Handbook for public health capacity-building at ground crossings and cross-border collaboration

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ACRONYMS

EBS	Event-based surveillance
EWAR	Early warning and response
IDSR	Integrated Disease Surveillance and Response
IHR	International Health Regulations (2005)
IMO	International Maritime Organization
NGO	Nongovernmental organization
PHEIC	Public health emergency of international concern
POE	Point(s) of entry
PPE	Personal protective equipment
SOP	Standard operating procedure
WASH	Water supply, sanitation, and hygiene promotion
WHO	World Health Organization

Introduction

Rationale

The International Health Regulations 2005 (IHR) stipulate that States Parties should designate airport(s) and port(s) that will meet the core capacities, as laid out in Annex 1 of the IHR. However, the regulations only "suggest" that a State Party may designate ground crossings "where justified for public health reasons" (Articles 19, 20 and 21) and "encourage" neighbouring countries to cooperate by entering into bilateral or multilateral agreements/arrangements concerning prevention or control of the international transmission of disease, or by joint designation for developing IHR ports of entry (POE) capacities.

Ground crossings are predominantly characterized by more complex and varied environments than settings at other POE such as airports and seaports. Ground crossings often represent larger cross-border communities with strong family and commercial ties, where travellers may frequently – even daily – traverse a porous border. Persons crossing these borders may use a large variety of transport ranging from trains, trucks (lorries), buses, automobiles, motorcycles or bicycles to animals or even passing through on foot. Depending on the populations served by ground crossings, the volume of traffic may fluctuate or vary from tens of thousands to fewer than 50 persons per day. The infrastructure and resources available to competent authorities at a ground crossing can differ widely. Some crossings have sustained electricity and large, modern technologically-equipped facilities with sufficient staffing, while others may consist of only a simple makeshift gate intermittently staffed by one or two persons along a rural frontier with no electricity or cell phone connections, and yet others may be no more than a known location on an open road or footpath were the land changes from one country to another. Given extensive terrestrial frontiers and geographical constraints, ground crossings may be both formal or informal, the latter far outnumbering the former. Finding sufficient technical staff for such crossings is a significant challenge. The variety of governmental and nongovernmental stakeholders concerned with ground crossings includes authorities for border policy and regulations for commerce, immigration, security, animal health. This range of stakeholders, when coupled with the differing geographical, sociodemographic, infrastructure and resource factors, often presents challenges in developing the necessary capacities and collaborative partnerships for coordination and action within countries and across borders.

Because international travel and traffic occurs at any active ground crossing, even if non-designated, these unique and varied settings pose substantial challenges to consistent implementation of the IHR. Consequently, ground crossings present a potential weak point in global health security and therefore pose greater challenges for implementing the IHR consistently.

States Parties require guidance on how to implement the IHR core capacity for prevention, early detection and response to public health events at these often less-resourced POEs. The guidance must include consideration of how States Parties

select ground crossings for designation under the IHR framework and what measures they can take to achieve and sustain the IHR core capacities in varied contexts. Given the paucity of available global guidance, this handbook presents a unique opportunity to address the specific challenges and needs of ground crossings and their adjacent communities. Drawing upon established guidance, the handbook seeks not to replicate existing literature on POEs but rather to assemble and frame the technical knowledge on ground crossings, and to support neighbouring countries to enter into cross-border collaborative agreements whenever possible.

The handbook presents the key considerations for strengthening IHR capacities at ground crossings, including considerations for cross-border collaboration.

Purpose of this handbook

This handbook follows a comprehensive approach to health system strengthening at borders in order to support IHR national focal points and other national agencies in developing and implementing evidence-based action plans for IHR capacity development at ground crossings. The approach includes the movement of travellers and baggage, cargo, containers, conveyances, goods and postal parcels across ground crossings, as well as the interaction with adjacent border communities. Other factors can be considered, if needed, throughout the risk assessment.

Specifically, the objectives of the handbook are:

- to introduce principles of strategic risk assessment for prioritizing capacity-building for preparedness and response at ground crossings;
- to highlight issues to consider when selecting ground crossings for designation under the IHR;
- to support the establishment and maintenance of cross-border collaboration in order to improve coordination and communication at ground-crossing settings.

Drawing extensively from previously published guidance documents and reports in relation to ground crossings, this handbook was developed in collaboration with public health experts during successive consultative meetings, discussions and field-testing. Furthermore, experts on the subject from WHO's six regions were consulted to provide input and share best practices.

For the purpose of this document, a "ground crossing setting" is considered to be a structured ground crossing with administrative controls and adjacent communities. However, the content and principles for strategic risk assessment and the identification and prioritization of development and maintenance of the core capacities for public health purposes may be used for diverse ground-crossing settings, including porous borders.

This document excludes guidance on mass migration across ground crossings.

Target audience

Stakeholders with public health roles and responsibilities at ground crossings are not limited to the public health sector but also include other governmental, nongovernmental and private sectors and disciplines. This multi-stakeholder approach is not limited to those who are involved in the response to and management of public health events but may also include groups and organizations (governmental and nongovernmental) that can contribute to response measures.

The target audience of this handbook therefore includes:

- the IHR National Focal Point (IHR NFP);
- competent authorities responsible for implementing the IHR at ground crossings;
- government officials and representatives of nongovernmental organizations who regularly communicate and coordinate with competent authorities at ground crossings (e.g. on immigration, security and customs);
- policy-makers who may have the ability to develop new policies and laws to facilitate the practical implementation of the IHR at ground crossings and in adjacent border communities;
- public health professionals involved in disease surveillance, health communication, emergency preparedness and response, animal health, environmental health etc. at ground crossings and in adjacent border communities;
- representatives of nongovernmental organizations working in border areas and adjacent communities.

Overview/How to use this guide

This handbook is divided into two parts.

In **Part A**, each of the planning and operational chapters represents a stand-alone technical section which may be consulted separately or in conjunction with related chapters. The sequence of the chapters in Part A therefore presents operational modalities to:

- establish and strengthen capacities at ground crossings, beginning with carrying out a strategic risk assessment to ascertain public health needs and required resources, and
- guide the work of all relevant stakeholders if a country decides to designate a particular ground crossing.

The **Part B** outlines the fundamental tenets for enabling and enhancing cross-border collaboration, in addition to operational considerations. Each chapter includes toolboxes presenting complementary resources, technical considerations and examples of cross-border collaboration.

The annexes contain information which should be used together with the technical chapters.

Part A: Operational considerations for developing public health emergency preparedness and response capabilities at ground crossings

2.1 Strategic risk assessment and planning for risk mitigation

2.1.1 Overview

Given that ground crossings have diverse contexts, the public health risks are varied. Consequently, capacities for public health preparedness and response should be established and strengthened commensurate with the identified risk, presenting a cost-effective and evidence-based approach to management of national resources for IHR capacity development at prioritized ground crossings.

A strategic risk assessment is a recommended approach to inform the process of prioritization and resource allocation at ground crossings. The strategic risk assessment is a systematic process for gathering, assessing and documenting information to assign a level of risk. Ultimately, the strategic risk assessment will help inform decisions by national authorities regarding improvement of capacities to reduce the risk or impact of identified public health risks such as those associated with the international movement of persons, baggage, cargo, containers, conveyances, goods or postal parcels across ground crossings and nearby border communities.

The health impact of a public health emergency can be substantially reduced if ground crossings, local authorities and adjacent communities are well prepared to reduce the vulnerabilities and health implications of significant risks that are specific to a ground crossing. This reduction can be achieved if systematic capacities – such as emergency preparedness and response plans, institutional capacities and sustainable budgets, skilled personnel, public awareness, cross-border cooperation/coordination mechanisms, and procedures for risk-mapping, surveillance and response to diseases and events – are developed and maintained.

2.1.2 Operational guidance

(Note: This section is not intended to provide guidance on the strategic risk assessment process during an acute public health event)

2.1.2.1 Strategic risk assessment for ground crossings

The strategic risk assessment should consider not only the context of the physical ground crossing but also the collaborative frameworks between neighbouring countries that would address movement across land borders and the interaction with adjacent border communities.

The strategic risk assessment comprises a set of linked but separate assessments, namely:

- the hazard assessment to identify prioritized hazards;
- the vulnerability assessment to determine which characteristics or circumstances of a community or a system make it susceptible to the ongoing effects of the hazard;

- the severity and coping capacity assessment to identify potential consequences of the hazard and to assess capabilities to cope with and manage the hazard;
- the likelihood assessment to determine the likelihood that the hazards and exposures will occur.

How to conduct a strategic assessment of risk at ground crossings

- **Establish a risk assessment team:** The multisectoral team should consist of experts in border health strategies and persons with local knowledge about the targeted environment. These person may include public health experts from national, regional or local public health authorities; persons from other government departments such as agriculture, customs, security and transportation; representatives from the ground-crossing facility; and leaders from the local community and religious and social groups. This team will use its collective experience and expertise to provide, gather and interpret qualitative results from the assessments. Additional members with valuable expertise (such as veterinarians) can be added to the team at any time as required.
- **Perform the assessment:** The strategic risk assessment team completes the separate risk assessments by carrying out desk reviews and facilitated discussions with key stakeholders.
- **Risk characterization** (determination of the risk level and ranking): Using the information gathered during the strategic risk assessment process, the team assigns a risk characterization level to each hazard identified. The team can complete the risk characterization process for each hazard by using a risk matrix tool which combines an estimate of the likelihood of a hazard occurring with the potential impact if the hazard were to occur. This qualitative process should be fitted to the national context. General guidance on how to use the matrix and a formula for determining the impact of the hazard, are detailed in Annex 2. The value determined by this formula will be factored into the risk matrix along with the likelihood of exposure to the hazard in order to determine the overall level of risk.

Risk mitigation and public health emergency planning

Once the risk matrix is produced, the strategic risk assessment team and other national decision-makers can use this overall assigned level of risk to drive the prioritization of hazard-specific capacities at ground crossings and to assist States Parties to explore opportunities for cross-border collaboration, if warranted, at ground crossings and in border regions. This process takes account of the measures, processes, services and systems that are already in place, assesses whether they need to be strengthened and identifies the gaps in risk management. The process also considers how different ground crossings and adjacent areas interact with the identified risks and how likely they are to lead to variations of risk across time and locations.

The risk matrix is not a static document or a one-off exercise. It is essential to understand how changes in the context, trends and variations can affect future developments. The accuracy and reliability of the strategic risk assessment tool depends to a large extent on the effectiveness of surveillance, the free-flowing exchange of information, the quality and the skills of the assessment team and, especially, the ability to identify

the key elements to be monitored in order to anticipate developments and address problems proactively.

Minimum preparedness actions

Minimum preparedness actions for public health emergency planning are required for ground crossings in accordance with the IHR and should focus on the following capacity development activities:

➔ Ground crossing-specific public health preparedness and response measures should be coordinated across multiple stakeholders and agencies, with clearly defined roles and responsibilities to identify and prevent the introduction and transmission of suspected public health events during both routine and response operations. These measures should include:

- access to medical services including diagnostic services;
- access to equipment and personnel for the transport of ill travellers to an appropriate medical facility;
- surveillance activities;
- risk communication and social mobilization (i.e. the distribution of public health information to ensure that travellers meet local vaccination requirements);
- environmental health (i.e. vector control, solid and liquid waste management, potable water and general sanitation);
- data management and information exchange.

➔ Additional preparedness actions include:

- development of standard operating procedures and testing for field response;
- implementation of early mitigation measures (e.g. vaccination campaigns);
- implementation of active surveillance (including in communities) in high-risk regions or districts;
- development of an emergency response contingency plan for scenarios of identified hazards;
- identification of emergency funds that can be immediately available for mitigation and preparedness, as well as contingency funds for response;
- cross-border collaboration by harmonizing resources, increasing coordination and communication, expanding/complementing joint operations/efforts, and concluding local and national agreements;
- enhanced/emergency waste management services.

2.2 Designation of ground crossings

2.2.1 Overview

Article 21 of the IHR states that States Parties may choose to officially designate a ground crossing in order to further develop capacities for surveillance and response. The decision of a State Party to designate a particular ground crossing may be deemed as strategic for:

- implementing health capacities commensurate with risk and in-country resource allocations for strengthening preparedness and response, and
- securing in-country economic benefits.

All States Parties intending to designate ground crossings should consider first completing a strategic risk assessment to better understand and justify their selection.

When prioritizing ground crossings for designation in line with IHR Article 21.1, a number of factors should be considered (Table 1). It should also be noted that these factors can be used when prioritizing public health capacity-building at ground crossings.

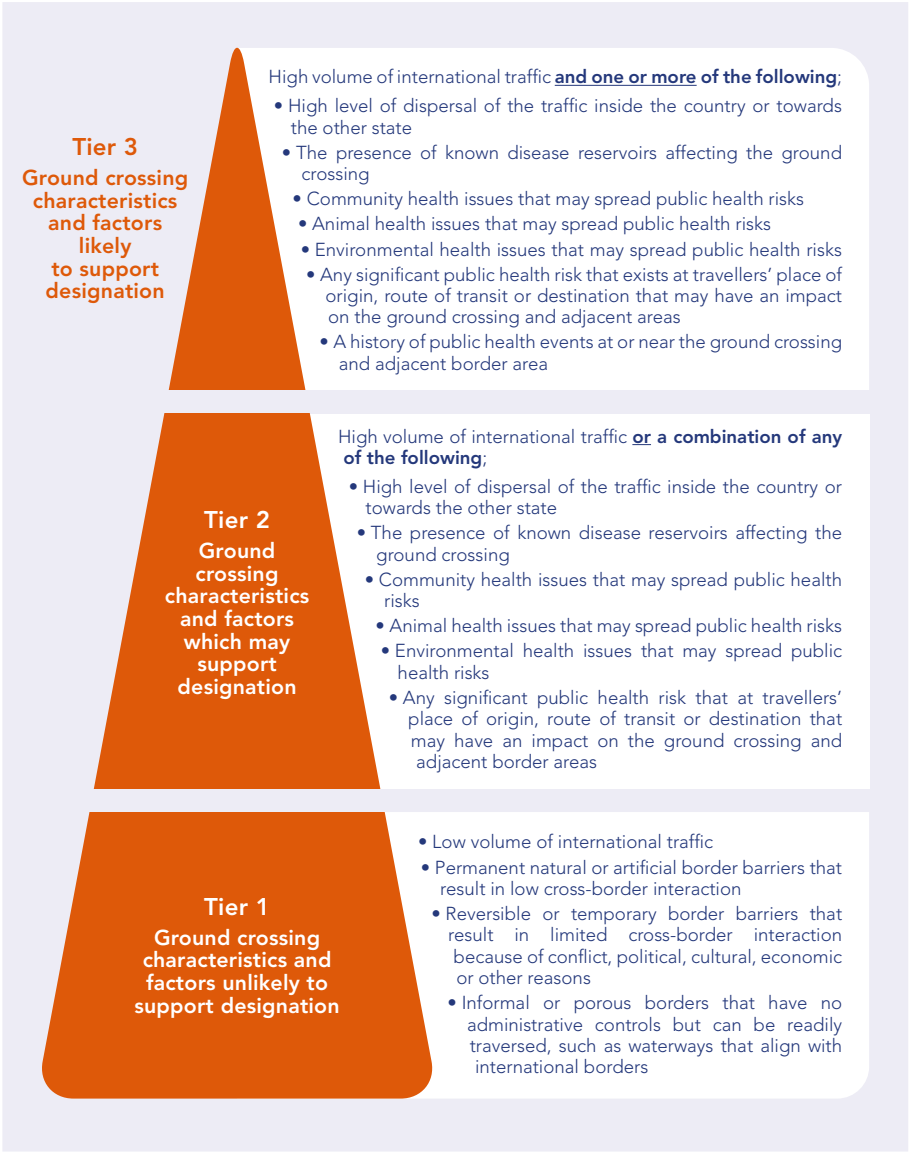
Table 1. Factors to consider when designating ground crossings

Volume	• Consider not only overall traveller volume but also whether the volume changes based on time (day/week/season), and what factors influence those changes (operating hours/accessibility/ security issues). • The highest volume is not the highest priority factor; rather consider the level of risk associated with the volume in view of the collective traveller profiles and other important considerations.
Access to health care	• Accessibility to health care via the ground crossing influences how public health assessment protocols are designed, and how sufficient infrastructure and resources are provided at the POE (e.g. lack of/limited access to health care may result in a sick traveller being isolated at a POE for a longer amount of time).
Connectivity to priority populations and locations	• How connected is the POE to other priority populations or geographical areas of interest? There may be a lower volume of travellers at a ground crossing through which people come from areas that often experience outbreaks or other public health events or through which travellers pass to seek health care on the other side of the border.
Strength of the surveillance system	• If the public health surveillance system around the POE is robust, it is likely to identify a potential case associated with travel through the specific ground crossing. Dedicating limited resources to public health capacities at that ground crossing might not be the highest priority for use of resources. • In contrast, in an area where the surveillance system is poor and it could take days or weeks before someone is identified and reported, public health screening of travellers at ground crossings may be an important way to identify potentially sick travellers.
Coordination with the neighbouring country	• Consider whether the district or POE has an existing relationship with the cross-border counterparts. Do they communicate regularly, coordinate activities, provide alerts at the local level etc? • Ground crossings where this relationship does not exist or is not strong could be prioritized for designation because there is no other system in place to identify potentially sick travellers

2.2.2 Operational guidance

The designation pyramid (Figure 1) illustrates the process for taking account of the above factors, country-specific strategies, priorities and other contextual considerations for States Parties that have decided to designate one or more ground crossings in accordance with IHR Article 21.

Figure 1. Designation pyramid



2.2.3 Joint designation or bi/multilateral agreement

The joint designation of a ground crossing will require the sharing of public health information and resources across the border in order to benefit all border Member States and may result in better-adapted risk mitigation systems, reduced financial costs and administrative burdens, and the opportunity to capitalize on human resources and sharing of expertise. During a joint designation process, States Parties may learn that resources in a neighbouring state are situated closer to the ground crossing, thus allowing for a more cost-effective rapid response during a public health event. Official cross-border collaborative agreements which allow for coordinated data-sharing and well-defined communication channels will facilitate, or may result from, the joint designation process.

Cross-border collaborative agreements are further described in Part B of this handbook.

Section 2.2 Toolbox

Assessing ground crossing capacities

- The IHR Assessment tool for core capacity requirements at for designated airports, ports and ground crossings – www.who.int/ihr/ports_airports/PoE/en/. (NB: This can be used in whole or in part for non-designated ground crossings in order to assess the required capacities for compliance with the IHR)

Assessing ground crossing capacities – including border areas

- US Centers for Disease Control and Prevention (CDC) Border health capacity discussion guide
- Capacity assessment factors, as described in Annex 2

Guidance on the rapid risk assessment of acute public health events can be found at www.who.int/csr/resources/publications/HSE_GAR_ARO_2012_1/en.

2.3 Surveillance at a ground crossing

2.3.1 Overview

Surveillance is the systematic ongoing collection, collation and analysis of data for public health purposes and the timely dissemination of public health information for assessment and public health response as necessary. Effective surveillance enables the timely detection of public health events, the coordination and exchange of epidemiological information, and the ability to apply commensurate and appropriate public health measures at and around ground crossings.

Given the varied border contexts and the diverse health threats covered by the IHR all-hazards approach, conducting surveillance at ground crossings presents unique challenges. States Parties should implement a multi-layered surveillance strategy along land borders, including integrating their ground crossings into the national health surveillance system. This can include building on existing disease surveillance and response mechanisms and enhancing community involvement and capacities in surveillance activities. A strong national health surveillance system is crucial to the early detection of cases as travellers may be incubating or may mask signs and symptoms as they cross an international border.

Objectives for surveillance at ground crossings include:

- enabling the early detection of public health events for timely verification and the application of control measures;
- providing data to public health authorities for risk assessment of events and hazard mapping;
- informing stakeholders at a ground crossing, in border communities and at appropriate levels of the health system and other sectors (e.g. customs, animal health, conveyance operators) of detected events;
- integrating the ground crossing into the local health system, taking into account its responsiveness as well as its ability to provide essential functions that meet quality, safety and equity standards;
- assisting stakeholders in initiating preventive and response measures, investigation and management of events;
- detecting changes in trends of events at a ground crossing and in border communities, and addressing needs for health-care facilities and services, laboratories and allocation of resources etc;
- preventing and/or managing the importation and exportation of health hazards through cross-border movement;
- providing a basis for future programmes, operations research or action-oriented research and programme improvement.

2.3.2 Operational guidance

2.3.2.1 Reporting and communication

At a ground crossing

Surveillance activities in a ground crossing setting should take place during all hours of operation. Timely reporting plays an important role in a State Party's early warning and response system. Health assessment criteria and formularies at ground crossings and in border regions should be standardized and should be harmonized with those developed for community surveillance within the national health surveillance system in order to achieve consistency in reporting. Importantly, all ground crossings should be integrated into the national health surveillance system. Information channels – and the information flow – need to reach decision-makers and should strengthen coordination between all the functions (Emergency Operations Centre, National IHR Focal Point), systems and initiatives (e.g. National Event Management System, rapid response teams, emergency medical teams, early warning systems, Integrated Disease Surveillance and Response system) within the framework of the IHR.

The information to be reported from a ground crossing is likely to be specified by the national health surveillance system and may vary between States Parties as the result of differing local requirements (i.e. documentation required for prophylaxis). In addition, the type and frequency of information required may vary between routine operations and emergency response. A minimum data set should be selected on the basis of a multi-hazard approach and the national health information system, and this may evolve depending on surveillance needs and the trends of the main (current or expected) threats. Data security, privacy and interoperability should be taken into account in computerized information systems.

Communication at a ground crossing should include risk communication activities, including social and mass media communication, to monitor disinformation and rumours, to promote healthy lifestyles and healthy behaviours.

Between bordering countries

Effective coordination and communication for the exchange of health information is particularly important along porous borders. The timely exchange of information should be strengthened at local level through multisectoral collaboration between neighbouring countries (e.g. commerce, trade, customs, animal health, environment, health). The information to be shared at a ground crossing should accurately reflect the readiness of the neighbour countries to deal with ground crossing threats. The minimum data set should cover both the national needs and the neighbouring country's needs.

The best available information is needed for an evidence-based decision-making process at the highest political levels (and not only at the local level), in accordance with established agreements.

The decision-making process must comply with the purpose of the IHR "in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade", with full respect for openness and transparency and for people's dignity, human rights and fundamental freedoms.

Additional information can be found in Part B.

2.3.2.2 Alert systems for a ground crossing

Alerts of travel-related cases at a ground crossing

When there are suspected or confirmed cases of a communicable disease during travel, health staff at the ground crossing should assist surveillance teams in completing investigations and applying response measures. Additionally, fellow travellers might be investigated and – as appropriate on the basis of the results of investigations – either may be subject to further evaluation, quarantine or isolation, or medical care, or may be advised to contact their health-care provider should they become ill during a specified period following the travel. They should always refer to their recent travel history during their health assessment so that the national health surveillance system can be informed as required.

Alerts from medical facilities around a ground crossing

The health facilities in the area of a ground crossing should establish both routine and emergency procedures for timely reporting of travel-related cases of public health concern to the appropriate health authority, including those at a ground crossing and in adjacent district health authorities.

In all health facilities, the clinical evaluation of cases of communicable diseases of public health concern should contain a detailed history of recent travels (i.e. within the past 3 months) including means of travel, origin, transit points, destination(s), routes taken, purpose of travel and duration of travel. Investigation may take place retrospectively and public health measures may need to be applied after the travellers have left the ground crossing.

Travel information collected as above will make it possible to:

- link the case with travel and consequently inform the health authority at the ground crossing, who may then implement the necessary health measures;
- inform, as needed, the counterpart authorities in neighbouring countries ;
- identify all travel-related cases and analyse the surveillance data based on that parameter.

The diseases listed in Annex 2 of the IHR should be considered, according to the country context, for the systematic recording of travel information. Diseases to be recorded include, for instance, anthrax, diphtheria, viral haemorrhagic fevers (e.g. Ebola, Lassa, Marburg, Yellow fever), pulmonary tuberculosis, meningococcal disease, measles, severe acute respiratory syndrome (SARS), Middle East respiratory syndrome - coronavirus (MERS-CoV), human influenza caused by a new subtype, pneumonic plague and Legionnaires' disease.

Alerts from adjacent border community surveillance

Communities near ground crossings that receive cross-border travellers, animals or goods (e.g. villages with a market that receives travellers, animals or goods from across a border), and communities along a porous border, or some distance away from the border along a transit route (e.g. a major city located on a roadway or railway line), should be aware of the need to alert surveillance teams when an event may be associated with recent international travel. Sources of community event-based surveillance vary widely and may include traditional and alternative healers, educational establishments, labour and industry sources, community or religious leaders, local media, and cross-border initiatives.

Alerts from zoonotic disease surveillance using the One Health approach

The movement of humans, animals, and agricultural products may have an international impact on public health. Border health measures should include surveillance for animal diseases and controls on the movements of animal and agricultural products.

Given the trans-boundary incidence of zoonotic diseases and associated human and animal movement, health officials should coordinate disease surveillance and control efforts with officials responsible for animal health, agriculture, wildlife and natural resources. Public health and border officials should work towards developing a single disease surveillance platform (i.e. the "One Health" approach) that includes alerts for outbreaks in humans, domestic animals and wildlife.

In countries where veterinary facilities might not have existing links to the national health surveillance system, public health surveillance should account for unusual events, such as clusters of animal illnesses or deaths of animals which may have crossed land borders.

Alerts from food and water safety surveillance

Considering the amount and types of goods that may pass through a ground crossing, and the time spent transiting, certain risks should be taken into account when considering surveillance needs. Plants, water, food, animal products and commercial goods which may contain potential public health threats should be considered on the basis of a risk assessment approach.

Surveillance of the ground crossing premises, vendors of water and food safety compliance is also highly recommended to ensure there is a safe environment for those using the ground crossing. Routine checks by trained staff should be implemented, and methods for verifying possible contamination with laboratory diagnostics should be considered.

2.3.2.3 Surveillance activities during public health emergencies

In emergency settings (e.g. enhanced exit controls for an Ebola outbreak or a chemical spill in a river that traverses an international border), additional capacity may be added to ground crossings to provide enhanced health screening (e.g. exit screening, including temperature screening, health declarations, focused medical examination etc.) and measures to report directly to the national health surveillance system.

Additionally, travellers, animals and goods that pass through a ground crossing may travel long distances across the country. Consequently, the links with travel history, zoonotic disease surveillance and environmental data/information should be always considered in order to avoid the further spread of public health risks, particularly in the context of a public health emergency.

Exit screening

The following guidance should be considered if a State Party deems exit screening necessary to prevent the exportation of a communicable disease, or if WHO recommends exit screening:

- Prioritize ground crossings for exit screening activities on the basis of risk.
- Ensure sustainably of resources to conduct exit screening.
- Standardize communications (questionnaires, declarations, case definitions, information sheets, etc).
- Primary screening should be carried out by designated staff, using established procedures and appropriate personal protective equipment, to visually observe travellers for signs of illness, take temperature measurements and have travellers complete questionnaires and/or declarations.
- For travellers identified during primary screening as requiring further evaluation, there should be secondary screening which:
  - should be conducted by trained medical staff and may involve in-depth interviews, additional temperature measurements and completion of additional screening forms;
  - may also include a focused medical evaluation;
  - may result in travel restrictions or referral to a health facility for further evaluation and treatment should the traveller be exhibiting clinical signs and symptoms consistent with the disease of concern.
- During a public health emergency, a list should be established of any persons with travel restrictions and should updated regularly. The list should be shared with all relevant health authorities, while respecting the principles of data privacy and security, for the adoption of public health measures as appropriate. Public health authorities should take into account that a symptomatic individual may be permitted to travel under special arrangements (i.e. continued medical supervision while travelling).

Entry screening

WHO does not recommend entry screening. However, for the purposes of preparedness planning, countries may wish to develop plans and procedures for entry screening according to their own risk assessment and cost-benefit analysis. Entry screening may be introduced if there is suboptimal exit screening from affected areas, or where there is limited accessibility or where internal surveillance capacity is limited. However, entry screening must not interfere with international travel and trade. Planning for entry screening should consider the resource implications and the potential effectiveness. The technical considerations can be found in WHO's *Technical note for Ebola preparedness planning for entry screening at airports, ports and land crossings.*[1]

2.3.2.4 Porous borders and community-level surveillance

Porous and informal border crossing points are characterized by the uncontrolled and often undocumented nature of movement. These crossings therefore require special consideration when applying surveillance measures that not only take account of the risks at points of origin, transit points and destinations, but also elucidate motivations for travel and estimate the volume of travel (including seasonal differences) and the characteristics of travellers at such ground crossings.

Establishing surveillance zones along porous border areas that extend into communities can be an effective strategy when determining where and how to apply public health measures. Within these zones, strategic gathering places (e.g. markets, schools, places of worship) can receive selected public health measures such as screening activities, isolation and quarantine, infection prevention and control, communication strategies, public health declarations, education, outreach and awareness activities. Mapping information and technologies which show nationally established health regions, human and animal mobility factors, geographical features, disease and vector patterns, and various other local and regional data can provide strategic oversight to inform surveillance strategies.

2.3.2.5 Surveillance training

Needs: Some ground crossings may be regularly staffed by dedicated health or non-health personnel who are able examine sick travellers or animals and goods, facilitate referrals and report cases directly to the appropriate health authority. However, in many cases, ground crossing staff will not have public health, medical, veterinary or environmental training. In these cases, targeted POE staff can be trained to make initial health assessments and health referrals based on signs and symptoms of priority diseases. Targeted training can be supplemented by awareness sessions that are tailored to health and non-health staff accordingly.

Objective: To enhance capacity-building of human resources involved in surveillance, preparedness and response at ground crossings and adjacent border communities.

Plan: A sustainable training plan should be developed and implemented for all parties, across all categories of personnel involved in public health surveillance.

[1] See: https://www.who.int/csr/resources/publications/ebola/entry-screening-poe/en/ accessed 8 October 2019.

Training according to a regular schedule or as needed is of particular importance to ensure that surveillance staff are able to apply the most recent techniques and technologies properly and that updated protocols/guidelines are being used.

Audience: In addition to the public health workers required at a ground crossing, training should be provided for conveyance operators, customs staff, key actors of adjacent border communities and other personnel who have initial contact with travellers.

Contents: Training programmes should address roles and responsibilities, standard operating procedures, means of communications, case definitions and other applicable elements in order to enable the trainees to recognize key symptoms and signs of events among (primarily) travellers.

Regular meetings between the various authorities involved will also contribute to harmonizing training practices and improving the overall surveillance system. An information card or other readily accessible reference material summarizing surveillance training elements – such as signs and symptoms of priority diseases as well as key contact numbers –may be helpful for both health and non-health public health staff at ground crossings.

Chapter # Toolbox

Surveillance activities in an emergency setting

- Rapid risk assessments for acute public health events (www.who.int/csr/resources/publications/HSE_GAR_ARO_2012_1/en/, accessed 10 October 2019).
- International Health Regulations (2005) and chemical spills (http://apps.who.int/iris/bitstream/handle/10665/249532/9789241509589-eng.pdf?sequence=1, accessed 10 October 2019).

One Health

- WHO-OIE Operational framework for good governance at the human-animal interface: bridging WHO and OIE tools for the assessment of national capacities (www.oie.int/fileadmin/Home/fr/Media_Center/docs/pdf/WHO-OIE_Operational_Framework_final.pdf, accessed 10 October 2019).
- OIE Tool for the Evaluation of Performance of Veterinary Services – OIE PVS Tool (www.oie.int/support-to-oie-members/pvs-evaluations/oie-pvs-tool/, accessed 10 October 2019).
- Arriola CS, Rubin C. Prioritizing zoonoses: a proposed One Health tool for collaborative decision-making. PLoS ONE. 2014;9(10) e109986. doi:10.1371/journal.pone.0109986

Exit screening

- Exit screening at airports, ports and land crossings: interim guidance for Ebola virus disease (https://www.who.int/csr/resources/publications/ebola/exit-screening-guidance/en/, accessed 10 October 2019).

Entry screening

- Technical note for Ebola preparedness planning for entry screening at airports, ports and land crossings (https://www.who.int/csr/resources/publications/ebola/entry-screening-poe/en/, accessed 10 October 2019).

2.4 Risk communication

2.4.1 Overview

Risk communication planning and training are essential for comprehensive public health preparedness and response, as well as for determining the resources that need to be allocated for risk communication activities. At a ground crossing, authorities may be requested by public health officials or others to communicate certain risks to the public at the crossing itself or within the adjacent border communities – for instance, distributing current public health information or ensuring that travellers meet local vaccination requirements. Considering the international nature of ground crossings, certain factors such as differences in language, culture and health-care practices need to be taken into consideration when designing and implementing risk communication plans that respect the need for transparency and trust. Ground crossings may additionally reflect geographical contexts with diverse socioeconomic, political and other complexities, including those associated with bordering countries.

Nevertheless, ground crossings and nearby communities provide unique opportunities to educate travellers and commuters about public health events and sound public health advice (signs and symptoms, where to seek care etc.). Community engagement should therefore include coordinated strategies and messaging by officials between neighbouring countries to ensure harmonized and consistent approaches to public health threats.

2.4.2 Operational considerations

Risk communication should be incorporated into preparedness planning for major events and in all aspects of an outbreak response. The principles and steps shown in Table 2 are particularly critical to risk communication strategies at ground crossings and in nearby communities.

Table 2. Principles and steps for risk communication strategies at ground crossings

How? Assessing the needs and knowledge gaps	• Assess the cultural context of the border region and priority audiences (e.g. political tensions, cultural or religious practices, misperceptions, unfounded beliefs, risky behaviours, misinformation). • Assess the languages spoken by priority audiences, literacy levels (both the ability to read and health literacy) and access to technology. • Assess risks of the spread of the public health event through cross-border movement. • Map out coverage of potential media channels, including binational communication channels (e.g. cell phone coverage by carriers and radio station range in border areas) to identify gaps. Social media and traditional media should be part of an integrated strategy with other forms of communication to achieve convergence of verified, accurate information.

Who? Identifying the intended audience	• Identify and locate priority audiences, such as commercial traders, transportation workers, traditional healers, commuters, students, mobile populations and others who are most likely to cross the border or to interact with cross-border travellers. • Maintain a list of relevant points of contact and update this list as necessary.
What? Developing message content and appropriate forms/channels for message delivery	• Message content should be consistent with national messaging and should be tailored for cultural relevancy and the evolution of the public health events (e.g. adapt national messages to the context of the border region and the border crossing). Agreements or memorandums of understanding between bordering States Parties and/or other stakeholders may be beneficial when harmonizing risk communications. Content should be specific, realistic and designed by local experts familiar with the preferences of the priority audiences. • Include community leaders in the development of messaging. • Use the most effective and trusted forms of message delivery for each priority audience (e.g. targeted SMS messaging, radio public service announcements or dramas, meetings with community leaders, social mobilizers, print material, educational materials used by social mobilizers as teaching tools). Use appropriate channels for message distribution to fill information and message gaps. • For print materials, content should be mostly visual, with images that are culturally relevant and easy to understand for audiences with low literacy levels. • Material should be used cautiously because of potential socioeconomic impact. • Translate messages and materials into languages understood by border crossers on both sides of the border, adjusting for cultural and linguistic appropriateness.
Where? Determining delivery, geographical location and coverage	• At ground crossings place print materials (e.g. posters, banners, pamphlets, advisory material), including low-literacy and no-literacy items, at highly visible places in high-volume locations. • In a border region, place print materials in high-volume places (e.g. bus terminals/stops, transportation junctions, markets, mosques, churches). • Coordinate with partners and companies to address coverage gaps.
When? Identifying timing	• Identify peak travel routes or other hotspots where people gather along the border (e.g. marketplaces, official and informal border crossings, transportation hubs). • Prioritize key areas and times for dissemination of messages based on busy travel and gathering times • Disseminate the key messages following communication timelines, as set out by the national risk communication strategy, to cover all phases of a public health event until recovery.
With what resources?	• Identify staffing, platforms, financial resources or other factors that can improve communications with the public and partners during emergencies.

Coordination and consistency	• Identify roles and responsibilities of the risk communication personnel. • Provide training to risk communication personnel for responding to local hazards. • Coordinate content, timing and delivery methods with neighbouring countries to ensure consistency or messaging for audiences in these countries and to optimize resources. • Align communications content and materials for the border region with national messaging. • Coordinate any adaptations and revisions to communications material with neighbouring countries based on evaluation or evolution of understanding of the outbreak. • Follow up with partners to ensure that they are discussing a unified set of messages coordinated with social mobilization efforts and community outreach.
Monitoring and evaluation	• Monitor the risk communication to ensure its continuing implementation before during and after public health events. It is also important during this process to monitor rumours and social media and to adjust the communication message plan when necessary. • Evaluate the impact and consistency of messages at border crossings and in border communities through formal and informal dialogue with the community to monitor what they need and want. • Evaluate jointly with the participation of all relevant stakeholders and local communities the forms of message delivery for each key population. • Revise messages as necessary to further enhance desired understanding or behavioural change. • Document lessons learned in order to incorporate them into future operational research and to enhance/develop standard operating procedures for risk communication.

Chapter # Toolbox
Communicating risk in public health emergencies (http://www.who.int/risk-communication/guidance/download/en/, accessed 10 October 2019).

2.5 Preparedness for event management and response

2.5.1 Overview

Preparedness and response: Activities and measures for preparedness and response should be enabled and reinforced at ground crossings via established public health response plans and accompanying standard operating procedures. Plan development should take account of the types of potential emergencies a ground crossing may experience, as well as relevant legal authorities, surveillance mechanisms, response triggers, notification pathways, resources necessary to implement a response, mechanisms to obtain additional resources (surge capacity), and communications needs. The process should ensure the training of all responders and event managers in the relevant sections of the plan – standard operating procedures, simulation exercises (table-top, drills or full-scale exercises) to test plans, with updates to the plans as needed, based on lessons learned or changes following responses, exercises or periodic reviews.

Given the complexity of institutions and stakeholders, a ground crossing-specific public health preparedness and response plan should:

- reflect coordination across multiple agencies and describe specific procedures to identify and prevent the introduction and transmission of suspected public health events during both routine and response operations;
- align with relevant national, intermediate and local public health emergency response plans;
- clearly identify roles and responsibilities in a response to a public health event to avoid obstructions or obstacles;
- be tested and exercised during preparedness planning;
- pre-position anticipated essential resources at or in proximity to ground crossings, and have tested mechanisms to enhance and replenish resources during an emergency situation:
- be flexible, adjustable to different scenarios and scalable to adapt to the size and scope of the emergency (from a single sick traveller to an outbreak in a border community).

For ground crossings that lack a consistent agency presence or other resources to create and maintain a public health emergency response plan, States Parties can tailor the ground crossing-specific preparedness planning to needs identified through the strategic risk assessment process. At the same time, States Parties should incorporate ground crossings in national preparedness and response plans.

2.5.2 Operational considerations

2.5.2.1 Recommended steps for the development of a ground crossing response plan [2] include:

1. Establish a planning team that includes subject matter experts from applicable agencies/stakeholders.
2. Prepare for the planning phase:
   a. Take into account international, regional, national and local considerations.
   b. Gather background information and lessons learned from the past.
   c. Create situational awareness.
   d. Understand the ground crossing risk profile.
   e. Understand the current core capacity at the point of entry.
   f. Identify competent authorities and a committee for implementation of the plan.
3. Initiate the planning phase:
   a. Create a template.
   b. Ensure the plan is realistic and achievable.
4. Write the plan.
5. Review the plan.
6. Test the plan.
7. Obtain stakeholder sign-off (obtain approval for the plan from the relevant ministerial level).
8. Conclude the planning phase.
9. Publish and communicate the plan.
10. Brief and train required personnel.
11. Schedule regular exercises.
12. Review, update and maintain the plan as required.

2.5.2.2. Public health response measures

The public health response to individual travellers, baggage, cargo, containers, conveyances, goods and postal parcels with known or suspected exposure to a chemical contaminant, radiological event or communicable disease largely depends on the type of exposure and whether detection occurred before, during or after travel. While air and marine travel often have distinct points of departure and arrival, the public health response at ground crossings can be very challenging given the nature of the movement at a ground crossing coupled with the variability or absence of administrative controls at many crossings. It is this variability in administrative controls and structure that highlights the importance of integrating the ground crossing into the national surveillance and response structure.

Table 3 illustrates some response capacities that could be in place to address sick travellers – as well as baggage, cargo, containers, conveyances, goods and postal parcels – before, during and after travel. Public health measures at borders should be conducted in a way that protects the rights and dignity of travellers and minimizes disruption of travel and trade, including avoidance of border closures in almost all cases.

[2] International health regulations (2005): a guide for public health emergency contingency planning at designated points of entry. Geneva: World Health Organization; 2012 (https://www.who.int/ihr/publications/9789290615668/en/, accessed 10 October 2019).

Table 3. Response capacities before, during and after travel

Response capacity	Before travel	During travel	After travel
Contact-tracing		A serious illness on a conveyance (i.e. bus or train) may prompt the collection of contact information from fellow travellers. Determine the traveller's point of origin and other locations along the journey where exposures might have occurred.	Conduct contact-tracing for those persons who may have been exposed on the conveyance. Determine the traveller's point of origin and other locations along the journey where exposures might have occurred.
Communications	Inform travellers of disease information, precautionary advice, health measures adopted at a ground crossing, risk communication etc.	Conduct risk communication on specific disease information, precautionary advice, and where to seek help if signs and symptoms develop.	Find a mechanism to provide feedback on sick travellers to the country of origin.
Education	Educate or counsel travellers about delaying travel or other measures (e.g. isolation).	Provide public health information to ill travellers and potential contacts.	Provide public health information to ill travellers and potential contacts.
Health declaration and medical evaluation	Detect signs of symptoms and history of exposure manifested through health declaration, plus vigilant observation of overt illness.	Have trained staff available to conduct assessments of overtly ill travellers identified at the ground crossing.	Have trained staff available to conduct assessments of overtly ill travellers.
Isolation	Provide temporary facilities or nearby hospitals/clinics to isolate the sick traveller.	N/A	Provide temporary facilities or nearby hospitals/clinics to isolate the sick traveller.
Medical facilities	Provide reasonably timely transportation and access to medical facilities for further evaluation and laboratory testing if required.	Provide reasonably timely transportation and access to medical facilities for further evaluation and laboratory testing if required.	Provide reasonably timely transportation and access to medical facilities for further evaluation and laboratory testing if required.

Response capacity	Before travel	During travel	After travel
Quarantine	Implement community-level controls such as quarantine to restrict the movement of travellers with exposure history.	N/A	Follow up with communities on quarantine of travellers exposed to public health risks.
Review of relevant health documents (e.g. vaccination certificate)	Determine whether a traveller is to be exposed to a public health risk.	N/A	Determine if a traveller poses public health risks.
Screening	Prevent the travel of an affected traveller through a ground crossing or other POE.	N/A	Increase health awareness, active case-finding through reviewing the health declaration, and focused medical evaluation.
Travel restrictions	Prevent the travel of an affected traveller through a ground crossing or other POE.	Prevent the further travel of an affected traveller through a ground crossing or other POE.	Prevent the further travel of an affected traveller through a ground crossing or other POE.
Watch lists	Monitor available national and international "watch lists" to detect ill travellers who intend to cross borders. This capacity requires well developed alert and communication systems between countries.	N/A	Monitor available national and international "watch lists" to detect ill travellers who intend to cross borders. This capacity requires well developed alert and communication systems between countries.
Border closure and control	While border closure may seem an attractive political option to prevent the spread of a communicable disease across international land borders, evidence that closing a border is an effective disease prevention measure is scant-to-nonexistent, and the negative economic and social consequences can be significant. Closing land borders can have the opposite effect of increasing the risk of spread by encouraging travellers to take uncontrolled routes across the border. In addition, as per Article 43 of the IHR, restrictive measures such as closing a border should be avoided when reasonable alternative measures are available and would achieve a similar level of health protection. Similarly, implementation of border health measures that slow and impede travel, such as extensive health-screening processes, may discourage travel through official ground crossings, causing travellers to bypass the public health intervention.		

2.5.2.3 Challenges to implementing an effective response at ground crossings, especially in remote border areas, include:

- ill or exposed travellers purposely avoiding crossing borders at supervised ground crossings (public health measures implemented at POE may therefore need to be extended at travellers' transit and congregation points beyond the border areas);
- staff turnover or limited staffing, with difficulties in maintaining trained staff;
- little or no advance warning of the arrival of an ill or exposed traveller at a border post;
- lack of basic supplies;
- lack of safe and reliable medical transport;
- large distances from the nearest health-care facility;
- unreliable communications infrastructure and mechanisms.

Thus, an effective event management strategy at land borders is to strengthen disease surveillance in high-risk border regions. Health officials in these regions should put in place enhanced surveillance systems which can involve community leaders in reporting events of potential public health significance, mapping of known travellers' transit and congregation points through participatory population movement, establishing clear cross-border communication pathways for notifiable events and linking ground crossing officials to such systems.

2.5.2.4 Event management

Response officials should tailor the interventions to the event, including through (additional) event-specific risk assessments, and should have predefined triggers for implementation, escalation or de-escalation, and return to steady state. The volume, frequency and type of cross-border movement of travellers, animals, cargo, conveyances etc. should be subject to a risk analysis in order to put in place an adequate plan of inspection and adoption of public health measures as required. Event management preparedness and response activities should include a number of important measures, namely:

- Population movements across and along the border should be mapped to assess the pathways and the congregation points of cross-border population movements.
- The likelihood of transmission (accounting for clinical and environmental factors) and the feasibility of carrying out the measures (based on information and resources) should also be considered as part of the risk analysis process.
- Control measures (i.e. disinsection, deratting, disinfection, decontamination and treatment) are critical factors in an effective response. The necessary equipment, resources, trained staff, adequate infrastructure and areas for applying the control measures must be identified.
- In order to prepare properly for and respond to a public health event, trained staff should understand the epidemiological situation at the ground crossings, as well as the applicable sampling and testing protocols, vector

control measures, and all other relevant standard operating procedures and protocols that may apply.

Based on the nature of the emergency, some additional factors may play a significant role in the spread of diseases and could be taken into consideration if applicable. These factors include the movement of animals through known areas or at specific periods (e.g. seasonal migratory routes for birds and/or mammals) and climate threats (e.g. rainfall, temperature, wind movements, global radiation, air humidity).

Management of a public health event with a risk of cross-border spread or in border communities should be aligned with local, regional or national response plans. Special considerations include the potential implementation of public health interventions at designated and nondesignated ground crossings, transit routes and congregation points, and the need to coordinate response efforts with national, intermediate and local authorities on both sides of the border. In larger responses requiring multisectoral participation, coordination of response through a command and control structure involving one or more emergency operation centres is likely to apply. In such situations, ground crossings and border district public health authorities should be part of the established incident management structure with clearly defined roles and responsibilities. Domestic and cross-border up-to-date contact lists should be maintained by all stakeholders for both routine and emergency operations.

Clearly identified lines of cross-border communications and decision-making to facilitate timely notification of cross-border partners are critical for effective response and resource utilization. Stakeholders should understand how the established standard operating procedures and national emergency response plans are linked to regional plans and what threshold or event would trigger the notification of international organizations such as WHO.

Chapter # Toolbox
Public health preparedness at points of entry (www.who.int/ihr/publications/9789290615668/en/, accessed 10 October 2019).

2.6 Environmental health

2.6.1 Overview

Environmental health capacities serve as fundamental preventative measures to maintain ground-crossing facilities in a sanitary condition and thereby to reduce factors that may have an adverse impact on health. The development of these capacities may present a particular challenge to resource-poor States Parties; consequently, opportunities to collaborate across borders to maximize resources for the mutual development of capacities at the ground crossing should be explored. Additionally, collaboration both within and between neighbouring countries promotes effective and timely information-sharing and data management with the relevant stakeholders in order to address environmental health concerns.

Performing a risk assessment is the best way to show which capacities should be developed commensurate with the risk profile of a ground crossing, and therefore additional considerations may need to be taken beyond the essential capacities. Essential environmental capacities such as vector control, solid and liquid waste management, potable water and general sanitation are outlined in this guidance as crucial for all ground-crossing settings. The resources required to achieve these capacities should be planned both for routine operations and for responding to a public health event.

This section provides an overview of selected environmental health capacities. Risk-based assessments and resource availability will guide the necessity and extent to which each of these capacities are to be developed within a country-specific context.

2.6.2 Operational considerations

Vector and reservoir control

Vector surveillance and control at ground crossings is an effective method to reduce the risk of transmission of pathogens imported with vectors and reservoirs, as well as prevent the dispersal of local vectors to other countries (Table 4).

Table 4. Considerations when implementing a vector control programme

An integrated vector and reservoir control programme in place	✔
Development of an integrated vector and reservoir control programme includes identification of risk, establishment of threshold levels, inspection, employment of control measures and evaluation of effectiveness. The programme should include special arrangements or agreements/contracts with all service providers. The programme should also focus on the coordination between neighbouring countries to address gaps in vector and reservoir control and to synchronize the preventive and response measures. The programme needs to be developed and implemented with the involvement of local communities in order to increase the acceptance of the planned health measures.	
Trained personnel for control of vectors and reservoirs	✔
An adequate number of personnel must be available with appropriate training and knowledge to detect and control the public health risks of vectors and reservoirs, as well as to oversee and audit services and facilities of the ground crossing and surrounding areas.	
Monitoring of vectors at the ground crossing facility and in the surrounding area	✔
Monitoring should be maintained and updated for routine operations and emergencies. The monitoring should include baseline information on vectors and reservoirs, detection and identification, testing for pathogens, and effectiveness of control measures such as disinsection and deratting. Results of the latest audit of services and facilities should be available and accessible.	

Dedicated space, equipment and supplies for use by vector and reservoir control staff	✔
A dedicated and secure space/room should be available for use by vector and reservoir control staff and for the storage of public health equipment and supplies, including: insecticides, rodenticides, traps and application equipment, equipment for inspection, and a workplace and supplies for staff to prepare inspections, complete reports and prepare, calibrate and store sampling equipment.	
Demonstrating knowledge	✔
Ground-crossing facility staff should be able to demonstrate knowledge of the use of correct control methods for relevant vector-borne diseases and for hosts and vectors.	

Waste management

A safe environment for travellers using ground-crossing facilities requires a proper waste management system to be in place. The competent authorities are therefore responsible for the management/supervision of the removal and safe disposal of any contaminated water or food, human or animal dejects, wastewater and any other contaminated matter (Table 5).

Table 5. Considerations when implementing a waste management programme

Develop a waste management plan	✔
A documented, tested and updated solid and liquid waste management programme, including for medical wastes, should be in place. The plan should include actions for both routine operation and emergencies, with standard operating procedures for safe transport and final destination of the solid and liquid waste generated and/or treated at the point of entry. The plan should be developed and signed off with both health and non-health sectors responsible for waste management at a specific ground crossing.	
Trained personnel	✔
An adequate number of personnel with appropriate training and knowledge should be available to manage and oversee waste management practices and facilities at ground crossings.	
Monitoring of waste management	✔
All present and potential public health risks from solid and liquid waste are detected and assessed, and recommended control measures are implemented. Records are maintained and testing results are documented and available, covering: public collection within the boundaries of the ground crossing, cargo and container terminals, infrastructure and courtyards, transport and waste service providers for conveyances, and waste services for dangerous waste (medical/infectious, chemical, cutting instruments and sharps etc.). Contamination of potable water may result from inadequate waste management. Health concerns must be addressed in the waste management monitoring system.	

Designated facilities, equipment and supplies	✔
Access to appropriate disposal facilities/systems should be in place. Waste management containers must be leakproof, identified as to their contents, constructed of material that can be cleaned easily and covered when not in use. Waste management containers must be sufficient in number, accessible and emptied on a regular basis. Containers must not be stored or maintained in a manner that would attract or harbour vectors.	
Demonstrating knowledge	✔
Staff should be able to demonstrate knowledge of solid and liquid waste treatment and control methods, systems for detection and assessment, and recommended control measures for present and potential risks from solid and liquid waste.	

Potable water

Assuring the safety and quality of the potable water supply additionally contributes to the safe environment for travellers and others using ground crossings (Table 6).

Table 6. Considerations for ensuring the safety and quality of potable water

Develop a management plan for potable water	✔
A water safety programme should address all water safety risks, including suppliers, water storage tanks, water vehicles, drinking-water fountains, and potential cross-connection and backflow hazards. The plan should be developed and signed off with both health and non-health sectors responsible for the potable water supply chain.	
Trained personnel	✔
An adequate number of personnel should have the training and knowledge to manage, maintain and monitor potable water, plus water management practices and facilities at ground crossings.	
Monitoring potable water	✔
A documented, tested and updated water safety programme should be in place for both routine operation and emergencies. The programme should be conducted by, or under the supervision of, a competent authority, ensuring that records are maintained and testing results are documented and available. Water quality, including the effect of disinfection, should be monitored regularly to ensure that all present and potential public health risks from water supply are detected and assessed, and that recommended control measures are implemented. The programme's agenda, plus dates and results of testing and inspection, should be recorded and communicated, as appropriate, to neighbouring countries that share the same water source. Potable water sources should be kept under surveillance and supervision in secure places, far away from sources of pollution, and approved by the relevant health authority. Potable water quality should conform to the standards outlined in local and/or national standards/legislation.	

Designated facilities, equipment and supplies	✔
Potable water facilities and equipment should be maintained in good operating order and should be serviced regularly. An adequate supply of potable water should be available. This supply should be sufficient to meet the peak demand of the ground crossing facility. In the event of contamination of the water source, a plan should be in place to ensure an alternative supply of sufficient and safe potable water, especially for emergencies.	
Demonstrating knowledge	✔
Staff should demonstrate a knowledge of water safety management – i.e. knowledge of correct practices, especially with regard to the source, storage, distribution, treatment and control methods.	

General sanitation

The competent authorities at a point of entry are obliged to ensure that the premises, and the conveyances and goods passing through, are kept free from sources of infection and contamination in order to mitigate the international spread of public health risks (Table 7).

Table 7. Considerations regarding general sanitation

Develop a management plan for sanitation	✔
The sanitation management plan should include details of roles and responsibilities, cleaning schedules and standard operating procedures for both routine operation and emergencies.	
Trained personnel	✔
There must be an adequate number of personnel with training and knowledge in cleaning and sanitation practices to carry out these activities effectively at a ground crossing.	
General sanitation monitoring	✔
The frequency of cleaning should be documented and records made available. During public health emergencies, enhanced measures should be implemented and documented. Additionally, the solid and liquid wastes generated should be treated according to the emergency waste management plan and standard operating procedures.	
Designated facilities, equipment and supplies	✔
Buildings and structures should be designed and constructed in a way that facilitates the maintenance of a hygienic environment. Public washroom premises should be consistent with the volume of travellers and frequency of travel and should be in good operational condition. The washroom premises should be cleaned regularly and hygienically, with consideration for the volume of passengers and personnel using the terminal and other facilities at the point of entry.	
Demonstrating knowledge	✔
Staff should be able to demonstrate knowledge of the use of correct methods and an understanding of techniques for cleaning, disinfection and decontamination.	

Chapter # Toolbox

- Assessment tool for core capacity requirements at designated airports, ports and ground crossings (www.who.int/ihr/ports_airports/PoE_Core_capacity_assessment_tool.pdf, accessed 10 October 2019).
- Guidelines for drinking-water quality (http://apps.who.int/iris/bitstream/handle/10665/254637/9789241549950-eng.pdf?sequence, accessed 10 October 2019).
- Handbook for vector surveillance and control at ports, airports, and ground crossings (www.who.int/ihr/publications/9789241549592_eng/en/, accessed 10 October 2019).
- Water, sanitation and hygiene in health care facilities (https://www.who.int/water_sanitation_health/publications/wash-health-care-facilities/en/, accessed 10 October 2019).

Part B: Considerations for collaboration at ground crossings

3.1 Overview

The IHR articles 21.2, 44 and 57.2 address the value of cross-border collaboration and provide a legal framework for it. Cross-border collaboration reinforces and augments existing capacities in a ground-crossing setting by harmonizing resources, strengthening coordination and communication, and expanding/complementing joint operations/efforts. Effective collaborative agreements can have a significant impact on border health capacities.

In many cases, the development of effective national-level collaborative agreements has evolved from the development of small, local cross-border pilot projects to enhance public health communication and collaboration. Smaller-scale pilot or disease-specific or event-specific collaborative projects across borders may help to establish the conditions and lessons learned for successful longer-term binational collaboration. Similarly, collaborative arrangements at ground crossings are likely to be driven by and carried out in accordance with binational collaborative agreements.

Encouraging local and national agreements that support cross-border collaboration on local prevention or control of diseases which threaten to spread internationally strengthens IHR implementation and increases collective health security. These collaborative agreements may include:

- harmonizing public health surveillance and control measures, including timely identification of cases associated with ground crossings or other international travel;
- establishing cross-border communication/coordination protocols or mechanisms to enable timely information-sharing at the local level (e.g. local/binational committees);
- ensuring proper environmental and health-care conditions for the populations sharing the border;
- coordinating available resources to maximize the efficiency of the response (e.g. by referring sick travellers to a health-care facility on the other side of the border if that will facilitate more timely medical evaluation and treatment);
- considering binational surge capacity if the impact of a public health emergency affecting a border region is likely to be greater on one side of the border than the other, or if one country has more resources available in the region than the other.

The handbook encourages opportunities and considerations for joint/cross-border synergies. Part A provides overall operational guidance while Part B outlines planning elements for formalized cross-border collaboration.

3.2 Opportunities to collaborate – guiding questions

A series of guiding questions has been provided in the five-part Table 8 below and should be considered as part of an overall strategy when exploring opportunities to collaborate binationally or within a region.

Table 8. Guiding questions when defining a strategy on cross-border collaboration

Table 8a. Cross-border considerations – Joint Designation

Binational and regional information-sharing capacities

1. Has information on the disease burden been communicated? For instance:
   - areas with diseases of international concern, and
   - seasonal changes in disease patterns.
2. Is information on population movements shared between States Parties? For instance:
   - cross-border movement that may have an impact on the international spread of disease,
   - higher volumes of cross-border movement, and
   - seasonal changes in movement patterns.
3. Are there opportunities to collaborate on current or planned interventions? For instance:
   - additional training for community surveillance volunteers,
   - increased laboratory capacity,
   - immunization campaigns,
   - engaging community leaders (e.g. healers, religious leaders), and
   - establishing sentinel sites in health centres
4. Do the means exist to coordinate with cross-border counterparts to share information about public health events such as outbreaks, intervention strategies, case definitions etc?
5. What legal frameworks, legal agreements, memorandums of understanding, other agreements or joint technical committees are in place that may have an impact on cross-border collaboration?

Table 8b. Cross-border considerations – Surveillance, building on existing integrated disease surveillance and response (IDSR), community-based surveillance activities

1. Would entering into a collaborative arrangement for sharing information, data or protocols be beneficial bilaterally or regionally?
2. Are there any opportunities to harmonize the capacities of surveillance systems by entering into binational or regional collaborative arrangements?
3. Is there an opportunity or need to collaborate on the following reporting threshold factors, namely:
   - differences in case definitions,
   - differences in priority diseases,
   - differences in detection capacity, and
   - differences in reporting frequency?
4. Is there an opportunity or need to collaborate on the following reporting format factors, namely:
   - differences in language, and
   - differences in laboratory capacities, methods, reagents or sampling methods?
5. Are mechanisms in place for neighbouring countries to advise each other about travel-related cases?

Table 8c. Cross-border considerations – Communications

1. Have cross-border points of contact been identified for reporting and receiving notification of public health events?
2. Have different sectors/stakeholders been considered in communication plans? Strategies to collaborate and coordinate by using a multisectoral approach should be considered.
3. Are there opportunities to collaborate on social mobilization efforts?
4. Are there procedures at the central level to collaborate on drafting press releases?
5. Can communications strategies be coordinated and/or harmonized? For instance:
   - message content, and
   - timing of communication campaigns.
6. Are there opportunities to collaborate on communication between border health authorities, referral clinics/hospitals and transportation services?
7. Is there an opportunity to exchange maps of livestock migration routes and border livestock markets?

Table 8d. Cross-border considerations – Preparedness and response

<u>Medical and public health service capacities</u>

1. Is there a need to collaborate on the collection of information on cross-border cases and community connectivity? For instance:
   - incorporate travel history and travel intent in initial investigations,
   - register, follow up and monitor/control case movement, and
   - when mass cross-border movement is identified, immediately coordinate (i.e. surge capacity).
2. Would additional collaboration and coordination with nearby health facilities or referral health facilities be beneficial?

<u>Response plans and training capacities</u>

3. Is there an opportunity to collaborate regarding resources for public health event management at ground crossings (i.e. provision of isolation, quarantine, referral hospitals/clinics, stocks of medicines/vaccines)?
4. Is there an opportunity to collaborate on laboratory services such as sample collection, storing, packaging and transport?
5. Is there a need to collaborate on the coordination of control strategies (i.e. vector control, vaccination)?
6. Is there an opportunity to conduct joint training exercises, or cross-border table-top and/or simulation exercises?
7. Are there opportunities to collaborate on cross border public health response challenges? For instance:
   - differences in rapid response team design,
   - differences in emergency operation centre design, and
   - differences in screening measures at borders.

Table 8e. Cross-border considerations – One Health
1. Is there a need to exchange maps of livestock migration routes and border livestock markets?
2. Are there needs and opportunities to collaborate on capacity-building in diagnosis and response of emerging and re-emerging zoonosis diseases for both human and animal sectors?
3. Is there an opportunity to collaborate on control of cross-border livestock movement through joint animal health inspection and certification?
4. Is there a need to collaborate in animal quarantine measurement at the ground crossing?

3.3 Components of a cross-border collaborative agreement

The strategic risk assessment process may lead to opportunities to enter into cross-border collaborative arrangements. The following elements should be taken into consideration when developing a cross-border collaborative agreement:

- political commitment,
- identification of key stakeholders,
- clearly identified objectives and desired outcomes,
- identification of hazard(s),
- the scope and level of cooperation,
- operational considerations,
- complementary communication and technical mechanisms,
- leveraging existing agreements, and
- financial resources.

Political commitment

Political will on both sides of the border is a fundamental element of any cross-border collaborative agreement. Agreements are often complex undertakings that require both political and public will to align for an agreement to be successful. The basic elements of any agreement are likely to require the government to invest financial, human, material and other resources. Without the necessary political commitment and influence, any potential agreement is at great risk of not being realized. The political commitment becomes even more significant if it is reflected in and endorsed by national legislation.

An example of political commitment

It is important to acknowledge the countries and authorities which have reached understandings and have entered into agreements for cross-border collaboration.

Key stakeholders

The first step in the cross-border collaborative process is to identify key stakeholders, followed by identification of their existing cross-border collaborative mechanisms,

including non-health ones, that could host or facilitate health ones. For instance, taking a One Health approach, non-traditional public health counterparts such as ministries of agriculture, environment or livestock could be integrated into a stakeholder analysis to facilitate operational considerations on animal health, environmental health or related commercial trade.

This multi-stakeholder process will assist in identifying critical gaps as well as collaborative actions to address the gaps in terms of technical and resource mobilization. A comprehensive and up-to-date stakeholder contact list is essential to the successful implementation of this component.

Examples of key stakeholders

Examples include areas such as agriculture, environment, finance, intergovernmental organizations, livestock, plants, transport, trade etc.

Objectives

The objectives outlined in a collaborative agreement should be specific to the disease or to the public health issue of concern. Governmental and nongovernmental stakeholders should endeavour to articulate a common understanding of the issue and should link the objectives of the collaborative agreement to larger national agendas. It is imperative to document achievable and measurable objectives within an agreement in order to reach the desired outcomes. Any outcomes identified in collaborative agreements should also have mutually agreed timelines or milestones in order to be successful.

An example of a statement of objectives

The agreement aims to strengthen public health capabilities in cross-border disease surveillance, risk assessment, preparedness and coordinated response to public health events that have potential to cause international spread through cross-border movement at a specific ground crossing.

Prioritized hazard(s)

Hazards may be biological, zoonotic, chemical or radiological. The strategic risk assessment process supports the assessment of public health hazards that are significant for a specific ground crossing and the adjacent border communities. Sources of information that may assist in the identification of hazards include previous disease information in the region, epidemiological studies, data on the health-care system, clinical data, surveillance data and trends, and academic/research information. The agreement should state the priority diseases, including zoonotic diseases, and public health events that are associated with a specific ground crossing.

An example of a statement of prioritized hazard(s)

The priority diseases are cholera, Ebola, plague, vector borne diseases, vaccine-preventable diseases, and outbreaks of emerging/re-emerging infectious diseases – including zoonotic diseases and chemical or radiological incidents affecting neighbouring countries.

The scope and form of cooperation

The scope and form of cooperation with counterparts across borders are important for public heath collaboration. Counterparts should agree a communications plan, the type and frequency of meetings, training events, financial commitments and, if applicable, the application of public health measures. When determining activity schedules, resource considerations such as funds required for travel, meetings, training, translation and other activities should be factored into any agreement.

Examples of the scope and form of cooperation:

These include:

- a coordination committee comprised of national coordinators assigned by participating countries/districts;
- information and data exchange on diseases and public health events;
- experience and best practice shared through defined means/platforms;
- health care networking and sharing of resources;
- laboratory capacity-strengthening and networking;
- joint human resource development through exchange of experts, training and site visits;
- coordinated response, including active case-finding through screening.

Operational considerations

Available resources, both human and operational, should be taken into consideration when developing a collaborative agreement because one State Party's capacities – as such as laboratory capacities – may be more developed or better situated than those in neighbouring countries. Other operational considerations such as potential differences in case definitions, outbreak notification thresholds and laboratory methods should be harmonized whenever possible.

An additional cross-border requirement is for free and open, systematic and routine cross-border exchange of important public health information at the local/district level. This information exchange must respect the sovereignty of each country and the national public health surveillance system procedures of each State Party.

Examples of operational considerations

- Cross-border partners should consider harmonizing case definitions and unique identifiers to use for binational case identification in border districts.
- Travel history data may include:
  - contact with persons who lived or travelled in the neighbouring country since the contagious period began;
  - contact with persons who lived or travelled in the neighbouring country since the incubation period began;
  - travel history since the initial epidemiological link and/or incubation period began.

- Incident cases or communicable disease contacts that occur in non-border jurisdictions may be included in cross-border surveillance reports if the travel history suggests possible border region or cross-border travel.
- Information-sharing agreements should be developed between laboratories where possible.

Complementary communication and public health measures

Complementary communication and public health measures are necessary to achieve the desired outcomes of a collaborative agreement. Complementary communication and collaboration protocols should be established to enable near-simultaneous cross-border notification to appropriate public health authorities in order to avoid delays in response. These cross-border communication protocols should include criteria for notification similar to those recommended for national notification, designated points of contact and alternates, and emergency contact information. When clear and timely, cross-border communication can be critical to minimize the international risk and impact of public health threats.

Information-sharing can facilitate strengthened preparedness by collating public health surveillance data in a binational or multinational geographical region to enable population-based analysis of, for instance, disease incidence and spread. This type of collaboration can be initiated and sustained through joint designation of shared ground crossings (IHR Article 21.2), formal agreements for cross-border information-sharing, collaboration in response at the local, intermediate and national levels, and for disease- or event-specific collaborative projects.

The application of public health measures that may cross borders – such as mass vaccination plans, social mobilization activities or vector control programmes – should be coordinated across borders whenever possible in order to maximize impact.

Example of complementary communication and public health measures

- Jointly conduct risk-mapping at ground crossings and adjacent border regions in order to identify border areas of high risk due to cross-border movement.
- Jointly define criteria for notification of public health events.
- Exchange knowledge and information relating to diseases or other public health risks, health promotion and risk communication, hygiene and sanitation, and human resource development for ground crossings and nearby border communities.
- Identify health measures (e.g. early detection, investigation, quarantine, isolation, contact tracing, etc.) as a joint disease defence mechanism that prevents or controls the spread of the disease nationally and internationally among the participating countries.

Leveraging existing agreements

States Parties are encouraged to establish formal agreements and standard operating procedures at the local level for timely sharing of information necessary for a public health response. These agreements may be binational or multinational in scope.

Leveraging existing agreements between countries on a binational or district basis may be necessary in order to develop and strengthen critical partnerships across national land borders at the district and ground-crossing levels. These agreements should be communicated to the national, provincial and local governments in order to ensure that all stakeholders are aware of the agreements and the impact they may have at the various levels of government.

An example of leveraging existing agreements

The cross-border agreement is subject to the legislation in each country that is party to the agreement. Therefore, participating countries are encouraged to leverage their existing cooperation with regard to direct and rapid exchange of public health information between the neighbouring territories of different states. Such information should include public health measures to be applied in adjacent territories of different states at their common frontier, arrangements for carrying affected persons or affected human remains by means of transport specially adapted for the purpose, and the deratting, disinsection, disinfection, decontamination or other action designed to render goods free from disease-causing agents.

Financial resources

Establishing collaborative agreements between neighbouring countries and supporting such initiatives financially can be a challenge for both developed and less-developed countries. The scope of cross-border collaborative activities will need to be prioritized within existing funding resources. Engaging multiple stakeholders – which may include government ministries, traditional community leaders, the leadership of nongovernmental organizations, business leaders and other civil society partners, including conveyance operators – may help in securing funding to realize these collaborative agreements.

An example of financial resources

Participating countries will consider and establish a joint mechanism to mobilize financial resources in order to support implementation of identified activities in each country.

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ANNEXES

Annex 1. Definitions

"Affected" means persons, baggage, cargo, containers, conveyances, goods, postal parcels, or human remains that are infected or contaminated, or carry sources of infection or contamination such as to constitute a public health risk.

"Contact-tracing" means the identification of persons who may have been exposed to an infectious disease. It aims to identify new cases and respond to them in a timely way, hence preventing the further spread of the disease.

"Contamination" means the presence of an infectious or toxic agent or matter on a human or animal body surface, in or on a product prepared for consumption or on other inanimate objects, including conveyances, that may constitute a public health risk.

"Competent authority" means an authority responsible for the implementation and application of health measures under the International Health Regulations (2005).

"Communicable disease" means a disease that is caused by a microorganism such as bacteria, virus, parasite or fungi that can be spread, directly or indirectly, from one person to another.

"Conveyance" means an aircraft, ship, train, road vehicle or other means of transport on an international voyage.

"Conveyance operator" means a natural or legal person, in charge of a conveyance or their agent.

"Designated point of entry" means airports, ports and certain ground crossings designated by States Parties to develop the capacities set forth in Annex 1 of the International Health Regulations (2005). These capacities include: an access to appropriate medical services (with diagnostic facilities); services for the transport of ill persons; trained personnel to inspect ships, aircraft and other conveyances; maintenance of a safe environment; a programme and trained personnel for the control of vectors and reservoirs; a public health emergency contingency plan; and capacities for responding to events that may constitute a public health emergency of international concern.

"Early warning and response" means the organized mechanism for the earliest possible detection of any public health event requiring rapid investigation and response.

"Event" means a manifestation of disease or an occurrence that creates a potential for disease.

"Event-based surveillance" means the organized collection, monitoring, assessment and interpretation of mainly unstructured ad hoc information regarding health events or risks, which may represent an acute risk to human health. Event-based surveillance is a functional component of early warning and response.

"Ground crossing" means a point of land entry in a State Party, including one utilized by road vehicles and trains.

"Indicator-based surveillance" means the systematic (regular) collection, monitoring, analysis and interpretation of structured data – i.e. of indicators produced by a number of well-identified, mostly health care-based formal sources.

"International Health Regulations (2005)" is the international legal instrument that is binding in 196 countries across the globe, including all WHO Member States. 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. The IHR, which were adopted by the Fifty-Eighth World Health Assembly on 23 May 2005 and entered into force on 15 June 2007, require countries to report certain health events to WHO. Building on WHO's unique experience in global disease surveillance, alert and response, the IHR define the rights and obligations of countries to report events and establish a number of procedures that WHO must follow in its work to uphold global public health security.

"National IHR Focal Point" means the national centre, designated by each State Party, which shall be accessible at all times for communications with WHO IHR Contact Points under the International Health Regulations (2005).

"Notification" is the mandatory or advised communication of information by a State Party to WHO, as stated in article 6 of the International Health Regulations (2005).

"Point of entry" means a passage 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.

"Public health emergency of international concern" is an extraordinary event which is determined, as provided in the IHR (i) to constitute a public health risk to other States Parties through the international spread of disease, and (ii) to potentially require a coordinated international response.

"Public health risk" is the likelihood of an event that may affect adversely the health of human populations, with an emphasis on one which may spread internationally or may present a serious and direct danger.

"Reporting" is the process by which health events and health risks are brought to the knowledge of the health authorities.

"Reservoir" means an animal, plant or substance in which an infectious agent normally lives and whose presence may constitute a public health risk.

"Sentinel surveillance" means that a limited network of carefully selected reporting sites, with a high probability of seeing cases of disease, is used as a source of case reporting in order to signal trends, identify outbreaks and monitor the burden of disease in a community as a rapid, economical alternative to other surveillance methods.

"Surveillance" or "public health surveillance" means the systematic, ongoing collection, collation and analysis of data for public health purposes and the timely dissemination of public health information for assessment and public health response as necessary.

"Traveller" means a natural person undertaking an international voyage.

"Vector" means an insect or other animal which normally transports an infectious agent that constitutes a public health risk.

"WHO IHR Contact Point" means the unit within WHO which shall be accessible at all times for communications with the National IHR Focal Point.

Annex 2. How to apply the Strategic Risk Assessment Tool

2.1 How to use this tool:

- **Step 1.** Assemble a strategic risk assessment team. The knowledge and expertise of the team will greatly influence the quality of the strategic risk assessment process. Additional expertise can be brought in at any time.
- **Step 2.** Identify suspect hazards, known hazards or public health concerns associated with prioritized ground crossings. Much information on hazards may already exist at the country or ground-crossing level, including general risk, hazard analysis and mapping (Table A1). Additional public health and related information can be collected from surveillance data. Country-specific information can be combined with neighbouring country information if available. Furthermore, this baseline information may contain key descriptions of vulnerability, severity, coping capacity and likelihood.
- **Step 3.** Use tables A2, A3 and A4 as guides for the team to evaluate vulnerability, severity and coping capacity assessments. The team needs to evaluate only the factors relevant to the identified hazards. **It should also be noted that each question does not have to be asked for each identified hazard as many capacities are cross-cutting and can be grouped into broader categories (e.g. the capacity to have staff trained on personal protective equipment in a laboratory setting will be cross-cutting for many agents that requires laboratory diagnostic capabilities).**
- **Step 4.** For each individual hazard identified through the hazard assessment process, the strategic risk assessment team will use Figure A1 (the risk matrix tool) to assign a level of risk (risk characterization process). In order to populate the risk matrix, the team should complete the following steps:
  - **Step 4.a** The strategic risk assessment team will use the information from the hazard assessment to assign a qualitative descriptive value (between very unlikely and almost certain) to the risk matrix tool to describe the likelihood of the hazard occurring (Table A5).
  - **Step 4.b** The strategic risk assessment team will use the information from the vulnerability, severity and coping capacity assessments to assign a qualitative descriptive value of minimal-to-severe to the impact of the hazard occurring to the risk matrix tool.
    - Guidance on how to assign a value to the impact of the hazard occurring can be found in the formula presented in Table A6.
    - Guidance on how to read the values generated by the impact formula risk can be found in Table A7.

- **Step 5.** Risk mitigation: the team will prioritize the capacity-development activities driven by the overall level of risk (likelihood x impact), as determined by the risk characterization process (Table A8). The team will also decide on the risk mitigation actions required, as well as the minimum and additional preparedness actions.

Note: A companion Strategic Risk Assessment Tool spreadsheet has been developed to support the assessment.

2.2. Assessment factors

Table A1. Hazard assessment

A listing of all existing or emerging hazards with the potential to cause a health emergency and that may have an impact on the ground crossing, based on public health event data. Hazards may be biological, zoonotic, chemical or radiological.

1. Assess burden of diseases factors. Review records such as:
   - ✔ epidemiological studies
   - ✔ health-care system data
   - ✔ clinical data
   - ✔ existing mapping data on the distribution of high consequence communicable disease, and
   - ✔ surveillance data and trends.
2. Evaluate data and linkages between available public health data, literature reviews, studies and academic/research information.
3. Review immunization registries, vital statistics and any disparities.
4. Identify the type of hazard.

Table A2. Vulnerability assessment

Evaluate the potential vulnerabilities of the population to the hazards identified in the hazard assessment.

In consultation with local experts, stakeholders and local sources of information, the strategic risk assessment team should use a series of guiding factors and any other relevant local information about the hazard to assign an vulnerability score to the hazard on a scale of 1 to 5. The score will be subjective in nature and should be based on the best available, accurate and recent information.

The vulnerability score will then be entered into the companion strategic risk assessment tool spreadsheet to determine the hazard's level of impact.

The assigned score from 1 to 5 would be as follows:

Exposure	
1	Very low vulnerability
2	Low vulnerability
3	Moderate vulnerability
4	High vulnerability
5	Very high vulnerability

Comments

Guiding factors to take into consideration when determining vulnerability:

- Identify geographical areas that are likely to be affected by the health consequences and distribution factors (e.g. the number and location of chemical plants and the chemicals they use).
- Identify and estimate the number of exposed persons at a ground crossing who may contract a disease or who could become infected because of their lack of immunity (i.e. the susceptible population at risk) in the case of a biological hazard.
- Identify and estimate the size and density of communities near ground crossings or along associated transit routes.
- Identify and estimate the number of persons living in the high-risk area of the ground crossing and adjacent border communities. In the case of a chemical or radiological hazards, estimate:
  - o the duration of exposure;
  - o the risk of exposure to chemical or radiological substances, or vulnerability to natural disasters.
- Identify the modality of interactions between communities on either side of a ground crossing with travellers, cargoes and conveyances moving across borders.
- Assess social determinants of health (e.g. access to food, water, housing).
- Determine whether potentially impacted populations have access to health-care services.

Table A3. Severity

For each identified hazard, the strategic risk assessment team shall assign a severity score on a scale of 1 to 5.

A series of guiding factors are provided below and can be taken into consideration in conjunction with other available data to determine the severity score.

The severity score will then be entered into the companion strategic risk assessment spreadsheet tool to determine the hazard's level of impact.

The assigned severity score from 1 to 5 would be as follows:

Severity	
1	Very low severity
2	Low severity
3	Moderate severity
4	High severity
5	Very high severity

Guiding factors to take into consideration when determining severity are:

- seriousness of consequences (morbidity and mortality);
- exposed population immune status factors;
- vector-borne disease factors (e.g. distribution, density, infectivity, seasonal variations) and/or animal hosts (density, prevalence, existing control programmes) along/across borders and travel routes having an impact on borders.

Table A4. Coping capacity assessment

Coping capacities refer to the capabilities of the ground crossing and border region to cope with and manage the potential hazards.

A series of guiding questions have been provided in this table to assist in the evaluation of existing coping capacities that may be used to manage potential hazards. These questions have also been provided in the companion strategic risk assessment tool. All applicable questions are to be answered as yes or no in the companion strategic risk assessment tool.

A value of 1-5 is to be assigned to the level of each coping capacity required, commensurate with the hazards, with 1 being very high (the necessary capacities commensurate to the hazard are in place) and 5 being very low (no capacities commensurate to the hazard are in place).

The companion strategic risk assessment tool will calculate the average value of all coping capacities evaluated and this number (1-5) will be the overall coping capacity value that will be used to populate the risk assessment formula.

Based on the overall coping capacity value, the following scales can be used for rating existing capacities to the hazard.

Coping capacity	
1	Very high
2	High
3	Partial
4	Low
5	Very low

Communication and coordination	Yes	No
• Have any staff members at the ground crossing been identified as focal points for communication with stakeholders within the ground crossing (e.g. service providers, stakeholders, medical facilities that provide public health services to the ground crossing)? • Are there means of communication to receive and/or report available public health surveillance information? • Has public health information been provided by the ground crossing to travellers? • Has public health information been provided by the ground crossing to local communities adjacent to the ground crossing? • Has public health information been provided to the surveillance system by local communities adjacent to ground crossing? • Have communication mechanisms been established to communicate health-related information from the ground crossing to neighbouring countries or to regional disease surveillance networks? • Have communication mechanisms to communicate to all levels of government and policy makers and stakeholders been established? • Has an up-to-date emergency contact list been established of stakeholders for public health events management?		

Surveillance	Yes	No
• Are standard case definitions for public health events under surveillance (e.g. diseases, symptoms) used at the ground crossing? • Are standard operating procedures in place to identify suspect cases at the ground crossing? • Are standard operating procedures in place to identify suspect cases within neighbouring communities? • Does the surveillance system receive public health information from ground crossings, including the presence of ill or deceased travellers? • Does the surveillance system receive environmental health information from ground crossings in relation to infection and contamination of food/water? • Does the surveillance system receive information in relation to vectors and reservoirs associated with vector-borne diseases? • Does the surveillance system receive information in relation to chemical or radiological hazards? • Have the reporting sites been established at the ground crossing and along the border region? • Have the reporting mechanisms from the ground crossing to the national level been identified? • Have the reporting mechanisms from the border community to the national level been identified? • Is information standardized when a public health event is reported by the ground crossing to the national surveillance system (i.e. is there a predefined list and standardized format for the variables to be reported)? • Have the staff of the ground crossing been trained in how to identify a potentially ill traveller? • Has a system been established between the national surveillance system and the ground crossing for management of case-related data (including contact-tracing)? • Have roles and responsibilities of all stakeholders been identified, documented and shared, including in adjacent border communities?		
Mapping cross-border movements (travellers, goods, cargo)	Yes	No
<u>Structured border with administrative controls</u> • Have travel routes (e.g. origin, destination and transit pathways) and the potential for international traffic dispersal through links to major roadways, railways, airports and ports of entry been assessed? <u>An open/porous border</u> • Have the critical access points from one country to another along the border been identified in order that one can understand the movement dynamics of travellers, goods and cargo? • Have the critical points of congregation where cross-border travellers may interact with other travellers, and/or adjacent border communities, been identified? • Are the points of access and of congregation prioritized on the basis of estimates of traveller volume?		

Assessment and care of travellers	Yes	No
• Has adequate space to conduct private interviews with ill travellers been identified at a ground crossing? • Have isolation and quarantine facilities been identified? • Are there language barriers or cultural differences that may hinder the assessment of travellers? • Are translation services available? • Have the following factors been taken into account when undertaking observation or isolation of suspected or affected travellers at ground crossings? Is there: - shelter - sanitation - water - waste disposal - food - privacy and safety - communications - transportation? • Has access to qualified laboratories been identified and established?		
Health-care facilities	Yes	No
• Has the type and proximity of the health-care facilities providing services to the ground crossing been determined? • Do travellers and ground-crossing staff have access to medical professionals? • Are accessible health-care resources able to respond to a communicable disease event?		
Transportation	Yes	No
• Have procedures been established for transporting samples to laboratories (cross-border transport)? • Are there means of transport available to convey travellers who are (or are suspected of being) ill from a ground crossing to a health-care facility?		
Trained staff	Yes	No
• Are sufficient numbers of trained staff available for routine functions at ground crossings? • Have surge capacities been taken into consideration in order to respond to a public health emergency at a ground crossing and in a border region? • Are ground crossing table-top exercises and/or field and/or full-scale drills conducted? • Are trained staff available to inspect conveyances at or near the ground crossing? • Are after-action reports available? • Has a gap analysis been conducted to address human resource capacities in the after-action review? • Does regular on-the-job training take place for IHR health functions?		

Technical and logistical issues	Yes	No
• Are the necessary instruments (chemicals and equipment) available to manage an event of public health concern at a ground crossing or in a border region? • Has the location for storing equipment and supplies (e.g. PPE, disinfectant, etc) been identified? • Has the access to equipment and supplies (e.g. PPE, disinfectant, etc.) for the ground crossing been identified?		
Environmental health programmes	Yes	No
• Are environmental health programmes established near or at the ground crossing and in communities linked to the ground crossing by transportation routes? Do the programmes include: - potable water safety - vector control - solid waste and sewage management - food safety? • Is the general level of sanitation at the ground crossing facility and in surrounding areas conducive to the transmission of communicable diseases? • Are there any factors that may have an impact on the application of possible recommended measures such as disinsection, disinfection, decontamination or other treatment of contaminated conveyances, baggage and goods (e.g. human resources, equipment, supplies)?		
Vectors	Yes	No
• Have vectors of public health significance been identified? • Do data exist on the epidemiological context and the local entomological situation at the ground crossing and in the border region? • Is a vector control programme in place at the ground crossing? • Is a vector control programme in place in the border region? • Has information on the vector control programme in one country been shared with the neighbouring country?		
One Health	Yes	No
• Has a communication mechanism been established for exchanging information and maps of livestock migration routes and border livestock markets at ground crossings that have importation or exportation of livestock? • Is there access to diagnosis of emerging and re-emerging zoonotic diseases for both human and animal sectors? • Is there access to veterinary services for conducting quarantine and isolation of affected animals detected among imported/exported animals at ground crossings (e.g. are there services for decontamination, disinfection and treatment of affected animals)?		

Emergency preparedness plans	Yes	No
• Have ground crossings been incorporated into community/national public health emergency plans? • Have emergency planning exercises for ground crossings been conducted? • Are exercises conducted on traveller screening activities for early detection of cases? • Are there any cross-border communication protocols for sharing disease information? • Do up-to-date emergency contact lists exist within the country? • Do up-to-date emergency contact lists exist of countries on both sides of the ground crossing? • Have ground crossings been integrated into the community/national communication protocol? • Have standard operating procedures been established for the detection, investigation and management of cases and affected conveyances (e.g. exit screening)?		
Vaccination and prophylaxis	Yes	No
• Are the vaccination requirements of the country published? • Have these requirements been communicated to the bordering countries? • Are records of vaccination required at POE? • Are there any vaccination or prophylaxis services for travellers at the ground crossing? • Are there any vaccination or prophylaxis services for the border region? • Do contingency plans for mass vaccination exist? • Has the general health status of the communities near the ground crossing or along transit routes that are linked to the ground crossing been considered (i.e. malnutrition, vaccination rates)?		
Community engagement	Yes	No
• Could any local cultural practices along the border region (i.e. burial practices) increase the hazard? • Have health-seeking practices been identified among the border communities? • Are there social or behavioural considerations? • Have any ethical concerns of note been identified? • Has the community's general level of acceptance of potential control measures been considered?		
Overall score		

2.3 Risk characterization (determination of risk level and hazard ranking)

2.3.1 Determination of likelihood

Table A5. Likelihood of occurrence

For each possible hazard (biological, chemical, physical or radiological), determine the likelihood of occurrence.

Determine the likelihood of occurrence of a hazard by evaluating its frequency and seasonality, and by identifying the possible negative health consequences for populations at ground crossings and in adjacent border communities.

Likelihood	
1	Very unlikely
2	Unlikely
3	Likely
4	Very likely
5	Almost certain

Examples of questions that can assist in assessing the likelihood of a specific hazard:

- Are there any interactions at ground crossings and in the border region that facilitate the introduction/spread of diseases to the bordering countries?
- Is the hazard highly infectious?
- Is there any past evidence of local spread within the border region? Is there an index case that is associated with a history of travelling to bordering countries within the previous month, or of close contact with a traveller/mobile population at the ground crossing, or participation in an international gathering in the bordering countries?
- Is there any past evidence of an event caused by an environmental contamination associated with this specific hazard (biological, zoonotic, chemical or radiological) that has the potential to spread across borders?
- Is the event at a ground crossing or in a border region with intense international traffic and limited capacity for sanitary control or environmental disinfection and decontamination?

2.3.2 Determination of the level of impact

The formula in Table A6 is intended to assist the user to determine the scale of the impact of an individual hazard on an aggregation of the scores given for vulnerability, severity and coping capacity.

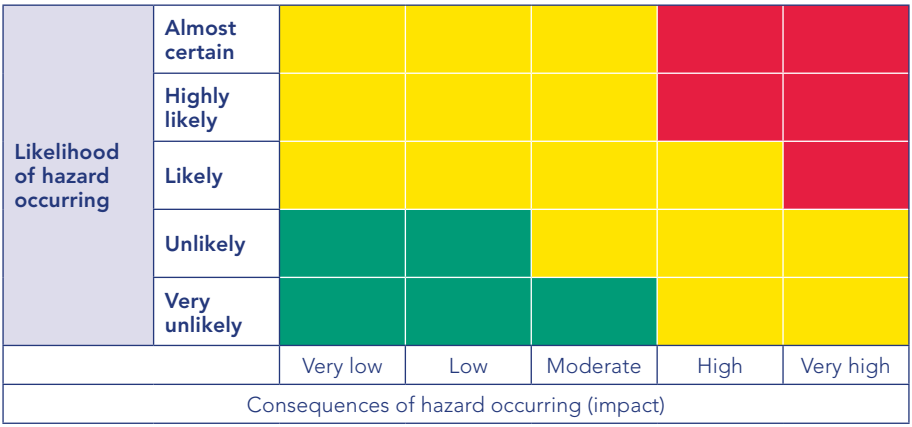
Table A6. Determination of level of impact

Level of impact	Impact = (vulnerability + severity + coping capacity)/3
Very low	1
Low	2
Moderate	3
High	4
Very high	5

Table A7. Impact value definitions

	Level	Impact
1	Very low	• Limited impact on the affected population. • Little disruption to normal activities and services. • Routine responses are adequate and there is no need to implement additional control measures. • Few extra costs for authorities and stakeholders.
2	Low	• Minor impact for a small population or at-risk group. • Limited disruption to normal activities and services. • A small number of additional control measures will be needed that require minimal resources. • Some increased costs for authorities and stakeholders.
3	Moderate	• Moderate impact because a large population or at-risk group is affected. • Moderate disruption to normal activities and services. • Some additional control measures will be needed and some of these require moderate resources for implementation. • Moderate increase in costs for authorities and stakeholders.
4	High	• Major impact for a small population or at-risk group. • Major disruption to normal activities and services. • A large number of additional control measures will be needed and some of these require moderate resources for implementation. • Significant increase in extra costs for authorities and stakeholders.
5	Very high	• Severe impact on the affected population. • Severe disruption to normal activities and services. • A large number of additional control measures will be needed and most of these require moderate resources for implementation. • Serious extra costs for authorities and stakeholders.

2.4 Figure A1. Risk matrix tool



2.5 Table A8. Risk mitigation and level of risk and preparedness & response capacity development

Likelihood and impact of each individual hazard	Risk mitigation actions	Capacities/examples
	Minimum preparedness actions (Ground crossing capacity development activities)	Ongoing monitoring of the hazards to determine that the impact or likelihood doesn't increase.
	Additional preparedness actions: Minimum preparedness actions, plus	Provision for adequate capacities should be prioritized due to the high impact of occurrence and/or likelihood. Refer to previous assessment of coping capacities to assist with this prioritization.
	Risk mitigation actions: any additional preparedness actions, plus	Hazards that are characterised both as high impact and high likelihood should receive the highest priority for capacity development and be identified specifically in contingency plans. Refer to previous assessment of coping capacities to assist with this prioritization.

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