



World Health  
Organization

Public health risk assessment  
and interventions

## **Typhoon Haiyan**

Philippines – 16 November 2013

# Contents

<b>Preface</b>	<b>2</b>
<b>Executive summary</b>	<b>3</b>
<b>Background and risk factors</b>	<b>5</b>
<b>Priority health concerns</b>	<b>8</b>
<b>Priority interventions</b>	<b>16</b>
<b>Staff health</b>	<b>25</b>
<b>Annexes:</b>	
<b>Annex 1: WHO recommended case definitions</b>	<b>27</b>
<b>Annex 2: Map of infrastructural damaged post typhoon Haiyan</b>	<b>30</b>
<b>Annex 3: Key data on previous pattern of disease related to disasters</b>	<b>31</b>

## Preface

The purpose of this public health risk assessment is to provide all health sector partners, including professionals of local and national authorities, non-governmental organizations (NGOs), donor agencies and United Nations agencies currently working with populations affected by the emergency in the Philippines, with up-to-date technical guidance on the major public health threats faced by the affected population.

The topic areas addressed have been selected on the basis of the burden of morbidity, mortality and potential for increased burden of disease in the affected area.

Public health threats represent a significant challenge to those providing health-care services in this evolving situation. It is hoped that this risk assessment will facilitate the coordination of activities among all partners working among the populations currently affected by the crisis.

## Executive Summary

The Philippines archipelago was hit by category 5 hurricane on 8 November 2013, affecting over 18 million people living in a large swathe across the center of the island group. There is substantial damage, and all homes and buildings in the path of the storm have been significantly damaged or destroyed. A large storm surge also hit the city of Tacloban, washing entire communities away. Most areas have no water, power or communications, little fuel, and access is hampered by the severely damaged infrastructure.

### **Baseline health profile:**

Prior to the emergency, the typhoon-affected areas had suboptimal vaccination coverage for measles and polio; health services did not cover all levels of care; there were an estimated 12,000 deliveries per month.

### **Principal health issues:**

- a. Wounds and injuries as a direct result of the storm, or associated with post-event flooding
- b. Lack of food, water, sanitation and hygiene facilities, and related food and water-borne illnesses
- c. Problems associated with pregnancy and childbirth
- d. Respiratory infections associated with overcrowding, especially acute respiratory infections in children
- e. Measles, and potentially polio due to importation, are risks
- f. Malnutrition, especially of infants and young children, leading to increased and more severe disease
- g. Mental health and psychosocial conditions
- h. Leptospirosis from exposure to rodent excreta or contaminated water
- i. Vector-borne diseases, especially dengue and chikungunya fevers. Malaria risk is absent or low, except in a few affected provinces
- j. Sexually transmitted diseases

### **Immediate priorities:**

- a. Provision of food, safe drinking water, appropriate sanitation, shelter, and other essential non-food items including fuel for cooking
- b. Trauma care for the wounded with tetanus prevention
- c. Provision of medicines and medical supplies
- d. Establishment of emergency primary and secondary care for medical, surgical and obstetric emergencies
- e. Risk communication to the public
- f. Management of dead bodies with retrieval and identification of victims
- g. Measles vaccination, and polio vaccination in high risk areas

- h. Establishment of an early warning system for early detection and response to outbreaks
- i. Infection control in healthcare units including safe blood transfusion and medical waste management, as well as sufficient water supply and sanitation
- j. Management of acute malnutrition including medical complications
- k. Continuity of treatment for chronic diseases and chronic infections such as tuberculosis

**Short term priorities include:**

- a. Re-establishment of essential health care services (primary, referral and hospital care)
- b. Emergency mental health care and psychosocial support
- c. Waste management
- d. Vector control and provision of personal protection against vector-borne diseases

**Medium term priorities include:**

- a. Post-surgical care and management of disabilities
- b. Routine immunization
- c. Health of victims who have migrated and potential returnees

A national list of case definitions for likely conditions has been defined for clinical and epidemiological purposes (see Annex 1: WHO recommended case definitions for reference). Laboratory diagnostic support is limited and clinical definitions are therefore essential for disease management.

Staff deploying to the Philippines should be appropriately vaccinated and offered malaria prophylaxis when required.

# 1. BACKGROUND AND RISK FACTORS

The Philippines is an archipelago located in the western Pacific; the capital and main port of entry is Manila.

The country is comprised of more than 7000 islands with a total land area of approximately 300 000 square km. There are three main groups of islands – Luzon in the north, Visayas in the central zone and Mindanao in the South. The country generally has a tropical climate, with a wet season from June to November, cooler and dry from December to February, and hot and dry from March to May.

The estimated population of the Philippines in 2013 is more than 98 million. The annual per capita income is US\$ 3430, with a ranking of 102/179 on the UNDP Human Development Index 2007. In 2005, 23% of the population existed on less than US\$ 1.25 per day.

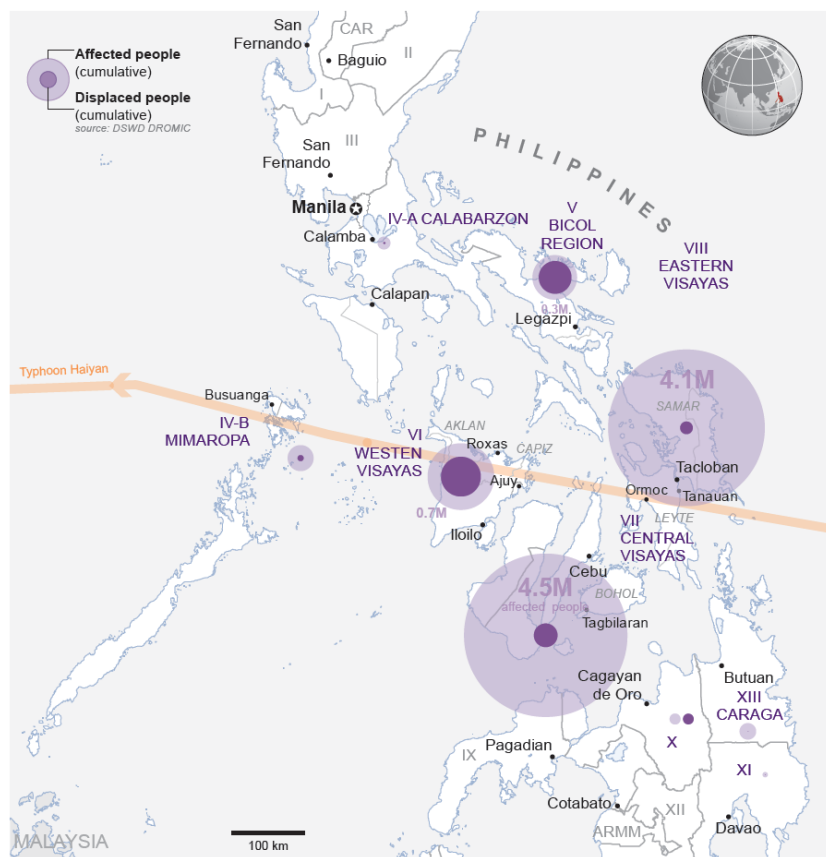
The Philippines is currently affected by a series of crises, such as the September 2013 civil unrest in Zamboanga and the 7.1 earthquake in Bohol.

On 8 November 2013 at 0440 am a category 5 typhoon, Haiyan (locally named Yolanda), made landfall in the Guiuan municipality, Eastern Samar province, moving

steadily north into the province of Northern Cebu, with maximum winds of 235 km/hr and severe gusts of 275 km/hr. The typhoon made subsequent landfalls in Tolosa municipality south of Tacloban City, Leyte province, Daanbantayan and Bantayan Island, Cebu province, and Conception, Iloilo province. The typhoon affected the city of Roxas in Capiz province and the tourism centre of Borocay in Aklan province.

At least 18 million people live in the worst affected regions.

*Philippines: Typhoon Haiyan - Humanitarian Snapshot (OCHA, 12 November 2013)*



First reports from Government of the Philippines, UN Disaster Assessment and Coordination Teams (UNDAC) on the ground, and initial eyewitness reports/social media report massive devastation and deaths in areas directly in typhoon path:

- All homes/buildings in the path of the storm have been seriously damaged
- Areas of Cebu, Roxas and Tacloban devastated; Samar, Leyte, Iloilo, Aklan and Coron badly hit
  - Tacloban City - massive damage, large parts of the city flattened. Storm surge over 7 metres. Entire coastline communities washed away.
  - Palo City - very large number of casualties
  - Samar – 80% destruction of buildings (see map of damaged houses in Annex 2).
- Power and communications infrastructure have been seriously damaged.
- Seaports and airports remain closed. Transport is very difficult and possible only by helicopter at the moment
- Security is of concern

In these areas, medical personnel will have been heavily affected and health facilities have been extensively damaged, including submerged ground floors, damaged and destroyed medical supplies, equipment, records, office equipment and buildings.

The Secretary of Health has formally requested assistance from WHO and partners for the immediate deployment of field medical teams (e.g. trauma), and emergency supplies (e.g. trauma kits, supplies, hospital tents). Requests for further assistance are expected.

**Major risks to public health:**

1. Major trauma and injuries are the first health concern following a typhoon. They require surgery and post-operative wound care to prevent infection and disability.
2. Population displacement, overcrowding, poor shelter, exposure, lack of safe water, sanitation and hygiene facilities, vector breeding and poor nutritional status, lead to
  - increased communicable disease transmission and potential for outbreaks of diseases such acute respiratory infections, measles diarrhea, typhoid fever and viral enteric diseases.
  - increased exposure to vector-borne diseases such as dengue and chikungunya or malaria. Flooding may initially flush out mosquito breeding, which can restart when the waters recede. The lag time is usually around 6-8 weeks before the onset of increased disease transmission.
  - displacement of animal populations leads to human rabies from the bites of infected cats and dogs.
3. Flooding is a known risk factor for outbreaks of leptospirosis

4. Disruption of health services and access to health care result from damaged and/or flooded health infrastructure, loss of medicines and supplies, and injured or dead health staff.
5. Malnutrition and communicable diseases. In children who are already undernourished or malnourished, prolonged and severe infections are more frequent.



## 2. PRIORITY HEALTH CONCERNS

### 2.1 Wounds and injuries

Wounds and injuries are frequently associated with the immediate post-flooding period due to strong winds, navigating floodwaters, displacement of hazards, or from near-drowning. Survivors of near-drowning may have complications such as aspiration pneumonia. Injuries may also result from being swept by floodwaters through collapsed structures and debris. The management of all injuries may be complicated by delays in presenting for care and limited access of skilled personnel to the affected areas. Complications of untreated injuries are death, infections, tetanus and long term disability.

The management of wounds needs to consider the potential of tetanus. The risk of tetanus is increased in some typhoon affected areas compared to other areas of the Philippines, due to low vaccination coverage. In addition, waning tetanus immunity in adults increases the likelihood of morbidity and mortality from tetanus.

### 2.2 Water/sanitation/hygiene-related and foodborne diseases

With severe windstorms, water sources can become unsafe for drinking due to the incursion of floodwaters, faecal contamination caused by overflow of latrines, inadequate sanitation and upstream contamination of interconnected water sources. Population displacement, crowding, poor access to safe water, inadequate hygiene and toilet facilities, and unsafe practices in handling and preparing food may cause outbreaks of diseases such as acute watery diarrhea, typhoid fever, shigellosis, viral enteritis and hepatitis A and E. Increasing significant antimicrobial resistance is also a problem in the Philippines.

WHO INFOSAN Information note on Food Safety in natural disasters [http://www.who.int/entity/foodsafety/fs\\_management/No\\_05\\_NaturalDisasters\\_Sept05\\_en.pdf](http://www.who.int/entity/foodsafety/fs_management/No_05_NaturalDisasters_Sept05_en.pdf).

### 2.3 Diseases associated with displacement, crowding and flooding

Population displacement caused by flooding can result in overcrowding in resettlement areas, raising the risk of transmission of many communicable diseases. Acute respiratory infection, measles, diphtheria, and pertussis are transmitted from person to person through respiratory droplets generated during coughing and sneezing, and the risks are increased when shelters are overcrowded and inadequately ventilated. The transmission of meningitis, waterborne and vector-borne diseases is also increased in such conditions.

### **Acute respiratory infection (ARI)**

Among all infection of the upper or lower respiratory system, a major concern is acute lower respiratory (ALRI) tract infection (pneumonia, bronchiolitis and bronchitis) in children under five. ALRI kills more children globally than any other disease. WHO estimates that 13% of deaths among under 5 years old children in the Philippines are caused by pneumonia.

Low birth weight, malnourished and non-breastfed children and those living in overcrowded conditions are at higher risk of acquiring pneumonia as well as of experiencing more severe disease and death from pneumonia. Prevention is key. Exclusive breastfeeding, adequate nutrition, and immunization can help reduce infection rates.

Early detection and case management of pneumonia and other common illnesses, guided by the Integrated Management of Childhood Illness (IMCI), will prevent morbidity and mortality in children under five years of age. Trained health care workers should refer to the national IMCI guidelines during and after the emergency.

### **Measles**

There is a moderate to high risk of measles outbreak. The Philippines continues to report sporadic cases and outbreaks of measles (such as in 2011). National levels of vaccine coverage are relatively high, however local levels in some of the affected areas are much lower.

Current recommendations are to conduct flood-response measles immunization with vitamin A supplementation for all children 6-59 months old, regardless of their vaccination status, in all Internally Displaced People (IDP) shelters that contain more than 1000 people.

### **Leptospirosis**

The risk of outbreak of leptospirosis is high. Outbreaks commonly occur following flooding in the Philippines, the most recent outbreak being after tropical storm Haiyan in 2012. Leptospirosis is a bacterial zoonosis present worldwide. The number of cases is increasing in all regions, especially in urban areas after heavy rains and floods, and is related to the crowding of rodents, wild and domestic animals and humans on shared dry ground. In this situation, the disease is likely to be spread through indirect contact with water contaminated with the urine of rodents or other infected animals.

## **Tetanus**

Tetanus comes from contaminated wounds. The disease has a high CFR of 70%-100% without medical treatment and is globally underreported. The incubation period is usually 3 to 21 days. A shorter incubation period is associated with severe disease and a worse prognosis. Reports from the national authorities, WHO and UNICEF indicate a 86% DTP3 coverage rate (2008 data) among one-year-old children in the Philippines, some typhoon affected areas have a lower vaccine coverage. In addition waning immunity in adults may lead to an increased number of tetanus cases.

Appropriate management of injured survivors should be implemented as soon as possible to minimize future disability and to avert avoidable death following disasters. All wounds and injuries should be inspected carefully as *Clostridium tetani* spores present in the soil can infect trivial, unnoticed wounds, lacerations and burns. Health-care workers operating in disaster settings should be alerted by the occurrence of cases of dysphagia and trismus (inability to swallow and facial muscle spasm), often the first symptoms of the disease. In circumstances of poorly treated trauma, wounds and injuries should be viewed with a high level of suspicion. Patients should systematically receive prophylactic antibiotics and tetanus toxoid vaccine if non-immune, together with tetanus immune globulin if the wound is tetanus-prone.

## **Tuberculosis (TB)**

The Philippines has the ninth highest TB incidence in the world and the second highest in the Western Pacific Region. In 2012, the estimated number of TB cases was 260 000, with an incidence of 265 cases per 100 000 population. The TB burden is disproportionately high among the poor, the elderly and the male population, although the death rate is highest among older persons.

In the acute phase of this emergency, follow-up and continuity of treatment of patients already on care should be maintained when feasible. Other aspects of TB control can be addressed once emergency and basic health care have been re-established.

## **Meningococcal disease**

Spread from person to person through respiratory droplets from infected people, meningitis transmission is facilitated by close contact and crowded living conditions. In 2004 and early 2005, WHO assisted with the response to an outbreak caused by meningococcus serogroup A involving 98 cases (74 from Baguio City, 22 from Mt. Province and 2 from Ifugao) and resulting in 32 deaths (CFR, 33%).

## Polio

No cases of polio have been reported since 1993, and the country was declared polio-free in 2000. However polio vaccination coverage is lower than the national average in some affected areas and polio vaccination should be considered.

**Table 1.** Routine vaccination coverage at one year of age, 2012, the Philippines

Antigen	% Coverage*
(BCG) bacille Calmette–Guérin	88
Diphtheria–tetanus–pertussis, 3rd dose	86
Hepatitis B, 3rd dose	70
MCV (measles-containing vaccine)	85
Polio, 3rd dose	86

\* Official country estimates reported to WHO/UNICEF, 2012

See Annex 3: Key data on previous pattern of diseases related to disasters.

## 2.4 Vector-borne diseases

### Dengue / Dengue Haemorrhagic Fever (DHF)/Chikungunya

There is a low to medium risk of dengue in the affected areas with the peak season for dengue being in July/August.

Dengue is a viral disease transmitted by the *Ae. Aegypti* mosquito, which is endemic in the Philippines with more than 100 000 cases reported every year. Dengue causes a severe influenza-like illness. A potentially lethal complication called dengue haemorrhagic fever can sometimes occur. Epidemics of dengue occur cyclically every 3-5 years. In 2010 the country reported about 135 000 cases. Its epidemiology is rapidly evolving, with outbreaks occurring more frequently and expanding to new geographical areas that were previously unaffected. Mortality is highest during the initial period of the outbreak or epidemic. Children are at particularly high risk of mortality as a result of complications and lack of access to prompt treatment.

DHF can affect all age groups. The risk of transmission may increase among people living in inadequate shelters or overcrowded conditions, particularly where fresh water is stored in unprotected water containers and rainfall collects in other artificial containers, allowing mosquito vectors to proliferate.

Early detection and treatment of DHF can reduce the case-fatality ratio from 20% to <1%. Supportive treatment supplies should be stockpiled.

Chikungunya fever is of moderate risk and presents very similarly to dengue, although haemorrhagic complications are rare. A significant proportion of patients develop a long-term debilitating arthritis that lasts for months to years.

## **Malaria**

There is an absent or very low risk of malaria in most affected areas, with exception of some provinces in Region IV-B (Provinces Occidental Mindoro, Oriental Mindoro and Palawan) where moderate risk of malaria exists.

*Plasmodium falciparum* is responsible for about 70% of malaria cases in the Philippines, and 30% are due to *P. vivax*. *P. falciparum* resistance to chloroquine and sulfadoxine-pyrimethamine is common.

## **Japanese encephalitis**

Less common but present in the Philippines, Japanese encephalitis can affect all age groups. It is transmitted by the *Culex* mosquito, which tends to breed in flooded rice fields. Culicines are normally zoophilic (feed mainly on animals) but feeding on humans can occur and is associated with an explosive increase in the mosquito population, which occurs after flooding.

## **2.5 Other risks and considerations**

### **Comprehensive reproductive health interventions**

These interventions prioritize safe delivery, acute care of the newborn (family planning) and management of gender based violence. These interventions are critical components of the Minimal Initial Service Package (MISP) for reproductive health, which is currently recommended for implementation in the acute phase of an emergency.

### **Malnutrition**

This problem is still present in certain areas of the Philippines, particularly for children aged 6-24 months. Under-nutrition is an important underlying factor contributing to childhood mortality, and has also been linked to impaired cognitive development. Anemia in preschool children is considered to be a moderate public health problem. The affected populations will be at increased risk of acute malnutrition if there is a lack of access to appropriate and adequate food, and reduced access to health and nutrition services. This will disproportionately affect vulnerable groups such as young children, pregnant and lactating women and older persons. Children with moderate acute malnutrition (MAM) need urgent food support or they will move into severe acute malnutrition (SAM) and potentially severe infection and death. In 2008, 34% of infants 0-6 months were exclusively breastfed (DHS). Nutritional needs among the flood-affected populations must be addressed urgently.

**Noncommunicable diseases (NCDs)**

Chronic conditions, including cardiovascular diseases, diabetes, chronic respiratory disease, neuropsychiatric disorders and cancer account for an increasing proportion of the disease burden in the Philippines. This group of diseases places a substantial burden on health services and an impoverishing drain on families and communities. The priorities during the acute phase of this emergency are to minimize treatment interruptions.

**Skin infections**

They occur not only due to overcrowding but also as a result of a lack of water and reduced hygiene. Infestations (e.g. scabies, lice – associated with typhus) may occur commonly and require treatment once they occur.

**Snakebites** are common after flooding and need appropriate care.

**Displaced dogs and cats** with subsequent biting or scratching can pre-dispose to infection with rabies.

**Sexually transmitted infections (STIs) including human immunodeficiency virus (HIV)**

During emergencies, vulnerable people may be subjected to situations that substantially increase their exposure to STIs, including HIV. Risk factors include massive displacement of people from their homes, women and children left to fend for themselves, prevalence of domestic violence, social services overwhelmed or destroyed, and a lack of means to prevent HIV infection, such as clean needles, safe blood transfusions and availability of condoms.

The overall prevalence of HIV infection in the population of the Philippines is less than 0.1% in adults (15 to 49 years old) with 14 000 people estimated to be living with the virus (UNAIDS 2012). The emergency response should ensure good practice to minimize blood borne virus infections, including the strengthening of standard precautions, with the provision of gloves, sterile needles and syringes, safe waste disposal management in health services, and support to a safe blood transfusion site. Related services such as provision of condoms, education and prevention messages, and post-exposure prophylaxis for occupational exposure and survivors of rape should be provided when resources become available.

Needle- and syringe-exchange programs should be maintained when feasible. When possible, antiretroviral treatment (ART) for persons with HIV/AIDS should be maintained and ART provided for the prevention of mother-to-child transmission of HIV. Care providers should also be sensitized to the possibility of child abuse (physical and sexual) and symptoms of child abuse.

**Environmental risks** may result from damaged industrial facilities (chemical, radiological). Health workers should look out for patients' symptoms that may be consistent with such causes.

Poor management of waste, including health-care waste, can potentially expose health-care workers, waste handlers, patients and the community at large to infection, toxic effects and injuries, as well as increasing the risk of polluting the environment.

### **Corpses**

Dead bodies do not pose a risk of outbreaks. Large numbers of bodies are psychologically traumatic to viewers and require urgent DNA testing for identification and proper burial. It is important to convey to all parties that corpses do not represent a public health threat. However, those involved in the collection and burial of bodies should follow standard precautions.

### **Interrupted power supply**

As a result of extended power supply interruption, food is likely to have been spoiled and could become a possible source of disease if consumed. Routine vaccine stocks and the cold chain are also likely to have been compromised.

## **2.6 Drug donations**

Inappropriate donations of medicines and medical supplies can be minimized by donors adhering to the interagency guidelines. In general, the key principles are:

- drug donations should not be a priority;
- donated drugs should explicitly address the expressed official needs of the recipient country;
- donated drugs must be on the national list of registered drugs;
- donated drugs must be labeled in English or the national language;
- the date of expiration of the drugs must be no less than one year from arrival in the country.

The Department of Health has specific guidelines addressing drug donations. Guidance for donors on donations of drugs and medical supplies has been developed by WHO in consultation with more than 100 humanitarian organizations and experts. These guidelines will help ensure that the donations are used to maximum effect for the affected population in the Philippines and will help prevent stockpiling of unwanted medicines and medical supplies.

**Disposal of pharmaceuticals** should be by high-temperature incineration (i.e. >1200°C). Such incineration facilities, equipped with adequate emission control, are mainly found in the industrialized world. The cost of disposing of hazardous waste in this way ranges from US\$ 2000-4000 per tonne. In emergency situations, temporary burial of pharmaceutical and other wasted medical supplies is an appropriate option until properly functioning incinerators are in working order again. Poorly-destroyed supplies in medium-temperature incinerators are as great a hazard as landfills. If facing a huge amount of damaged, expired or damaged labeled medicines, both liquid and solids, do not dispose of them but keep them in a safe place until a reliable disposal system is again in place. Ensure these are not disposed into rivers or seas.



### 3. PRIORITY INTERVENTIONS

#### **Immediate priorities:**

- a. Provision of food, safe drinking water, appropriate sanitation, shelter, and other essential non-food items including fuel for cooking
- b. Trauma care for the wounded with tetanus prevention
- c. Provision of medicines and medical supplies
- d. Establishment of emergency primary and secondary care for medical, surgical and obstetric emergencies
- e. Risk communication to the public
- f. Management of dead bodies with retrieval and identification of victims
- g. Measles vaccination, and polio vaccination in high risk areas
- h. Establishment of an early warning system for early detection and response to outbreaks
- i. Infection control in healthcare units including safe blood transfusion and medical waste management, as well as sufficient water supply and sanitation
- j. Management of acute malnutrition including medical complications
- k. Continuity of treatment for chronic diseases and chronic infections such as tuberculosis

#### **Short term priorities:**

- a. Re-establishment of essential health care services (primary, referral and hospital care)
- b. Emergency mental health care and psychosocial support
- c. Waste management
- d. Vector control and provision of personal protection against vector-borne diseases

#### **Medium term priorities:**

- a. Post-surgical care and management of disabilities
- b. Routine immunization
- c. Health of victims who have migrated and potential returnees

### 3.1 Water and sanitation

Ensuring uninterrupted provision of safe drinking water is the most important preventive measure in reducing the risk of outbreaks of water-borne diseases.

- UNHCR, WHO and SPHERE recommend that each person be supplied with at least 15–20 liters of clean water per day.
- Chlorine is the most widely available and easily used, and the most affordable drinking water disinfectant. It is also highly effective against nearly all water-borne pathogens.
  - For point-of-use or household water treatment, the most practical forms of free chlorine are liquid sodium hypochlorite, sodium calcium hypochlorite and bleaching powder.
  - The amount of chlorine needed depends mainly on the concentration of organic matter in the water and must be determined for each situation. After 30 minutes, the residual concentration of active free chlorine in the water should be 0.5 mg/litre, which can be determined by using a simple field test kit.
- The provision of appropriate and sufficient water containers, cooking pots and fuel can reduce the risk of cholera and other diarrheal diseases by ensuring that water storage is protected and that food is properly cooked.
- The need for good hygiene should be emphasized to the public.
- Adequate sanitation facilities must be provided in the form of latrines or designated defecation areas.

### 3.2 Shelter and site planning

- Wherever possible, shelters for the displaced or homeless must be positioned with sufficient space between them and, in accordance with international guidelines (UNHCR and Sphere standards), aimed at preventing diseases related to overcrowding or lack of ventilation, such as measles, ARI, diarrhoeal diseases, TB and vector-borne diseases.
- In shelter sites and during food distribution, particular attention and protection should be given to women, the elderly, unaccompanied minors and those with disabilities. Women should be included in planning and implementation of shelter and food-distribution activities.
- Waste should be disposed in a pit, away from shelters and protected from rodents to reduce the exposure of the population to rodents and other vectors of disease.

- Shelters should be equipped with long-lasting insecticidal nets (LLIN) for each sleeping space to prevent malaria transmission. Where housing conditions allow, indoor residual spraying (IRS) can be carried out if >85% IRS coverage of dwellings in the locality can be assured.
- Distribution of non-food items will be required: e.g. blankets, water containers, cooking materials, etc.

### 3.3 Prevention and Management of malnutrition

- Infants should normally start breastfeeding within one hour of birth and continue breastfeeding exclusively (with no food or liquid other than breast milk, not even water) until 6 months of age. The aim should be to create and sustain an environment that encourages frequent breastfeeding for children up to 2 years of age. Infants who are not breastfed are vulnerable to infection and diarrhea.
- Exclusive breastfeeding (for under 6-month-olds) and continued breastfeeding should be encouraged and supported. Donations of milk powder supplies usually increase in emergency situations and contribute to a higher number of infants with diarrhea and pneumonia. It also further exacerbates the low percentage of exclusively breastfed infants. For those unable to be breastfed, the following hierarchy of feeding should be followed: 1) expressed breast milk by mother, 2) breastfeeding from surrogate donors and donor expressed breast milk. The few infants who have no access to breast milk require an adequate supply of infant formula, safe water and clean utensils. For those few cases, health-care providers, including mothers, should be provided with guidance on the safe preparation of infant formula products.
- Many adults will have been or will now also be of borderline nutritional status, and given that diarrheal disease will further compromise this, attention must be paid not only to the equitable distribution of food, but also to maintaining adequate nutrition of nursing mothers.
- Bacterial infections are very common in severely malnourished children on initial admission to hospital. Clinical management of severely malnourished patients, including fluid management, must be thorough, carefully monitored and supervised. Common problems encountered in severe malnutrition include hypothermia, hypoglycaemia, dehydration and electrolyte disturbances. It is important that the phases and principles of management of severely malnourished children are followed as outlined in WHO guidelines.
- Populations dependent on food aid need to be given a food ration that is safe and adequate in terms of quantity and quality (covering macro- and micro-nutrient needs). Infants from 6 months onwards and older children need hygienically prepared, and easy-to-eat, digestible foods that nutritionally complement breast milk. Regular assessments of households' access to food (including market prices) need to be undertaken and emergency food aid needs

to be adapted accordingly. Households' access to facilities for the safe preparation of their food should also be assessed on a regular basis and emergency supplies of necessary utensils and appropriate energy sources for cooking should be adapted accordingly.

- After the acute phase of the emergency, efforts should be made to improve household access to food in a more sustainable way (e.g. seed distribution, land/crop management, income-generation activities) and to institute appropriate child-feeding and caring practices, including diversifying diets and improved hygiene. It is important to emphasize that poor hand hygiene exacerbates the spread of diarrhoeal diseases, even in the presence of adequate nutrition.

### 3.4 Essential health services

Good case management is predicated on ensuring access to care. Access to health clinics for the affected population is critical, including case-management protocols and medications/material to treat likely high-burden conditions (trauma/wounds, communicable and non-communicable diseases, emergency reproductive health services).

#### **Essential medical and surgical care**

- Priority must be given to providing emergency medical and surgical care to people with traumatic injuries, which account for many of the health-care needs among those requiring medical attention in the immediate aftermath of the event. Falling structures cause crush injuries, fractures, and a variety of open and closed wounds. Appropriate medical and surgical treatment of these injuries is vital to improving survival, minimizing future functional impairment and disability and ensuring as full a return as possible to community life. In order to prevent avoidable death and disability, field health personnel dealing with injured survivors should observe the following basic principles of trauma care.
- Patients should be categorized by the severity of their injuries and treatment prioritized in terms of available resources and chances for survival. The underlying principle of triage is allocation of resources in a manner ensuring the greatest health benefit for the greatest number. Open wounds must be considered as contaminated and should not be closed. Debridement of dead tissue is essential which, depending on the size of the wound, may necessitate a surgical procedure undertaken in appropriate (e.g. sterile) conditions. Any associated involvement of organs, neurovascular structures, or open fractures will also necessitate appropriate surgical care.
- After debridement and removal of dead tissue and debris, wounds should be dressed with sterile dressings and the patient scheduled for delayed primary closure.
- Patients with open wounds should receive tetanus prophylaxis (vaccine and/or immune globulin depending on vaccination history). Antibiotic prophylaxis or treatment will likely be indicated.

- Wherever possible, search and rescue workers should be equipped with basic protective gear such as footwear and leather gloves to avoid puncture wounds and exposure to diseases such as leptospirosis.
- HIV post-exposure prophylaxis kits should be available to health-care workers, rescue and safety workers in case of accidental exposure to contaminated blood and body fluids.

### **Reproductive health services**

Access to comprehensive emergency reproductive health services and implementation of the Minimum Initial Service Package (MISP) for Reproductive Health:

- A lead agency for reproductive health should be identified along with a reproductive- health officer to ensure coordination, communication, and collaboration in MISP implementation.
- Measures should be put in place to prevent sexual violence and to respond to the needs of victims of sexual violence.
- HIV transmission should be prevented.
- Excess maternal and newborn morbidity and mortality should be prevented.
- Plans should be put in place for the transition to comprehensive reproductive health services.

### **Communicable diseases**

- Heightened community awareness of the need for early treatment and reinforcement of proper case management are important in reducing the impact of communicable diseases. The use of standard treatment protocols in health-care facilities with agreed-upon first-line drugs is crucial to ensure effective diagnosis and treatment for ARI, the main epidemic-prone diseases (including cholera, dysentery, shigellosis, typhoid, dengue and DHF, hepatitis, leptospirosis, measles, malaria, and meningitis) and STIs.
- Standard infection control practices in accordance with national protocols should also be in place.
- Malaria treatment:
  - Uncomplicated-unconfirmed: Artemether-Lumefantrine;
  - Uncomplicated *P. falciparum* laboratory-confirmed: Artemether-lumefantrine + Primaquine (single dose);
  - Severe malaria: Quinine + Tetracycline
  - Uncomplicated *P. vivax*: Chloroquine + Primaquine (14 days).
- Tetanus: appropriate management of injured survivors should be implemented as soon as possible to minimize future disability and to prevent avoidable death following disasters.
- Provision of anti-TB treatment should be ensured for TB patients who were previously receiving treatment in the affected areas. Their treatment should not be interrupted and should be provided in line with the directives of the

national TB control programme (NTP) services. All aspects of TB case management should also follow the NTP directives. The drugs used to treat the disease, such as rifampicin or streptomycin, must not be used for the treatment of other illnesses.

- Efforts should be made to ensure that HIV/AIDS patients receiving antiretroviral treatment (ART) do not have their treatment interrupted and that ART is provided for the prevention of mother-to-child transmission of HIV.

#### **Non-communicable diseases**

- Chronic conditions: continuation of treatment for those on medications for chronic conditions, including hypertension, diabetes, cancer, and kidney disease. Where feasible, decentralization of care will increase treatment coverage given the restrictions on movement.
- Mental health and psychosocial support: psychological and social considerations should be taken into account in provision of general health care. Psychological first aid should be given to people with severe, acute anxiety and continued access to care should be assured for people with severe mental disorders.
- Snake-bite management includes first-aid treatment, reassuring victims, immobilization of the bitten limb with a splint or sling, pressure-immobilization for venomous bites. Avoid any interference with the bite wound as this may introduce infection, increase absorption of the venom and increase local bleeding.

### **3.5 Risk communication**

Risk communication is a critical tool for effective management of public health emergencies. When the public is at risk of a real or potential health threat, treatment options may be limited, direct interventions may take time to organize and resources may be few. Communicating advice and guidance, therefore, is often the most important public health tool in managing a risk.

#### **Specific messages:**

##### **Safe water**

- Even if it looks clear, water can contain germs. Under the present emergency in the Philippines, water in the affected areas should be assumed to be contaminated.
- Add drops of chlorine to the water or boil water before drinking or using for food preparation.
- Keep drinking water in a clean, covered pot or bucket or other container with a small opening and a cover. It should be used within 24 hours of collection.
- Pour the water from the container – do not dip a cup into the container.
- If dipping into the water container cannot be avoided, use a single cup or other utensil with a handle and which is attached to the container.

### **Promote good hygienic practice**

- Wash hands with soap, ash or lime:
  - before cooking, before eating and before feeding children;
  - after using the latrine or cleaning children after they have used the latrine;
  - wash all parts of hands – front, back, between the fingers and under the nails.

### **Avoid mosquito bites**

- Sleep under an insecticide-treated bednet.
- Make sure your house or tent/shelter has been properly sprayed with insecticide during the transmission season.
- Wear protective clothing at times when mosquitoes and other biting insects are active.
- Stay indoors when outdoor biting mosquitoes are most active.
- Use insect repellents and mosquito coils if available.
- Remove, destroy or empty small rain-filled containers near the house or tent/shelter.

### **Five keys to safer food**

- Keep clean (hand hygiene)
- Separate raw and cooked food
- Cook food thoroughly
- Keep food at safe temperature (piping hot)
- Use safe water and safe raw materials

### **Seek treatment early**

- Diagnosis and treatment of fever, diarrhea and other illnesses should be within 24 hours from observation of first signs of symptoms.
- For diarrhea, oral dehydration salts made with safe (boiled and chlorinated) water should be consumed.

## **3.6 Surveillance/early warning and response system**

The purpose of the surveillance/early warning and response system is to detect disease outbreaks. Rapid detection of cases of epidemic-prone diseases is essential to ensure rapid control. The local system, SPEED (Surveillance in Post Extreme Emergencies & Disasters) is designed for this purpose and will be utilised. Co-ordination of surveillance information through the health cluster (Department of Health and WHO) will be done to provide a more comprehensive coverage. The surveillance system will inform risk assessments of any disease incident, allowing resources to be allocated proportionally and appropriately.

To be effective, a surveillance system needs to:

- Focus on the communicable diseases most likely to occur in the disaster-affected population;
- Be simple to use, uniform in style and include standard case definitions and reporting forms (for WHO case definitions, see Annex 1) for detection of acute watery diarrhea, acute bloody diarrhea, measles, acute respiratory infection, malaria, jaundice syndrome, meningitis, tetanus, unexplained fevers, unexplained cluster of events;
- Include an alert system for immediate reporting and prompt investigation of priority epidemic-prone diseases such as cholera, bloody diarrhea, measles and DHF;
- Include outbreak preparedness, with development of specific outbreak response plans and adequate stockpile of supplies such as ORS, Ringer's Lactate and doxycycline for cholera, ciprofloxacin for Sd1, amoxicillin and vitamin A for measles, Coartem™ for malaria, iv solutions and specific medicines for DHF management, as well as outbreak investigation kits;
- Be sensitive to unusual emerging and re-emerging communicable diseases of major public concern;
- Identify key laboratories for prompt diagnosis and confirmation of the main communicable disease threats, as well as protocols for sample collections, transport and tracking of specimens;
- Ensure that data is forwarded to the local health authorities and the WHO office.

### 3.7 Immunization

- In evacuation centers or other crowded settings, vaccination using a measles-containing vaccine, together with vitamin A, should be an immediate priority health intervention (at least 20% of children are vitamin A deficient). Children aged 6-59 months (susceptibility profile based on prior coverage through routine and supplementary immunization activities and immunity gaps identified through prior measles surveillance) should receive the measles vaccine, regardless of previous vaccination or disease history. Infants 6-11 months should receive 100 000 IU of vitamin A and children 12-59 months should receive 200 000 IU of vitamin A. Re-vaccination of infants who received their first dose of measles vaccine at 6-8 months of age is recommended once they reach 9 months; the minimum interval between doses is one month.
- A single suspect measles case is sufficient to prompt the immediate implementation of activities to control measles.
- Given the threat of reintroduction of poliomyelitis into the area due to suboptimal vaccination coverage, every opportunity should be taken, if feasible, to give oral poliovirus vaccine to all children younger than age 5.



- Mass tetanus vaccination programmes to prevent disease are not indicated. Wounds or lacerations may occur from objects submerged in floodwaters. Tetanus vaccine (TT or Td) and tetanus immune globulin (TIG) is indicated for those with open wounds/lacerations who have never been vaccinated. TIG is indicated for previously vaccinated people who sustain wounds/lacerations (e.g. clean-up workers), depending on their tetanus immunization history.
- Mass vaccination against influenza is not indicated.
- When the situation stabilizes, vaccinations routinely offered by the national immunization programme should be made available to all infants, pregnant women and other people as part of the provision of basic emergency health-care services.
- Hepatitis A vaccine is not recommended to prevent outbreaks in the affected population. Vaccination efforts should always be supplemented by health education and improved sanitation.
- Typhoid vaccination, in conjunction with other preventive measures, may be useful to control typhoid outbreaks, depending on local circumstances.
- Oral cholera vaccines (OCV). The decision to use OCV in emergency-affected populations should be guided using a WHO risk assessment tool. However, current recommendations state that OCV should not be used once an outbreak has started or if basic public health priorities are not covered.
- Special attention should be paid to the safe management and disposal of waste from immunization activities to prevent the transmission of blood-borne pathogens.

### 3.8 Vector control and personal protection

- Long-lasting insecticidal nets should be made universally available, with priority given to pregnant women and children aged <5 years.
- Refuse must be collected and appropriately disposed of to discourage rodent vector breeding.
- Water-storage containers should be enclosed or covered with mosquito-proof lids.
- Space spraying and larviciding will control fly and mosquito population, especially around displacement centers.

## 4. STAFF HEALTH

Emergency settings differ vastly, including their epidemiological context. It is thus essential that medical preparation is as comprehensive as possible (within the limitations imposed by departure at short notice) and tailored specifically for the Philippines.

A minimum period of time is required following vaccination, to build up protective levels of antibodies. A series of injections may be necessary. It is advised that staff receive vaccinations 2 weeks in advance of departure if possible (see table below). In the event of immediate departure, the duration of the mission may influence the choice of vaccines.

Personal protection against mosquito bites, both during the day and at night is important in preventing vector-borne diseases such as dengue, Japanese encephalitis and malaria (long-sleeved clothes, repellents, mosquito nets).

Basic knowledge of first aid and stress management is important. Some teams may have to handle large numbers of dead bodies. The emotional overload in performing such an unusual and heavy task without specific training can provoke significant reactions of traumatic stress and even lead to psychological trauma. Although not always avoidable, good preparation can be useful in preventing and limiting stress..

### A - Vaccination recommendations

**NB: Yellow Fever vaccination certificate is required from travelers coming from infected areas**

	Vaccine	Validity	Comments
Essential	Diphtheria	10 years	Can be combined with tetanus
	Tetanus	10 years	Booster does is recommended if not taken in the last 10 years
	Polio	10 years	
	Typhoid	3 years	
	Hepatitis A	Life	If there is no proof of immunity by vaccine or illness, even if departure at short notice. Can be combined with Hepatitis B.
	Hepatitis B	15 years	
	Cholera	6 months	If there is sufficient time, 2 oral doses to be taken one week apart. Immunity is obtained 1 week after the second dose of the Dukoral™ vaccine which can provide protection from both Vibrio cholera serotype O1 and ETEC (enterotoxigenic E. Coli).

<b>Optional</b>	Meningitis ACYW 135	3 years	No recent outbreak, but potential risk of cases in such context (prolonged mission).
	Measles		Potential risk in emergency situation. If not fully immunized in childhood, obtain vaccination.
	Japanese encephalitis		3 doses over 30 day period (days 0,7,30). Systemic side effects reported in around 10% of those receiving vaccine.

## **B - Malaria prophylaxis and treatment**

When considering the typhoon affected areas, malaria prophylaxis is only recommended for staff in some of the provinces in Region IV-B (Provinces Occidental Mindoro, Oriental Mindoro and Palawan).

The recommended drugs for prophylaxis are:

<b>Medication</b>	<b>Start of treatment</b>	<b>Dosage</b>
Atovaquone 250 mg & Proguanil 100 mg (Malarone)	One day before exposure	One tablet daily until 7 days after last exposure
Doxycycline 100 mg	One day before exposure	One tablet daily until 4 weeks after last exposure
Mefloquine 250 mg	One week before exposure	One tablet weekly until 4 weeks after last exposure

It is recommended that individuals carry supplies of reserve treatment for all missions lasting longer than 8 days, in view of the potential difficulty in accessing health services. The recommended treatment for malaria is Artemether-Lumefantrine combination tablet (Coartem™).

## **C - Other precautions**

To consider for teams

- Medical kits, including chlorine tablets for water purification
- PEP kit
- Surgical masks
- Gloves
- Food and water: given that there will be an extreme shortage of basic food and drinking water.

## **Annex 1. WHO-RECOMMENDED CASE DEFINITIONS**

### **ACUTE DIARRHOEA**

Acute diarrhoea (passage of 3 or more loose stools in the past 24 hours) with or without dehydration.

### **SUSPECTED CHOLERA**

In an area where cholera is not known to be present: a person aged >5 years with severe dehydration or death from acute watery diarrhoea with or without vomiting. In an area where there is a cholera outbreak: a person aged >5 years with acute watery diarrhoea with or without vomiting.

To confirm a case of cholera:

Isolation of *Vibrio cholerae* O1 or O139 from a diarrhoeal stool sample.

### **BLOODY DIARRHEA**

Acute diarrhoea with visible blood in the stool.

To confirm a case of epidemic bacillary dysentery: take a stool specimen for culture and blood for serology; isolation of *Shigella dysenteriae* type 1.

### **ACUTE FLACCID PARALYSIS (SUSPECTED POLIOMYELITIS)**

Acute flaccid paralysis in a child aged <15 years, including Guillain–Barré syndrome, or any acute paralytic illness in a person of any age in whom poliomyelitis is suspected.

### **ACUTE HAEMORRHAGIC FEVER SYNDROME**

Acute onset of fever (duration of less than 3 weeks) and any of the following:

- haemorrhagic or purpuric rash
- vomiting with blood
- cough with blood
- blood in stools
- epistaxis
- other haemorrhagic symptoms.

### **ACUTE JAUNDICE SYNDROME**

Illness with acute onset of jaundice and absence of any known precipitating factors and/or fever.

## **ACUTE LOWER RESPIRATORY TRACT INFECTIONS/ PNEUMONIA IN CHILDREN AGED under 5 years old**

- Cough or difficulty breathing and
- Breathing 50 or more times per minute for infants aged 2 months to 1 year
- Breathing 40 or more times per minute for children aged 1 to 5 years and
- No chest in drawing, no stridor, no general danger signs.

Note: Severe pneumonia = cough or difficulty breathing and one or more of the following: (inability to drink or breastfeed, severe vomiting, convulsions, lethargy or unconsciousness) or chest in drawing or stridor in an otherwise calm child.

### **MALARIA**

Person with current fever or history of fever within the past 48 hours (with or without other symptoms such as nausea, vomiting and diarrhea, headache, back pain, chills, muscle pain) with positive laboratory test for malaria parasites (blood film (thick or thin smear) or rapid diagnostic test).

#### **In children**

- Uncomplicated malaria
- Fever and no general danger signs such as lethargy or unconsciousness, convulsions, or inability to eat or drink. Where possible, confirm malaria with laboratory test.

#### **Severe malaria**

- Fever and general danger signs (lethargy or unconsciousness, convulsions, or inability to eat or drink).

### **MEASLES**

- Fever and maculopapular rash (i.e. non-vesicular) and cough, coryza (i.e. runny nose)
- or conjunctivitis (i.e. red eyes).
- or any person in whom a clinical health worker suspects measles infection.

To confirm a case of measles:

- Presence of measles-specific IgM antibodies.

## **MENINGITIS**

### **Suspected case**

- Sudden onset of fever (>38.5 °C) with stiff neck.
- In patients aged <12 months, a suspected case of meningitis occurs when fever is accompanied by a bulging fontanelle.

### **Probable case of bacterial meningitis**

- Suspected case of acute meningitis, as defined above, with turbid cerebrospinal fluid.

### **Probable case of meningococcal meningitis**

- Suspected case of meningitis, as defined above and Gram stain showing Gram-negative diplococcus
- or ongoing epidemic or petechial or purpurial rash.

### **Confirmed case of meningococcal meningitis**

- Suspected or probable case, as defined above, with either positive-CSF antigen detection for *Neisseria meningitidis* or positive CSF culture or blood with identification of *N. meningitidis*.

## **TETANUS**

### **Adult tetanus**

Either of the following signs 3–21 days following an injury or wound:

- trismus of the facial muscles or risus sardonicus
- painful muscular contractions.

### **Neonatal tetanus**

Any neonate with normal ability to suck and cry during the first 2 days of life who, between day 3 and day 28, cannot suck normally, or any neonate who becomes stiff or has spasms or both.

## **UNEXPLAINED FEVER**

Fever (body temperature >38.5 °C) for >48 hours and without other known aetiology.

## **UNEXPLAINED CLUSTER OF HEALTH EVENTS**

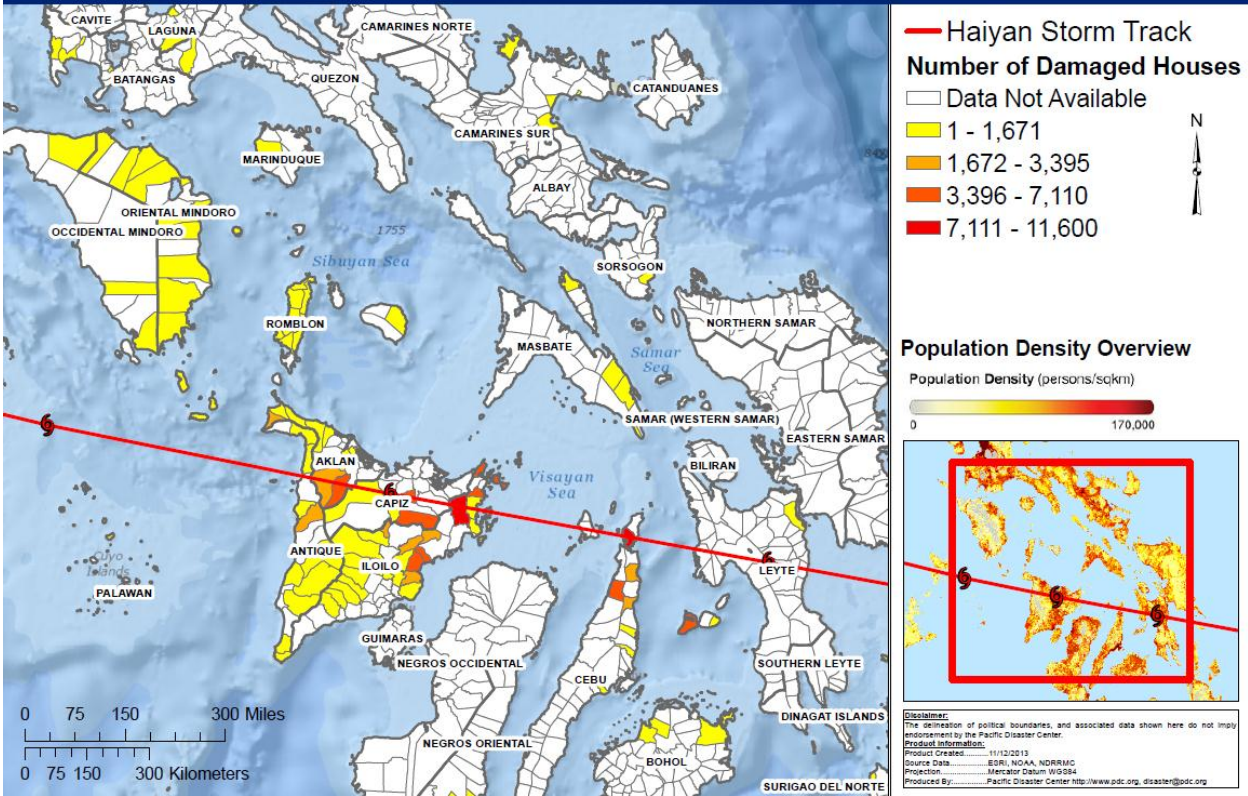
An aggregation of cases with similar symptoms and signs of unknown cause that are closely grouped in time and/or place.

# Annex 2. Map of infrastructural damaged post Typhoon Haiyan

as of 12 November 2013 (Pacific Disaster Center)

## Number of Damaged Houses - Typhoon Haiyan (Yolanda)

This map depicts the number of houses destroyed or partially damaged by Typhoon Haiyan (Yolanda). This map is based on information from NDRRMC Situation Report #15, 12NOV13, 2200 PHT. Only data for those municipalities who have reported is shown. This product will be updated as additional information becomes available.



### Annex 3: Key data on previous pattern of disease related to disasters

Predicted affected regions: IV-A, IV-B,V, VI, VIII

#### Communicable Disease Background

Number of Cases and Incidents of Disaster-Related Diseases, according to PIDSR 2012

Region	Cholera*	Typhoid	Acute Bloody Diarrhoea	ILI	Leptospirosis**	Malaria**
IV-A	0	160	181	11 944	417	23
IV-B	0	43	220	4 788	18	1 005
V	74	12	13	115	205	3
VI	0	8	205	3 046	1 219	7
VIII	1	8	646	2 813	81	1
Whole Affected Area	75	231	1 265	22 706	1 940	1 039
Nation Wide	92	902	15 080	93 864	7 687	1 593

Region	Dengue	Measles Suspected	Measles Confirmed	Tetanus, Non-Neonatal*	Bacterial Meningitis**	Meningococcal Disease*	Population (based on 2010 census)
IV-A	29 843	430	187	142	271	29	12 609 803
IV-B	2 346	92	30	40	77	2	2 744 671
V	3 777	29	8	93	81	10	5 420 411
VI	11 880	777	492	132	523	7	7 102 438
VIII	1 669	47	23	56	59	5	4 101 322
Whole Affected Area	49 515	1 375	740	463	1 011	53	31 978 645
Nationwide	187 031	3 600	1 536	1 112	2 677	154	92 337 852