in the Democratic Republic of Congo, between 27 September 2004 and early January 2005, no less than 42 564 cases of typhoid fever were reported, including 214 deaths and 696 cases of peritonitis and intestinal perforations. • In virtually all endemic areas, the incidence of typhoid fever is highest in children from 5-19 years old. The disease is almost exclusively transmitted by food and water contaminated by the faeces and urine of patients and carriers. • Polluted water is the most common source of typhoid transmission. In addition, shellfish taken from sewage-contaminated beds, vegetables fertilized with night-soil and eaten raw, contaminated milk and milk products have been shown to be a source of infection. • Typhoid fever has been virtually eliminated in most areas of the industrialized world with the advent of proper sanitary facilities. Most cases in developed countries are imported from endemic countries. • People can transmit the disease as long as the bacteria remain in their body; most people are infectious prior to and during the first week of convalescence, but 10% of untreated patients will discharge bacteria for up to 3 months. • Typhoid fever can be treated with antibiotics. However, resistance to common antimicrobials is widespread. Healthy carriers should be excluded from handling food.
Surveillance goal
<ul style="list-style-type: none"> • Detect Typhoid Fever sporadic cases and outbreaks promptly, and seek laboratory verification • Identify areas/population at high risk in order to improve prevention of the disease by taking hygienic measures
Standard case definitions

<p>Suspected case: Any person with gradual onset of steadily increasing and then persistently high fever, chills, malaise, headache, sore throat, cough, and, sometimes, abdominal pain and constipation or diarrhoea.</p> <p>Confirmed case: Suspected case confirmed by isolation of <i>Salmonella typhi</i> from blood, bone marrow, bowel fluid or stool.</p>
<p>Respond to alert threshold</p>
<p>If Typhoid fever cases are suspected:</p> <ul style="list-style-type: none"> • Arrange for laboratory testing of stool specimens or rectal swabs of suspected cases, especially in situations where food- or waterborne transmission is suspected. • Report and investigate all suspected outbreaks of typhoid. Search for case/carrier that is the source of infection and for the vehicle (water or food) through which infection is being transmitted. • Treat typhoid fever patients with antibiotics. Severe cases should be provided supportive measures such as oral or intravenous hydration, the use of antipyretics, and appropriate nutrition.
<p>Respond to action threshold</p>
<p>If Typhoid Fever cases are confirmed</p> <ul style="list-style-type: none"> • Identify areas/populations at high risk to identify source(s) and mode(s) of transmission in order to prevent and control the disease. • Conduct health education programmes on hygiene with simple messages on safe water, safe food handling practices, hygiene and hand washing. • Support provision of clean water and proper sanitation to affected population(s). Chlorinate suspected water supplies. All drinking water should be chlorinated or boiled before use. • More than 90% of patients can be managed at home with oral antibiotics, reliable care and close medical follow-up for complications or failure to respond to therapy. Patients with persistent vomiting, severe diarrhoea and abdominal distension may require hospitalization and parenteral antibiotic therapy.
<p>Analyze and interpret data</p>
<p>Time: Graph cases and deaths weekly. Construct an epidemic curve during outbreaks.</p> <p>Place: Plot location of case households with precise mapping.</p> <p>Person: Report immediate case-based information for cases and deaths. Report summary totals monthly. During outbreak, count cases and deaths weekly. Analyze by age. Assess risk factors to improve prevention of outbreaks.</p>
<p>Laboratory confirmation</p>

Diagnostic test	Culture: Isolation of <i>salmonella spp.</i> from stool or blood of a patient The WIDAL Test should not be used for diagnostic purpose
Specimen	Blood Stool
When to collect the specimen	Collected samples preferably before antibiotics are administrated
How to prepare, store, and transport	5-10 ml of blood distributed in a blood culture bottle. Stool in stool container Store specimens at 4-8 C or ambient temperature away from heat and direct sunlight.
Results	Blood culture 4 days to 2 weeks Stool 3-4 days.
Reference	
<ul style="list-style-type: none"> • The diagnosis, Treatment and Prevention of Typhoid Fever; WHO/V&B/03.07 • Weekly Epidemiological Record; N° 1, 2005, 80, 1-8; http://www.who.int/wer • WHO Recommended Surveillance Standards WHO/CDS/CSR/ISR/99.2 	

West Nile Fever

Background

- West Nile Fever is a febrile illness resulting from a mosquito-borne arbovirus in the *Flaviviridae* family. It is a zoonotic disease transmitted from birds to humans and other animals. Serological evidence suggests that the infection is present throughout practically the entire African continent. West Nile Fever most likely emerged in Africa and is now found world-wide. Outbreaks occur in humans, birds and horses.
- Most cases are mild and may not come to the attention of the health system. Patients seeking health care usually present with flu-like symptoms such as fever, headache and body aches. Occasionally patients present with a skin rash on the neck, trunk, arms or legs.
- People of all ages and conditions may be affected. However, those who are above age 50 years or who have had an organ transplant are at increased risk of severe illness.
- Very severe cases include signs of encephalitis, meningo-encephalitis or meningitis. Symptoms include high fever, headache, neck stiffness, stupor, tremors, convulsions, flaccid paralysis and coma.
- The case fatality rate in patients with neurological involvement ranges from 4% to 14% and as high as 29% in elderly patients.
- West Nile Fever can be prevented by avoiding mosquito bites especially at dusk when mosquitoes are most active. Insect repellents, wearing long sleeves and trousers, staying indoors and draining breeding sites like pools of standing water can reduce exposure to mosquitoes.
- Confirmation of West Nile Fever in patients with clinical symptoms requires laboratory confirmation of specific IgM antibodies in cerebrospinal fluid and serum specimens.
- Because there is no specific treatment for West Nile Fever, patients with severe disease are usually hospitalized for supportive treatment and nursing care.

Surveillance goal

- Identify risk factors for infection and determine high-risk populations for targeted prevention activities
- Identify geographic areas for targeted prevention and control activities
- Identify most severe cases for referral to hospitalized care

Standard case definition

Suspected case:

A hospitalized case of encephalitis due to unknown cause

Confirmed case:

Confirmation of West Nile Fever is through laboratory diagnostics to identify WNV-specific IgM

Respond to alert threshold**If a single case is suspected:**

- Report case-based information immediately to the appropriate levels.
- Treat and manage the patient with supportive care.
- Collect specimen safely to confirm the case.

Respond to action threshold**If a single case is confirmed:**

- Treat and manage the patient with supportive care
- Mobilize the community through education in order to promote adoption of behaviours that reduce disease risk such as protection against mosquito bites and reduction of mosquito breeding sites
- Conduct community education on how WNV is transmitted and on how to prevent being infected

Analyze and interpret data

Time: Construct an epidemic curve during the outbreak.

Place: Plot location of case residence and worksite.

Person: Immediate case-based reporting of cases and deaths. During an outbreak, count and report cases and deaths. Analyze age and sex distribution. Assess risk factors immediately and consider request for assistance to improve outbreak control.

Laboratory confirmation**Diagnostic test**

Presence of IgM antibodies against West Nile Fever

Specimen	<p><i>For ELISA:</i> Whole blood, serum or plasma</p> <p><i>For PCR:</i> Whole blood or blood clot, serum/plasma or tissue</p> <p><i>For immunohisto-chemistry:</i> Skin or tissue specimens from <i>fatal</i> cases.</p>
When to collect the specimen	<p>Collect specimen from the first suspected case.</p> <p>If more than one suspected case, collect until specimens have been collected from 5 to 10 suspected cases.</p>
How to prepare, store, and transport the specimen	<p>HANDLE AND TRANSPORT SPECIMENS FROM SUSPECTED VHF PATIENTS WITH EXTREME CAUTION. WEAR PROTECTIVE CLOTHING AND USE BARRIER PRECAUTIONS.</p> <p><i>For ELISA or PCR:</i></p> <ul style="list-style-type: none"> • Refrigerate serum or clot • Freeze (-20C or colder) tissue specimens for virus isolation <p><i>For Immunohistochemistry:</i></p> <ul style="list-style-type: none"> • Fix skin snip specimen in formalin. Specimen can be stored up to 6 weeks. The specimen is not infectious once it is in formalin. Store at room temperature. Formalin-fixed specimens may be transported at room temperature.
Results	<p>Diagnostic services for VHF are not routinely available. Advance arrangements are usually required for VHF diagnostic services. Contact the appropriate National authority or WHO.</p>
Reference	

- Global Alert and Response; West Nile Fever epidemic updates
http://www.who.int/csr/don/archive/disease/west_nile_fever/en/
- Pedro N. A and Boris Szyfres. Zoonoses and Communicable Diseases Common to Man and Animals. Third edition, Volume II. Chlamydioses, Rickettsioses and Viroses, Part II: Viroses Pages 372-376. Pan American Health Organization, WHO
- Epidemic/Epizootic West Nile Virus in the United States: Guidelines for Surveillance, Prevention and Control.
<http://www.cdc.gov/ncidod/dvbid/westnile/resources/wnv-guidelines-aug-2003.pdf>
- Infection Control for Viral Hemorrhagic Fevers in the African Health Care Setting WHO/EMC/ESR/98.2
- Viral Infections of Humans; Epidemiology and Control. 1989. Evans, A.S. (ed).

Yellow fever

Background

- Acute viral hemorrhagic disease caused by a flavivirus transmitted human-to-human via the domestic species of *Aedes* mosquitoes (Urban epidemics) or to humans from primate reservoir via a forest mosquito species (Sylvatic cycle).
- Large scale outbreaks occur every 3 to 10 years in villages or cities in the absence of large scale immunisation. Sporadic cases can occur regularly in endemic areas. Resurgence of disease in Africa since mid-1980s. True incidence far exceeds reported cases.
- Incubation period 3 to 6 days after the bite from an infected mosquito. About 15% of infections progress to fever and jaundice.
- While only the minority of cases are severe, case fatality rate may be 25% to 50% among patients with syndrome of haemorrhage, jaundice, and renal disease.
- Risk factor: sporadic cases often linked to occupation or village location near woods or where monkeys are numerous. Also non-vaccinated persons.
- International reporting to WHO required within 24 hours.
- Viral hemorrhagic fevers (VHF) and other parasitic, viral, or bacterial diseases such as malaria, Dengue Chikungunya, leptospirosis, hepatitis A-E, Epstein-Barr virus, West Nile, Q fever, anthrax, rickettsial diseases, etc, and toxic exposures may mimic yellow fever.
- Infection and disease can be prevented by vaccination. With a vaccine efficacy > 95% and duration of immunity of at least 10 years.

Surveillance goal

- Seek confirmation of yellow fever and rule out other possible etiologies of fever with jaundice
- Provide information in order to adopt appropriate control measures
- Identify populations at risk of yellow fever
- Monitor the epidemiology of the disease and the impact of control measures Support operational research and innovation

Standard case definition

Suspected case:

Any person with acute onset of fever, with either a negative laboratory test (blood slide or RDT) for malaria or failure to respond to a full course of antimalarials AND any one of the following:

1. Jaundice or scleral icterus appearing within 14 days of onset of the first symptoms
2. Bleeding from either the mouth, nose, gums, skin, eyes or stomach (gastrointestinal tract)

Probable case:

Any person meeting the suspect case definition criteria with epidemiological link to a

Confirmed case:

A probable case

AND

Any person who meets the suspect or probable case definition criteria AND has not had yellow fever immunization within 30 days before onset of illness; and one of the following:

1. Detection of yellow fever-specific IgM;
2. Detection of fourfold increase in yellow-fever IgM, or IgG antibody titres between acute and convalescent serum samples, or both;
3. Detection of yellow fever-specific neutralizing antibodies.

**YF-specific means that antibody tests (such as IgM or neutralizing antibody) for other prevalent flavivirus are negative. This testing should include at least IgM for Dengue and West Nile and may include other flavivirus depending on local epidemiology.*

OR

Any person who meets the suspect or probable case definition criteria and has not had yellow fever immunization within 14 days before onset of illness; and one of the following:

1. detection of yellow fever virus genome in blood or other organs by pcr;
2. detection of yellow fever antigen in blood, liver or other organs by immunoassay;
3. isolation of yellow-fever virus

Respond to alert threshold

If a single case or cluster is suspected or probable:

- Fill out notification form, including clinical information, case based forms, check vaccination status and travel history
- Take blood specimen for laboratory confirmation. You may obtain convalescent specimen from patient(s),

Diagnose and treat patient(s) with supportive care.

- Notify immediately to the next level. In the case of probable case inform nearby health units
- Strengthen surveillance (apply the community case definition ie. fever and jaundice)
- Initiate a preliminary field investigation if cluster of cases with fever and jaundice. Obtain information to determine probable site of infection. Determine vaccination coverage of the community and start planning for vaccination (in case of a cluster)

Respond to action threshold**In addition to alert threshold response If a single case is confirmed:**

- Continue / complete epidemiological investigation including screening for vaccination status
- Initiate entomological investigation if indicated
- Determine vaccination coverage in affected area (routine EPI, recent outbreak responses or preventive campaigns)
- Initiate social mobilization for interventions selected
- Continue risk communication and action to reduce risk including vector control if indicated
- Initiate vaccination in affected villages, district or town/city based on epidemiological findings
- Notify to WHO through Central Authorities using IHR decision instrument
- Continue to strengthen routine yellow fever immunization, especially for hard-to-reach areas

Analyze and interpret data

Time:	Generate Weekly Graphs of cases and deaths. During outbreaks, construct epidemic curves (to monitor daily then weekly trends).
Place:	Plot location of case households and occupation with precise mapping.
Person:	Report immediate case-based information for cases and deaths. Report summary totals weekly.

<p>During outbreak, count cases and deaths daily as they occur, then weekly when the epidemic matures or ends. Analyze by person variables (age, sex, occupation.). Assess risk factors to improve prevention of sporadic outbreaks.</p>	
<p>Laboratory confirmation</p>	
<p>Diagnostic test</p>	<ol style="list-style-type: none"> 1. ELISA for the presence of yellow fever Specific IgM and IgG antibodies. 2. Exclusion of Dengue, West Nile virus and other locally prevalent flavivirus will be necessary for the confirmation of yellow fever. 3. PCR, YF specific seroneutralization, virus isolation or histopathology
<p>Specimen</p>	<p>Serum in the acute and convalescent phases of the illness; In the event of death, postmortem liver specimen</p>
<p>When to collect the specimen</p>	<p>Within 14 days of onset of first symptoms</p> <p>Collect specimen from at least the first to 10th suspected cases of yellow fever. Collect specimen from last cases (based on epidemic curves) to decide on the end of the epidemic.</p>
<p>How to prepare, store, and transport the specimen</p>	<ul style="list-style-type: none"> • Collect 10 ml of venous blood from adults, 1-5 ml from children, in a capillary tube, microtainer, or if necessary in a standard glass test tube. • Separate blood cells from serum: <ul style="list-style-type: none"> ○ Let clot retract for 30 to 60 minutes at room temperature. Centrifuge at 2000 rpm for 10-20 minutes and pour off serum into a clean glass tube. ○ If no centrifuge, put sample in refrigerator overnight (4 to 6 hours) until clot retracts. Pour off serum the next morning. ○ If no centrifuge and no refrigerator, let blood sit at an angle for at least 60 minutes (without shaking or being driven in a vehicle. Pour off serum into a clean tube. • Store serum at 4°C. <p>Transport serum samples using appropriate packaging to prevent breaking or leaks during transport. Avoid glass tubes for shipment and transport if possible.</p>
	<p>The specimen should arrive at the laboratory within 3 days of being collected. Avoid shaking of specimen before serum has been collected.</p> <p>To prevent bacterial overgrowth, ensure that the serum is poured into a clean glass test tube. The test tube does not need to be sterile - just clean.</p> <p>Transport the serum in an EPI hand vaccine carrier at 4°C-8°C to prevent bacterial overgrowth (up to 7 days). If not refrigerated, serum stored in a clean tube will be good for at least 3 days.</p>

Results	Laboratory results should be received within 7 days of reception of the specimen in the laboratory.
Reference	
<ul style="list-style-type: none">• <i>District guidelines for yellow fever surveillance.</i> WHO 1998 WHO/GPVI/EPI/98.09• Yellow Fever. 1998. WHO/EPI/Gen/98.11• Recommendation of Expert Meeting on Yellow Fever Surveillance and Response in Africa. Brazzaville, Congo, from 13 to 15 October 2010	

Annexes to SECTION 11

The following annexes are examples of program specific forms. Some forms are for documenting initial findings while others are designed for in-depth investigation. Refer to your country's national surveillance program for the appropriate forms.

ANNEX 11A Reporting form for adverse events following immunization (AEFI)

ANNEX 11B Acute flaccid paralysis - case investigation form

ANNEX 11C Cholera - case-based investigation form

ANNEX 11D Guinea worm - case investigation form

ANNEX 11E Maternal death - reporting form

ANNEX 11F Measles - case investigation form

ANNEX 11G Neonatal tetanus - case investigation form

ANNEX 11H Perinatal death audit form

ANNEX 11I Tuberculosis - MDR and XDR TB - case-based reporting form

ANNEX 11J Viral hemorrhagic fever - case report form

Annex 11A : Reporting form for adverse events following immunization (AEFI)

	AEFI reporting ID No.
<p>*Patient name:</p> <p>*Patient's full Address:</p> <p>Telephone:</p> <p>Sex: M F</p> <p>*Date of birth (DD/MM/YYYY): / /</p> <p><i>OR Age at onset:</i> Years Months Days</p> <p><i>OR Age Group:</i> < 1 Year 1 to 5 Years > 5 Years</p>	<p>*Reporter's Name:</p> <p>Institution / Designation, Department & address:</p> <p>Telephone & e-mail:</p> <p>*Date today (DD/MM/YYYY): / /</p>

Health facility (or vaccination centre) name:					
*Name of Vaccines Received	*Date of vaccination	*Time of vaccination	Dose (e. g. 1 st , 2 nd , etc.)	*Batch/ Lot number	Expiry date

<p>*Adverse event (s):</p> <p>Severe local reaction >3 days <i>beyond nearest joint</i></p> <p>Seizures <i>febrile afebrile</i></p> <p>Abscess</p> <p>Sepsis</p> <p>Encephalopathy</p> <p>Toxic shock syndrome</p> <p>Thrombocytopenia</p> <p>Anaphylaxis</p> <p>Fever 238°C</p> <p>Other (specify).....</p> <p>Date & Time AEFI started (DD/MM/YYYY):</p> <p> / / . Hr Min</p> <p>Was the patient hospitalized? Yes No</p> <p>Date patient notified event to health system (DD/MM/YYYY): / /</p>	<p>Describe AEFI (Signs and symptoms):</p>
<p>*Outcome:</p> <p style="text-align: center;">Recovering Recovered Recovered with sequelae Not Recovered Unknown</p> <p style="text-align: center;">Died If died, date of death (DD/MM/YYYY): / / Autopsy done: Yes No Unknown</p>	
<p>Past medical history (including history of similar reaction or other allergies), concomitant medication and other relevant information (e.g. other cases). <i>Use additional sheet if needed :</i></p>	

First Decision making level to complete:

Investigation needed: <input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, date investigation planed (DD/MM/YYYY): / /
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National level to complete:

Date report received at national level (DD/MM/YYYY): / /	AEFI worldwide unique ID:
Comments:	

Annex 11B : Acute flaccid paralysis - case investigation form

Revised December 2012
 Revised Poliomyelitis/Acute Flaccid Paralysis Case Investigation Form- Acute Illness
 Ministry of Health, Republic of Uganda

COMPULSORY NOTIFICATION (PLEASE COMPLETE ALL INFORMATION IN FULL)

(Complete this form for all cases occurring within the previous 12 months)

Circle or fill the form as appropriate. Revised September 2016 (F01 in triplicate)

EPID No: (for UNEPI only) UGA _____ FACILITY _____

DISTRICT OF ONSET _____ (District of onset = where the child was living when infected (2 weeks prior to onset of paralysis))

IDENTIFICATION

1. Child's Surname: _____ Other Name: _____
 2. Date of Birth: ___/___/___ 3. Age in years: [] in months: []
 4. Sex: M = Male F = Female []
 5. Residence: Name of head of household where the child lives: _____ Phone _____
 District _____ Sub County _____
 Parish _____ LCI _____ Mother's Name: _____

AFP case coordinates (WGS 1984 format) : Longitude : _____ Latitude : _____

(For all countries conducting Environmental Surveillance)

HOSPITALIZATION: 6. Referring Facility: _____

6.1 Is the child admitted? 1 = Yes 2 = No []
 6.2 Date of admission ___/___/___ 6.3 Medical Record Number: []

CLINICAL HISTORY:

7. Fever at onset of paralysis 1 = [] No 8. Date onset of fever: ___/___/___
 9. Paralysis Progressed <= 3 days 1 = [] No 10. Date onset of paralysis: ___/___/___
 11. Type of paralysis: (Tick if present)
 Sudden onset As ymetrical Sensation ss
 12. Site of Paralysis: (Tick if present)
 Left Leg Arm Right Right Arm
 12.1. Diminished reflexes Dis shed muscle tone
 12.2. Muscle wasting Mi weakness
 12.3. Respiratory Muscles Fa Stiff n Convulsion
 Headache V iting Diarrh other sites _____
 13. History of recent injection before the onset of paralysis: 1 = Yes 2 = No []
 Total number of injections received before onset of paralysis []
 If YES, dates of injection ___/___/___, ___/___/___, ___/___/___, ___/___/___
 Type of injection (name of drug or vaccine) _____
 Site (s) of the injection _____
 Name of the facility giving the injection (s) _____

VACCINATION HISTORY:

14. Total Number of polio vaccine doses [] Exclude dose at birth
 OPV Doses At birth ___/___/___ 2nd ___/___/___ 4th ___/___/___
 1st ___/___/___ 3rd ___/___/___ If > 4 last dose ___/___/___
 Total OPV (bOPV/mOPV2) doses received through SLA: [] known Total OPV (bOPV/mOPV2) doses received through RI: 99=Unknown []
 Total IPV doses received through RI and/or SLA: []=Unknown Date of last IPV dose received through RI or SLA: ___/___/___

STOOL SPECIMEN COLLECTION - VIRUS ISOLATION STUDIES

(Only for patients reported within 60 days of onset of paralysis.)

Date Collected	Time of collection	Date Sent to UVRI	Date Received	Result	Date of Result
Specimen 1: ___/___/___	_____	___/___/___	___/___/___	_____	___/___/___
Specimen 2: ___/___/___	_____	___/___/___	___/___/___	_____	___/___/___

15. Was this AFP cases detected after 14 days from its date of onset of paralysis. 1 = Yes 2 = []
 If "yes" Collect one stool specimens each from 3 contacts and conduct the 60-day follow up as soon as possible

after 60 days have elapsed since the onset of paralysis. Prioritize contacts < 15 years of age living in the same house as AFP case. If there are less than 5 contacts in the house, choose closest playmates or neighbours of the AFP case.

Fill a contact specimen collection form for each contact. Use separate specimen carrier for contacts specimens and the AFP case specimens.

Use same specimen collection procedures and reverse cold chain as for the AFP case specimens.

PERSON RECORDING _____ TITLE _____ DATE ___/___/___ TELEPHONE _____

PLEASE SEND A COPY OF THIS COMPLETED FORM WITH THE SPECIMENS TO UVRI/EPi LABORATORY IN ENTEBBE
 IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT: 0414320538 OR 0414320385

Annex 11C : Cholera - case-based investigation form

Cholera Case Investigation Form		
Area : Patient and clinical laboratory related information		
	Variables/Questions	Answers
1	Detection day (dd/mm/yyyy)	
2	Detection place (Health facility or Community)	
3	Patient identification number (yyyy-week- CCC-PPP-DDD-Reporting site- nnn)	
4	Patient surname or last name	
5	Patient first name(s)	
6	Age (years)	
7	Sex (F/M)	
8	Number of people in same household	
9	Patient's residencial Adress	
10	Village/Town	
11	Neighborhood	
12	District	
13	Province	
14	Country	
15	Date of onset (first symptoms) (dd/mm/yyyy)	
16	Clinical signs and Symptoms	
17	Was patient exposed to any known risk factor for this disease? (Yes/No)	
18	If yes, specify risk factor(s): Water used by the patient for drinking : (list by type, e.g. tap water, Borehole, unprotected well, protected well, River, dam, lake, pond)	
19	Number of doses of cholera Vaccine	
20	Date last dose was administered	
21	Laboratory related information: at least first and last cases	
22	<i>Vibrio cholerae</i> identified in stools?	
23	Drugs to which the vibrio strain is sensitive	
24	Drugs to which the vibrio strain is resistant	
25	Outcome (Died, Survived, Unknown)	

26	Final Classification (Not a case, Suspect, Probable, Confirmed by Lab, Confirmed by epidemiological link, Pending)	
27	Other Notes and Observations	
28	Date latest update of this record (dd/mm/yyyy)	

Area: Risk factor search (Information to be obtained from the water and sanitation group of the investigation team)

	Variables/Questions	Answers
	Mapping Potential Hazards	
1	Potential vibrio vehicles: drinking water	
2	Drinking water source 1	
3	Drinking water source 2	
4	Drinking water source 3	
5	Drinking water source 4	
6	Potential vibrio vehicles: non drinking water	
7	Non drinking water source 1	
8	Non drinking water source 2	
9	Non drinking water source 3	
10	Non drinking water source 4	
11	Potential vibrio vehicles: Food items	
12	Food items 1	
13	Food items 2	
14	Food items 3	
15	Food items 4	
17	Food items 5	

18	Food items 6	
19	Food items 7	
20	Food items 8	
21	Bacteriology lab findings	
22	Drinking water found infected by vibrio	
23	Non drinking water found infected by Vibrio	
24	Food items found infected by vibrio	
25	Looking out for Exposure to the identified hazards	
26	Water used by the patient for drinking : (list by type, e.g. tap water, Borehole, unprotected well, protected well, River, dum, lake, pond):	

27	Within 3 days prior to the onset of the disease did the patient drink from	
28	Water source 2 (Yes/No)	
29	Water source 3 (Yes/No)	
30	Water source 4 (Yes/No)	
31	Water source 5 (Yes/No)	
32	Within 3 days prior to the onset of the disease did the patient eat	
33	Food item 1 (Yes/No)	
34	Food item 2 (Yes/No)	
35	Food item 3 (Yes/No)	
36	Food item 4 (Yes/No)	
37	Food item 5 (Yes/No)	
38	Within 3 days prior to the onset of the disease did the patient attend any	
39	funerals (Yes/No)	
40	other social event (Yes/No)	

Annex 11D: Guinea worm - case investigation form

GUINEA WORM ERADICATION PROGRAMME CASE INVESTIGATION FORM FOR GUINEA WORM DISEASE	
Epid No: - - - - C O U - R E G - D I S - Y R - C A S E	<i>To be completed in triplicate</i>
I. Reporting/Investigation Information	
Reporting Village: _____ Zone: _____ District: _____ Region: _____ Date Case Reported: (dd/mm/yyyy) ____/____/____ Reported by: _____ Position: _____ Date Case Investigated: ____/____/____ Investigated by: _____ Position: _____	
II. Patient Information and Place of Residence	
Name: _____ Father's Name/Landlord's Name: _____ Age: _____ Sex: _____ Occupation: _____ Ethnicity _____ Resident Address: Village: _____ Zone: _____ Area/Sub District: _____ District: _____ Region: _____ Setting: Urban/Rural _____ Land Marks: _____ Place of residence is same as the reporting village: YES/NO _____ Residence since when(in months): _____ <input type="checkbox"/> (Please fill BOX "III. Place stayed in the last 10-14 months . ." if the number of months stayed in this box was less than 10.) <input type="checkbox"/>	
III. Place stayed in the last 10-14 months if not the same as above.	
_____ <input type="checkbox"/>	

**GUINEA WORM ERADICATION PROGRAMME
CASE INVESTIGATION FORM FOR GUINEA WORM DISEASE**

Epid No: - - - -

C O U - R E G - D I S - Y R - C A S E

To be completed in triplicate

Village: _____ Zone: _____ Area/Sub District: _____
 District: _____ Region: _____ Country: _____

IV. Travel History of patient in the last 10-14 months

Date From:	Date To:	Village:	Sub District	District:	Region:
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Possible water sources that the patient might have contaminated with location details and GPS:

Name	Latitude	Longitude	Type	Source	Check box if Treated with Abate and Date

**GUINEA WORM ERADICATION PROGRAMME
CASE INVESTIGATION FORM FOR GUINEA WORM DISEASE**

Epid No: - - - -

C O U - R E G - D I S - Y R - C A S E

To be completed in triplicate

_____ <input type="checkbox"/>																												
V. Sign and symptom																												
<p>What was the first sign/symptom before the emergence of worm? Blister/Itching/Swelling/Others,Specify_____</p> <p>Emergence of guinea worm: YES/NO No of Worms:_____ Is this the first guinea worm emerged this year? YES/NO Date of the First guinea worm emerged: / / _____ Was the case detected before worm emerged? YES/NO <input type="checkbox"/> <input type="checkbox"/></p> <p style="text-align: right;"><input type="checkbox"/> <input type="checkbox"/></p>																												
VII. Case Containment Measures and Guinea-worm registry																												
<p>Received any health education: YES/NO Patient entered any water source: YES/NO Place _____ <input type="checkbox"/> <input type="checkbox"/></p> <p>Managed: CCC/Home/Health Centers/Hospital <input type="checkbox"/> <input type="checkbox"/></p> <p>Name of Health Facility/Health Center/Other Centers if patient was hospitalized: _____ Admission Date: _____</p> <p>_____ / _____ / _____ Discharged Date: _____ / _____ / _____ <input type="checkbox"/> <input type="checkbox"/></p>																												
<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">SN.NO.</th> <th style="text-align: left;">Location of worm</th> <th style="text-align: left;">Date worm detected</th> <th style="text-align: left;">Date of guinea-worm</th> <th style="text-align: left;">Date confirmed</th> <th style="text-align: left;">Date of guinea-worm</th> <th style="text-align: left;">Regular</th> </tr> <tr> <th style="text-align: left;">Extracted emergence</th> <th style="text-align: left;">by supervisor:</th> <th></th> <th></th> <th></th> <th style="text-align: left;">completely expelled</th> <th style="text-align: left;">bandaging</th> </tr> </thead> <tbody> <tr> <td>_____</td> <td>_____</td> <td>____/____/____</td> <td>____/____/____</td> <td>____/____/____</td> <td>____/____/____</td> <td></td> </tr> <tr> <td></td> <td></td> <td>____/____/____</td> <td>____/____/____</td> <td>____/____/____</td> <td>____/____/____</td> <td></td> </tr> </tbody> </table>	SN.NO.	Location of worm	Date worm detected	Date of guinea-worm	Date confirmed	Date of guinea-worm	Regular	Extracted emergence	by supervisor:				completely expelled	bandaging	_____	_____	____/____/____	____/____/____	____/____/____	____/____/____				____/____/____	____/____/____	____/____/____	____/____/____	
SN.NO.	Location of worm	Date worm detected	Date of guinea-worm	Date confirmed	Date of guinea-worm	Regular																						
Extracted emergence	by supervisor:				completely expelled	bandaging																						
_____	_____	____/____/____	____/____/____	____/____/____	____/____/____																							
		____/____/____	____/____/____	____/____/____	____/____/____																							

**GUINEA WORM ERADICATION PROGRAMME
CASE INVESTIGATION FORM FOR GUINEA WORM DISEASE**

Epid No: - - - -

C O U R E G - D I S - Y R - C A S E

To be completed in triplicate

_____	_____	___/___/_____	___/___/_____	___/___/_____
_____	_____	___/___/_____	___/___/_____	___/___/_____
_____	_____	___/___/_____	___/___/_____	___/___/_____
_____	_____	___/___/_____	___/___/_____	___/___/_____
		___/___/_____	___/___/_____	___/___/_____

VIII. Specimen Handling

Was a specimen (worm) saved and preserved in alcohol? YES/NO If NO WHY?

Date sent to Region: _____ Received By: _____ Date: ___/___/_____

Received by: _____

Date sent to National: _____ Received By: _____ Date: ___/___/_____

Received by: _____

**GUINEA WORM ERADICATION PROGRAMME
CASE INVESTIGATION FORM FOR GUINEA WORM DISEASE**

Epid No: - - - -

C O U - R E G - D I S - Y R - C A S E

To be completed in triplicate

For National Secretariat Only:

Did you send it for confirmation? Yes/No Date sent: _____ Sent to: _____

Date Result Received _____

Result:

IX. Other Information

Use of cloth filter: YES/NO Frequency of changing filters 1-rarely; 2-sometimes; 3-always; 4-never

Remarks: _____

Person who completed this form:

NAME POSITION CELL PHONE NO SIGNATURE

Disease Control or Surveillance Officer:

Annex 11E : Maternal death - reporting form

Maternal Death Reporting Form	
<i>The form must be completed for all deaths, including abortions and ectopic gestation related deaths, in pregnant women or within 42 days after termination of pregnancy irrespective of duration or site of pregnancy</i>	
Questions / Variables	Answers
1 Country	
2 District	
3 Reporting Site	
4 How many of such maternal deaths occurred cumulatively this year at this site?	
5 Date this maternal death occurred (day/month/year)	
6 Maternal death locality (Village or Town)	
7 Record's unique identifier (year-Country code-District-site-maternal death rank)	
8 Maternal death place (Community, health facility, district hospital, referral hospital or private hospital, on the way to health facility or hospital)	
9 Age (in years) of the deceased	
10 Gravida: how many times was the deceased pregnant?	
11 Parity: how many times did she deliver a baby of 22 weeks/500g or more?	
12 Time of death (specify "During pregnancy, At delivery, during delivery, during the immediate post partum period, or long after delivery")	
13 If abortion: was it spontaneous or induced?	
Maternal death history and risk factors	
14 Was the deceased receiving any antenatal care? (Yes/No)	
Did she have Malaria? (Yes or No)	
15 Did she have Hypertension? (Yes or No)	
16 Did she have Anaemia? (Yes or No)	
17 Did she have Abnormal Lie? (Yes or No)	
18 Did she undergo any Previous Caesarean Section? (Yes or No)	
19 What was her HIV Status? (choose "HIV+; HIV-; or Unknown HIV status")	
Delivery, puerperium and neonatal information	
20 How long (hours) was the duration of labor	

Maternal Death Reporting Form	
<i>The form must be completed for all deaths, including abortions and ectopic gestation related deaths, in pregnant women or within 42 days after termination of pregnancy irrespective of duration or site of pregnancy</i>	
Questions / Variables	Answers
21	What type of delivery was it? (choose one from "1=Vaginal non assisted delivery, 2= vaginal-assisted delivery (Vacuum/forceps), or 3=Caesarean section"
22	What was the the baby status at birth? (Alive or Stillborn)
23	In case the baby was born alive, is he/she still alive or died within 28 days after his/her birth? (choose 1=Still alive, 2=neonatal death, 3=died beyond 28 days of age)
24	Was the deceased referred to any health facility or hospital? (Yes/No/Don't know)
25	If yes, how long did it take to get there? (hours)
26	Did the deceased receive any medical care or obstetrical/surgical interventions for what led to her death?
27	If yes, specify where and the treatment received*
28	Primary cause of the Maternal Death
29	Secondary cause of the Maternal Death
30	Analysis and Interpretation of the information collected so far (investigator's opinion on this death)
31	Remarks
32	Maternal death notification date (day/month/year)
33	Investigator (Title, name and function)
	* <u>Treatment received</u>
	I.V. Fluids; Plasma; Blood Transfusion; Antibiotics; Ocytocin; Anti-seizure drugs; Oxygen; Anti-malarial; Other medical treatment; Surgery; Manual removal of placenta; Manual intra uterine aspiration; Curettage, laparotomy, hysterectomy, instrumetal delivery (Forceps; Vacuum), Caesarian section, anesthesia (general, spinal, epidural ,
	<u>Definitions</u>
	Gravida: The number of times the woman was pregnant- Parity: Number of times the woman delivered a baby of 22 weeks/500g or more, whether alive or dead

Annex 11F: Measles case investigation form

EPID No. **Lab No.**_____ (For Lab Use Only).

Demographic Details

District of onset _____ Reporting Health Unit _____

Name of Patient _____ Sex _____

Age (in months) _____ Date of Birth / / _____

Home: Name of head of household where the child lives: _____

Guardian's occupation _____ Sub-county _____ LC1 (zone) _____

District _____ Parish LC 1 Chairman's name _____

Clinical History

Date of this visit / /

Symptoms: (circle as appropriate)

In/Out Patient ____ (1 = In-patient, No _____)

(2 = Out-patient, No _____)

Fever: Yes/No Date of onset / / Rash: Yes/No Date of onset / /

Temperature _____ degrees

Cough: Yes/No Red eyes: Yes/ No Running nose: Yes/No

Other complications: Yes/NO, If yes, specify _____

Outcome: _____ (1 = Alive 2 = Dead 3 = Unknown)

Date Health Unit Notified District _____ / / _____

Was vitamin A given during the current illness Yes/No No of doses _

Immunisation History Card seen/not seen

7. Number of measles doses _____ Date of last measles vaccination / /

8. Diagnosis written in the register _____

Specimens

Blood:

Date of collection Date sent to the lab Date received Specimen condition

/ / Urine:

___ / ___ / ___

___ / ___ / ___

Date of collection Date sent to the lab Date received Specimen condition

___ / ___

Investigators

___ / ___ / ___

___ / ___ / ___

Name: (person filling form) _____ Title _____ Date ___ / ___ / ___

--

ResultsSerology: IgM___

Date ___ / ___ / ___

Date sent to EPI

___ / ___ / ___

Virus Isolation: Urine _____ Date ___ / ___ / ___

Final Classification(1 = confirmed, 2 = Epidemiological linkage, 3 = Probable/Compatible, 4 = Discarded, 5 = Suspected)

Date results sent to district ___ / ___ / ___

Annex 11G: Neonatal Tetanus case investigation form

District: _____ Health Facility: _____

NEONATAL TETANUS CASE DEFINITION: An infant with history of all 3 of the following: (1) normal suck and cry for first 2 days of life (2) onset of illness between 3 and 28 days of life (3) inability to suck followed by generalized stiffness and/or spasms.

PATIENT IDENTIFICATION

1. FIRST NAME: _____

3. Date of birth /__/_/____

2. SECOND NAME: _____

4. AGE: _days 5. Sex (M/F)

6. PARENTS: MOTHER'S NAME _____

FATHER'S NAME: _____

RESIDENCE: District _____ Sub-county: _____

Parish _____ LC1: _____

CLINICAL INFORMATION

8. DATE OF ADMISSION or FIRST SEEN AT HEALTH UNIT / __ / __

9. DATE OF ONSET OF SYMPTOMS: __ __ / __ __ / ____

10. SYMPTOMS: (1=Yes 2= No 3= Unknown)

History of normal suck and cry the first 2 days of life

Inability to suck

Fever	Stiffness	Difficulty	in
breathing	Convulsions	Pneumonia	

11. OUTCOME: (1=Died; 2=Survived 9=Unknown)

12. DATE OF DISCHARGE/DEATH: /__ / ____

DELIVERY

13. PLACE OF DELIVERY _____ If a health facility, record the name of the facility.

1= Hospital _____ 2= Health centre _____ 3= Home

14. BIRTH ATTENDANT

- 1= Doctor 4=TBA
- 2=Nurse 5=Midwife

8= Other _____

9= Unknown

3=Friend or Relative 8=Other _____

9=Unknown

15. ON WHAT SURFACE WAS THE BABY DELIVERED

- 1=Cloth 4=Ground, Outside
- 2=Uncovered table 8=Other
- 3=Uncovered floor 9=Unknown

16. WHAT WAS USED TO CUT THE CORD?

1=Razor blade 8=other

2=Knife

9=Unk

nown 3=Scissors

17. WHAT WAS APPLIED TO THE CORD STUMP?

1=Soap & unboiled

water 5=Ashes

2=Soap & boiled water 6= Nothing

3=Antiseptic 8=Other _____

4=Cow dung 9=Unknown

MOTHER

18. WHAT IS THE MOTHER'S AGE?

19. EDUCATION (last school year completed):

- 1= None 3=Secondary (1-6
- 2=Primary (1-7 years) 4=Post-Secondary

20. OCCUPATION:

1=Housewife 3= Office

2=Market vendor 4= Other _____

ANTENATAL CARE (ANC)

21. BIRTH ORDER FOR THIS CHILD

22. DID THE MOTHER RECEIVE ANC DURING THIS

PREGNANCY? (1=Yes 2=No 0=Unknown)

23. IF YES, HOW MANY VISITS?

24. IF YES WHAT KIND OF FACILITY?

Name _____

1=Government

4=Private Midwife

2=NGO clinic 5=TBA
 3=Private Doctor 8=Other _____
 9=Unknown

TETANUS TOXOID IMMUNIZATION

25. IMMUNIZATION RECEIVED

(1=Yes by card 2=Yes
 by history 3= No
 9=Unknown)

<u>DOS</u>	<u>DATE OF</u>	<u>NAME OF IMMUNIZATION</u>
TT1	____/____/____	_____
TT2	____/____/____	_____
TT3	____/____/____	_____
TT4	____/____/____	_____
TT5	____/____/____	_____

Note: If the TT card is not available, record the month and year of any doses that the mother says that she has received based on the interview with the mother.

REMARKS

PERSON RECORDING _____ TITLE _____ Date ____/____/____

Annex 11H New-born Perinatal Death Audit Form.

A copy of this form should be sent to the Ministry of Health

HMIS 010b:

Date of Audit.....

1. SECTION ONE: Identification

1.1 IPNO. (Mother): 1.1.2 IP No. (Newborn).....

1.2 Name of the Health Facility:

1.3 Type of Health Facility (tick)

National Referral	Regional Referral	General	HC IV	HC III	Others
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1.4 District.....

1.5 Mother's initials 1.5.2 Age: (yrs) 1.5.3

Address:.....

1.6 Was baby referred? 1. Yes 2. No

1.7 If Yes; from? 1. Hospital 2. HC 3. VHT 4. TBA

5. Others (specify).....

1.8 If referred from health facility, name of the facility

2. SECTION TWO: Pregnancy progress and Care

1.1 Mother's Parity + 2.1.2 No. of mother's living children

1.2 Type of pregnancy 1. Singleton Twin

1.3 Attendance of Antenatal care: 1. Yes 2. No

2.5 Core ANC Interventions (tick appropriately)

2.4 If yes how many times

2.5.1 Malaria prophylaxis: 1. IPT1 2. IPT2 3. IPT3

2.5.2 Tetanus Toxoid: 1. TT1 2. TT2 3. TT3

2.5.2 HIV test done 1. Yes 2. No

2.5.3 HIV test results 1. -ve 2. +ve

2.5.4 If HIV positive: 1. On ARVs 2. Not on ARVs

2.5.3 Syphilis test done; 1. Yes 2. No 2.5.4 Syphilis test results 1. -ve 2. +ve

2.6 Conditions in present pregnancy (tick all applicable)

- | | | |
|--|---|---|
| 1. Antepartum Hemorrhage membranes <input type="checkbox"/> | 2. Hypertension <input type="checkbox"/> | 3. Pre-labour rupture of membranes <input type="checkbox"/> |
| 4. Diabetes <input type="checkbox"/> | 5. Anaemia <input type="checkbox"/> | 6. UTI <input type="checkbox"/> |
| 7. Malaria violence <input type="checkbox"/> | 8. Trauma-accidental <input type="checkbox"/> | 9. Trauma –gender-based <input type="checkbox"/> |
| 10. Multiple pregnancy specify..... <input type="checkbox"/> | 11. Others <input type="checkbox"/> | |

N.B. If multiple pregnancy, indicate birth order of the newborn . Fill separate form for each perinatal death

3. SECTION THREE: Labour and Birth

- 3.1 Weeks of amenorrhea at delivery 3.1.2 Date of delivery
- 3.2 Place of delivery 1. Health facility 2. Home 3. TBA

3.2.1 If health facility specify name

- 3.3 On admission, were there fetal sounds present? 1. Yes 2. No 3. Not assessed

- 3.4 Was partograph used? 1. Yes 2. No 3. Unknown

If 'Yes' was partograph used correctly? 1. Yes 2. No If No mention error.....

- 3.5 Mode of Delivery: 1. Normal Delivery 2. Caesarean Section 3. Vacuum or Forceps 4. Others specify:

.....

3.5.2 Indication for Instrumental /or Caesarean section:

.....

3.6 Time between decisions for Cesarean section /instrumental and actual delivery of the baby:

1. Less than 30 minutes 2. 30 minutes - 1 hour 3. Greater than 1 hour

3.6.1 Did vaginal delivery occur in spite of decision to do caesarean section? 1. Yes 2. No

3.7 Condition of the Baby

3.7.1 Apgar score at 1 min At 5min At 10min Don't know

3.7.2 Resuscitation done: 1. Yes 2. No

3.7.3 If 'Yes' what was done? 1. Stimulation 2. Suction 3. Oxygen given 4. Bag and Mask

5. Endotracheal and Positive pressure ventilation 6. CPR 7. Medication 8. All
 3.7.4 Resuscitation done by: 1. Doctor 2. Nurse 3. Trainee
 (doctor/ nurse) 4. Others (specify):

3.7.5 Weight of the baby: gms 3.7.6 Sex: 1. Male 2. Female

3.8 Type of Perinatal Death

3.8.1. Fresh Still Birth 2. Macerated still Birth 3. Neonatal Death

If neonatal death, reason for admission/ diagnosis at admission (Tick all applicable)

1. Difficult feeding (baby) 2. Difficult breast feeding (mother) 3. Jaundice 4.
 Anaemia
 5. Difficult breathing 6. Hypoglycaemia 7. Septicaemia 8.
 Hypothermia
 9. Bulging fontanelle 10. Fever 11. Convulsions 12.
 Bleeding Other conditions specify:

.....

3.9 Probable cause of death: Tick all applicable

Code	Cause of death	Code	Cause of death
A 33	Tetanus	Q 80	Congenital Anomalies
P 36	Septicaemia		Other - specify.....
P 15	Birth trauma		
P 22	Birth Asphyxia		
P 07	*Prematurity complications specify.....		
			Unknown

**Premature: Born after 28 weeks but before 37 weeks of gestation*

Avoidable factors/missed opportunities/substandard care. Which of the following factors were present (tick all appropriate)

1. Delay to seek health care	<input type="checkbox"/>
2. Delay to reach the health facility	<input type="checkbox"/>
3. Delay to provide care	<input type="checkbox"/>
4. Absence of critical human resources	<input type="checkbox"/>
5. Lack of resuscitation equipment	<input type="checkbox"/>

6. Lack of supplies and drugs including blood	
7. Misdiagnosis	
8. Inappropriate intervention	
9. Poor documentation	
10. Others specify	

Comments on avoidable factors and missed opportunities:

.....

Actions taken to address the avoidable problems

.....

CONFIRMATION OF DETAILS

The form was completed by: Name: -----Tel: -----

Email: ----- Date: -----Signature: -----

Annex 11I: Tuberculosis - MDR and XDR TB - case-based reporting form

Case based Multi-Drug Resistant and Extensively Drug Resistant Tuberculosis Report Form																													
Country:													Year:																
Quarter:													Month:										Drug Susceptibility Test Results						
													(S=sensitive; R=Resistant; I=intermediate; U=unknown)																
Case unique Identifier (Detection year-Country code- Number in Tb Register)	Sex (F/M)	Age (Year)	Date of Diagnosis (dd/mm/yyyy)	Type of Notification (MDR- TB* or XDR-TB**)	TB Site (Pulmonary or extra Pulmonary)	Type of TB Case (New /Relapse /After default /After failure of first treatment /After failure of treatment /Not on treatment /Don't Know)	HIV Status (positive /negative /Unknown)	H	R	E	Z	S	Th	Am	Km	Cm	Cfx	Ofx	Lfx	Mfx	Gfx	Gfx	Pto	Eto	Cs	PAS	Other (Specify)		

* **Multi-drug Resistant TB** = Resistance to at least Isoniazid and Rifampicin

****Extensively Drug Resistant TB** = MDR-TB plus: Resistance to any fluoroquinolone such as Ciprofloxacin, Oxfloracin, etc, and Resistance to at least one of the three second line injectable anti-TB drugs (Capreomycin, Kanamycin and Amikacin).

First-line drugs: H = Isoniazid R = Rifampicin E = Ethambutol Z = Pyrazinamide S = Streptomycin Th = Thioacetazone

Second-line drugs: Am=Amikacin Km=Kanamycin Cm=Capreomycin Cfx=Ciprofloxacin Ofx=Ofloxacin Lfx=Levofloxacin Mfx=Moxifloxacin Gfx=Gatifloxacin Pto=Protionamide Eto=Ethionamide Cs=Cycloserine PAS=P-aminosalicylic acid

Annex 11J Viral haemorrhagic fever - case reporting form

IDSR Viral Hemorrhagic Fever Case Report Form		
Variables / Questions		Answers
1	Detection day (ddmm/yyyy)	
2	Detection place (Health facility or Community)	
3	Patient identification number (yyyy-week-CCC- PPP-DDD-Reporting site-nnn)	
4	Patient surname or last name	
5	Patient first name(s)	
6	Age (years)	
7	Sex (F/M)	
8	Number of people in same household	
9	Number of other contacts	
10	Patient's residential address	
11	Village/Town	
12	Neighborhood	
13	District	
14	Province	
15	Country	
16	Date of first symptoms onset (dd/mm/yyyy)	
17	Observed Symptoms and Clinical signs	
18	Was patient exposed to any known risk factor for this disease? (Yes/No)	
19	If yes, specify risk factor(s)	
20	Lab results	
21	Final Classification (Not a case, Suspect, Probable, Confirmed by Lab, Confirmed by epidemiological link, Pending)	
22	Outcome (Died, Survived, Unknown)	
23	End of latest contact followed-up (dd/mm/yyyy)	
24	Other Notes and Observations	
25	Date latest update of this record (dd/mm/yyyy)	

Annex 11K: Viral Haemorrhagic Fever Case Investigation Form



UGANDA VIRAL HEMORRHAGIC FEVER CASE INVESTIGATION FORM

Send completed form and laboratory samples to:
UVRI/CDC, Attn: Viral Hemorrhagic Fever Laboratory
Plot 51-59 Nakivubo Rd., P.O. Box 49, Entebbe, Uganda
Contact #: 0600 264364 (VHFUG) (Toll Free)

MoH/UVRI
Case ID:

Health
Facility
Case ID:

Date of Case Report: ___/___/___ (dd, mm, yyyy - Example: 19 / 12 / 2018)

Section 1. Patient Information

Patient's Surname: _____ Other Names: _____ Age: _____ Years Months
Gender: Male Female Phone Number of Patient/Family Member: _____ Owner of Phone: _____

Status of patient at time of this case report: Alive Dead If dead, Date of Death: ___/___/___ (dd, mm, yyyy)

Permanent residence:

Head of Household: _____ Village/Town: _____ Parish: _____
Sub-County: _____ District: _____ Country of Residence: _____

Occupation:

Farmer Butcher Hunter/trader of game meat Miner Religious leader Housewife Pupil/student Child
 Businessman/woman; type of business: _____ Transporter; type of transport: _____
 Healthcare worker; position: _____ healthcare facility: _____ Traditional healer
 Other; please specify occupation: _____

Location where patient became ill:

Village/Town: _____ Sub-County: _____ District: _____
GPS Coordinates at House: latitude: _____ longitude: _____

If different from permanent residence, Dates residing at this location: ___/___/___ - ___/___/___ (dd, mm, yyyy)

Section 2. Clinical Signs and Symptoms

Date of initial symptom onset: ___/___/___ (dd, mm, yyyy)

Please tick an answer for ALL symptoms indicating if they occurred during this illness between symptom onset and case detection:

Fever Yes No Unknown
If yes, TEMP: _____ °C Source: Axillary Oral Rectal
Vomiting/nausea Yes No Unknown
Diarrhea Yes No Unknown
Intense fatigue/general weakness Yes No Unknown
Anorexia/loss of appetite Yes No Unknown
Abdominal pain Yes No Unknown
Chest pain Yes No Unknown
Muscle pain Yes No Unknown
Joint pain Yes No Unknown
Headache Yes No Unknown
Cough Yes No Unknown
Difficulty breathing Yes No Unknown
Difficulty swallowing Yes No Unknown
Sore throat Yes No Unknown
Jaundice (yellow eyes/gums/skin) Yes No Unknown
Conjunctivitis (red eyes) Yes No Unknown
Skin rash Yes No Unknown
Hiccups Yes No Unknown
Pain behind eyes/sensitive to light Yes No Unknown
Coma/unconscious Yes No Unknown
Confused or disoriented Yes No Unknown

Unexplained bleeding from any site Yes No Unknown

If Yes:

Bleeding of the gums Yes No Unknown
Bleeding from injection site Yes No Unknown
Nose bleed (epistaxis) Yes No Unknown
Bloody or black stools (melena) Yes No Unknown
Blood or "coffee grounds" in vomit (hematemesis) Yes No Unknown
Coughing up blood (hemoptysis) Yes No Unknown
Bleeding from vagina, other than menstruation Yes No Unknown
Bruising of the skin (petechiae/ecchymosis) Yes No Unknown
Blood in urine (hematuria) Yes No Unknown

Other hemorrhagic symptoms Yes No Unknown
If yes, please specify: _____

Other non-hemorrhagic clinical symptoms:

Yes No Unknown
If yes, please specify: _____

Section 3. Hospitalization Information

At the time of this case report, is the patient hospitalized or currently being admitted to the hospital? Yes No

If yes, Date of Hospital Admission: ___/___/___ (dd, mm, yyyy) Health Facility Name: _____

Village/Town: _____ Sub-County: _____ District: _____

Is the patient in isolation or currently being placed there? Yes No If yes, date of isolation: ___/___/___ (dd, mm, yyyy)

Was the patient hospitalized or did he/she visit a health clinic previously for this illness? Yes No Unknown

If yes, please complete a line of information for each previous hospitalization:

Dates of Hospitalization	Health Facility Name	Village	District	Was the patient isolated?
___/___/___ - ___/___/___ (dd, mm, yyyy)				<input type="checkbox"/> Yes <input type="checkbox"/> No
___/___/___ - ___/___/___ (dd, mm, yyyy)				<input type="checkbox"/> Yes <input type="checkbox"/> No

Section 4. Epidemiological Risk Factors and Exposures

IN THE PAST ONE(1) MONTH PRIOR TO SYMPTOM ONSET:

1. Did the patient have contact with a known or suspect case, or with any sick person before becoming ill? Yes No Unk
If yes, please complete one line of information for each sick contact:

Name of Contact	Relation to Patient	Dates of Exposure (dd, mm, yyyy)	Village	District	Was the person dead or alive ?	Contact Types**
		___/___/___ - ___/___/___			<input type="checkbox"/> Alive <input type="checkbox"/> Dead, date of death: ___/___/___ (D, M, Y)	
		___/___/___ - ___/___/___			<input type="checkbox"/> Alive <input type="checkbox"/> Dead, date of death: ___/___/___ (D, M, Y)	
		___/___/___ - ___/___/___			<input type="checkbox"/> Alive <input type="checkbox"/> Dead, date of death: ___/___/___ (D, M, Y)	

****Contact Types:** (list all that apply)
 1 – Touched the body fluids of the case (blood, vomit, saliva, urine, feces)
 2 – Had direct physical contact with the body of the case (alive or dead)
 3 – Touched or shared the linens, clothes, or dishes/eating utensils of the case
 4 – Slept, ate, or spent time in the same household or room as the case

2. Did the patient attend a funeral before becoming ill? Yes No Unknown

If yes, please complete one line of information for each funeral attended:

Name of Deceased	Relation to Patient	Dates of Funeral Attendance (dd, mm, yyyy)	Village	District	Did the patient participate (carry or touch the body)?
		___/___/___ - ___/___/___			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
		___/___/___ - ___/___/___			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown

3. Did the patient travel outside their home or village/town before becoming ill? Yes No Unknown
If yes, Village: _____ District: _____ Date(s): ___/___/___ - ___/___/___ (dd, mm, yyyy)

4. Was the patient hospitalized or did he/she go to a clinic or visit anyone in the hospital before this illness? Yes No Unk
If yes, Patient Visited: _____ Date(s): ___/___/___ - ___/___/___ (dd, mm, yyyy)
Health Facility Name: _____ Village: _____ District: _____

5. Did the patient consult a traditional/spiritual healer before becoming ill? Yes No Unk
If yes, Name of Healer: _____ Village: _____ District: _____ Date: ___/___/___ (dd, mm, yyyy)

6. Did the patient have direct contact (hunt, touch, eat) with animals or uncooked meat before becoming ill?
If yes, please tick relevant box(es) below: Yes No Unknown

Animal:		Status (check one only):	
<input type="checkbox"/> Bats or bat feces/urine	<input type="checkbox"/> Healthy <input type="checkbox"/> Sick/Dead	<input type="checkbox"/> Chickens or wild birds	<input type="checkbox"/> Healthy <input type="checkbox"/> Sick/Dead
<input type="checkbox"/> Primates (monkeys)	<input type="checkbox"/> Healthy <input type="checkbox"/> Sick/Dead	<input type="checkbox"/> Cows, goats, or sheep	<input type="checkbox"/> Healthy <input type="checkbox"/> Sick/Dead
<input type="checkbox"/> Rodents or rodent feces/urine	<input type="checkbox"/> Healthy <input type="checkbox"/> Sick/Dead	<input type="checkbox"/> Other <i>Please specify</i> _____	<input type="checkbox"/> Healthy <input type="checkbox"/> Sick/Dead
<input type="checkbox"/> Pigs	<input type="checkbox"/> Healthy <input type="checkbox"/> Sick/Dead		

7. Did the patient get bitten by a tick in the past 2 weeks? Yes No Unknown

8. Did the patient skin and/or eat bush meat in the past 21 days? Yes No Unknown

Section 5. Clinical Specimens and Laboratory Testing

Sample 1: Sample Collection Date: ___/___/___ (dd, mm, yyyy) Sample Collection Time: ___/___ (Hrs. Min) – <input type="checkbox"/> AM <input type="checkbox"/> PM Sample Type: <input type="checkbox"/> Whole Blood <input type="checkbox"/> Post-mortem heart blood <input type="checkbox"/> Skin biopsy <input type="checkbox"/> Other specimen type, specify: _____	Sample 2: Sample Collection Date: ___/___/___ (dd, mm, yyyy) Sample Collection Time: ___/___ (Hrs. Min) – <input type="checkbox"/> AM <input type="checkbox"/> PM Sample Type: <input type="checkbox"/> Whole Blood <input type="checkbox"/> Post-mortem heart blood <input type="checkbox"/> Skin biopsy <input type="checkbox"/> Other specimen type, specify: _____
--	--

Malaria RDT: POS NEG NOT DONE HIV RDT: POS NEG NOT DONE

Send specimens to:
Uganda Virus Research Institute/CDC
Attn: Viral Special Pathogens Branch,
Plot 51-59 Nakiwogo Rd., P.O. Box 49, Entebbe, Uganda
Phone: 0800 284384 (VHFUG) (Toll Free)

Specimen/shipping instructions:
 • Label sample with patient name, date of collection, and case ID
 • Send sample cold with a cold/ice pack, and packaged appropriately.
 • Collect whole blood in a purple top (EDTA) tube – green or red top tubes acceptable if purple not available
 • Preferred sample volume = 4 ml (minimum sample volume = 2ml)

Section 6. Case Investigation Form completed by:

Name: _____ Phone: _____ E-mail: _____
 Position: _____ District: _____ Health Facility: _____
 Information provided by: Patient Proxy; If proxy, Name: _____ Relation to Patient: _____

Annex 11L: Human Anthrax Case Investigation Form

Anthrax Disease Investigation form
(Please refer to the Disease Investigation Guideline for additional guidance.)

Patient Name: _____ **DOB:** ___/___/___ **CASE ID:** _____

District: **Sub county:**.....**Parish:**..... **Village:**

Date of Onset: ___/___/___ **First Symptom experienced:** _____
Status: Hospitalized; **Location:** _____ **Admit:** ___/___/___ **Discharge:** ___/___/___
Treatment given if any: _____

Died; date of death: ___/___/___ **GPS Coordinates : LAT:**.....**LONG:**.....

Patient contact: _____ **Time:**..... **Date of investigation** _____

Symptom Information				
Symptoms	Yes	No	Unk	Comments / Specifics
Fever				Max. temp:
Headache				
Malaise, severe				
Myalgia				
Stiff Neck				
Abdominal Pain				
Nausea				
Vomiting				
Diarrhea				
Eschar				Location
Edema (swelling)				:
Lymphadenopathy				Location
Other Skin lesions / Rashes				:
Abnormal chest x-ray				Describe:
Breathing difficult (Shortness of				
Cough unproductive				
Upper respiratory symptoms				
Other symptoms (list):				
Initial Laboratory Testing				
Test Type	Specimen	Collection	Laboratory	Obtain Copy of Results
				If not previously reported, send copies of any results to Tel:

1. Contact at Hospital: _____ Date: __/__/__ Time: __
2. Additional Contacts: _____ Phone: _____ Phone _____
3. Details on specimen being sent (i.e., type, where, when, how):

Anthrax Investigation form
 (Please refer to the Disease Investigation Guideline for additional guidance.)

Initial Information to Collect (Activities 6 weeks before onset)				
Initial questions	Yes	No	Unk	If yes, describe
4. Is any information available on the patient's occupation?				(Exact duties, type of business/industry and location)
2. Does the patient own, work with or around livestock or wild mammals or their body fluids?				(specify animals and describe exposure, including dates of)
3. Do you have animals recently brought on your farm? If yes, where and when?				
4. Do you have any animals that have died recently in this home? If yes how many and what signs presented before death?				
5. Has the patient had any contact with animal skins, furs, hair, or bone products?				
6. Does the patient garden, work with soil?				
7. Does the patient work in a clinical or microbiological				
8. Has the patient been involved in activities of hunting wild animals?				If yes, when and where?.
9. Did the patient involve him/herself in animal slaughter?				If yes, date of slaughter __/__/__; location:
10. For GI symptoms, has the patient eaten any animal died instantly /suddenly?				

<p>11. If no additional risk factors are identified, review patient activities the past 6 weeks. Has the patient:</p> <ul style="list-style-type: none"> a. Attended large gathers or special events? f. Had recent contact or visited an elected official or government office? 			
<p>12. Have any household members or close contacts experienced similar symptoms recently?</p>			<p>If yes, use general investigation contact form for documentation.</p>

LIST OF ALL HUMAN CASES IN THE HOME

NO	NAME	SEX	AGE	SYMPTOMS	DATE OF ONSET	OCCUPATION	TRAVEL HISTORY

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