



**World Health
Organization**

**Public Health Risk Assessment
and Interventions**

Typhoon Haiyan Philippines

Second edition

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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.

This is a revised Public Health Risk Assessment, following from the initial 16 November publication, and takes into account information assessed at 5 weeks post disaster. 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. Revision aligns with the evidence base provided to assist in a risk management approach to interventions that are to be made. The public health risk is being assessed at regular intervals and further editions will appear as required.

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 typhoon on 8 November 2013, affecting over 13 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. Prior to the emergency, the typhoon-affected areas had suboptimal vaccination coverage for measles, polio and tetanus; health services did not cover all levels of care; there were an estimated 12,000 deliveries per month.

Key issues immediately following the disaster were:

- a. Lack of shelter, food and water, and related food and water-borne illnesses aggravated by malnutrition
- b. Wounds and injuries as a direct results of the storm, or associated with the flooding after the event
- c. Respiratory infections associated with overcrowding, especially acute respiratory infections in children. Measles was also a potential problem
- d. Vector-borne diseases, especially dengue and chikungunya fevers. Malaria is more endemic in southern area
- e. Problems associated with childbirth and pregnancy.
- f. Malnutrition, especially of infants
- g. Mental health disorders (such as post dramatic stress disorder)
- h. Leptospirosis from exposure to rodent excreta or contaminated water, and rabies from displaced dogs and cats
- i. Sexually transmitted diseases

While many of the early issues remain and interventions continue to be implemented, some changes in focus have occurred, especially from the emergency treatment of trauma and injuries to more comprehensive essential health care.

Current priority interventions are:

- a. Provision of food, safe drinking water, appropriate sanitation and other essential non-food items including fuel for cooking
- b. Provision of shelter, health care facilities and waste management systems
- c. Prevention and management of acute malnutrition
- d. Extending and expanding treatment: Providing free primary and emergency health care as Philippine medical services are re-established. Special attention is required for the ongoing care of wounds to prevent infection (including tetanus), and reproductive and maternal and child health, including obstetric and neonatal care
- e. Ensuring access to essential drugs for the management chronic diseases (e.g. cardiovascular disease and diabetes) and chronic infections (tuberculosis, leprosy and HIV)

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- f. Strengthening disease surveillance and response systems to inform health care needs and prevent the spread of disease, including increasing coverage with recommended vaccines, pre-positioning supplies for possible outbreaks. Outbreaks of measles, respiratory infections, acute diarrhoeal diseases and arboviral infections (dengue and chikungunya) remain a public health concern in the post-disaster period
 - g. Preventing rabies associated with animal bites
 - h. Strengthening mental health assistance, including psychological first aid to typhoon survivors and referral services for post-traumatic stress disorder
 - i. Health of victims who have migrated and potential returnees, including vulnerable groups such as the elderly
 - j. Risk communication to the public
 - k. Ongoing management of dead bodies with retrieval and identification of victims
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1. 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.
 2. Staff deploying to the Philippines should be appropriately vaccinated and offered malaria prophylaxis when required. Provision should also be made for protection against occupational health hazards associated with clean-up and reconstruction.

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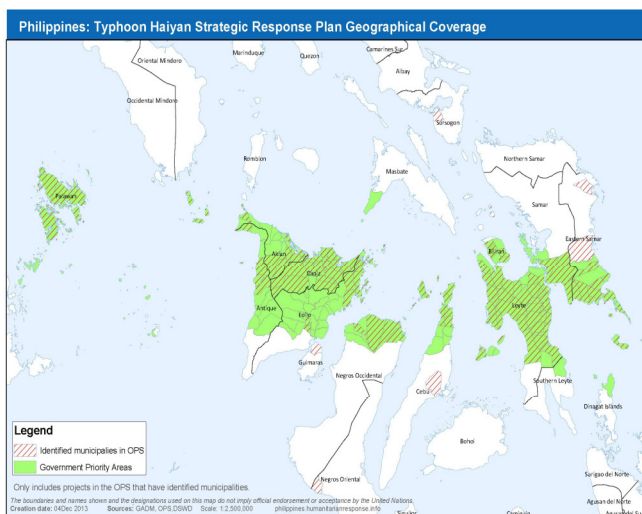
1. BACKGROUND AND RISK FACTORS

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 15 October 2013.



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 Concepcion, Iloilo province. The typhoon affected the city of Roxas in Capiz

province and the tourism centre of Borocay in Aklan province.

At least 13 million people live in the worst affected regions.

The Secretary of Health formally requested assistance from WHO and partners and the United Nations declared a grade 3 emergency.

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By 6 December, the National Disaster Risk Reduction Management Council of the Philippines reported 5786 deaths, 26 233 injured and 1786 missing with over 11 million people have been affected by the storm, including over 4 million displaced persons of whom 94 310 are in 385 evacuation centers. 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.

On 16 November 2013, the World Health Organization identified the major public health risks given the underlying demographic and disease profile and context of The Philippines as well as the dangers presented given the typhoon and its aftermath. The identification of the risks provided a framework by which Philippines Department of Health (DOH), the WHO and partner agencies could collaboratively operate.

The major risks **to public health** identified were:

- Major trauma and injuries
- Population displacement/movement, overcrowding, poor shelter, exposure, lack of safe water, sanitation and hygiene facilities, vector breeding and poor nutritional status, leading to increased potential for outbreaks of communicable and vector-borne diseases, and leptospirosis and tetanus
- Disruption of health services and access to health care due to damaged and/or flooded health infrastructure, loss of medicines and supplies, and injured or dead health staff. This would also impact on people needing ongoing care due to diabetes, tuberculosis and hypertension
- Malnutrition and communicable diseases. In children who are already undernourished or malnourished, prolonged and severe infections are more frequent

To deal with the major risks, a set of immediate, short and medium term priority interventions were identified. The initial risk assessment was based on limited information, and now 5 weeks into the response and already engaging early recovery, this document aims to highlight the status of actions put in place, briefly summarize the major priority interventions undertaken thus far, and outline ongoing as well as new risks that will be a part of the health strategy.

For the full initial public health risk assessment, please refer to World Health Organization Public Health Risk Assessment Typhoon Yolanda

http://www.who.int/entity/hac/crises/phl/sitreps/philippines_ph_risk_assessment_16November2013.pdf.

2. PRIORITY HEALTH CONCERNS

2.1 Wounds and injuries

As predicted, early surveillance systems reported that trauma was the top cause of mortality and morbidity in the affected areas during the first 2 to 3 weeks following the typhoon. The force and intensity of typhoon Yolanda resulted in a significant number of injuries and the appropriate management of wounds and injuries was a high priority. A lack of functioning health facilities in the areas of maximum impact meant that treatment of many of the injuries was delayed.

Immediate response to the need by coordinating the many foreign medical teams who were arriving and ensuring they were deployed to most affected sites. By 19 November, there were 22 Foreign Medical Teams deployed to the most affected areas composed of 546 medical staff. Sixteen type 1 (basic) and 2 type 2 (advanced) field hospitals had been established. Ten additional foreign medical teams composed of 213 staff were also in country awaiting deployment. In addition, 45 local medical teams comprising 504 staff were also deployed.

Tetanus was identified as a risk of trauma and the DOH shipped tetanus toxoid and immunoglobulin to affected areas to allow treatment of tetanus-prone wounds. By 9 December, over 13,000 doses of tetanus toxoid had been administered in Region VIII. Standardized guidelines for the management of cases were shared widely across partner agencies and medical teams.

Current challenges and ongoing risks

Initial wounds sustained during the storm have been at high risk for infection and require ongoing or follow-up care. Skin infections continue to be an issue because of slow healing and a high rate of complications due to poor hygiene, malnutrition and potentially underlying levels of diabetes. In addition, community members and workers involved in debris removal, clean up and reconstruction continue to be at an increased risk of wounds and injuries.

Suspected cases and deaths from tetanus (including 2 neonatal cases) have been reported through disease surveillance mechanisms. This highlights the need to be aware of vaccination status in those with injuries.

Care of wounded and disabled patients continues to be coordinated and tracked. Data collection mechanisms have been in place to understand the scope and extent of injuries being seen in health care facilities and such cases will require longer term care and rehabilitation.

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2.2 Communicable Disease

Poor shelter, lack of safe water, sanitation and hygiene facilities, overcrowding and increased vector breeding were all identified as factors which would lead to an increased transmission of communicable diseases with the potential for large outbreaks. Respiratory infections, measles, diarrhoea (including acute watery diarrhoea and viral enteric diseases), typhoid, leptospirosis, rabies and vector-borne infections were considered as particular risks.

Water/sanitation/hygiene-related and foodborne diseases

Ensuring a safe water supply was identified as the most important preventive measure in reducing the risk of outbreaks of water-borne diseases.

WASH services, as of 11 December, had in Region VIII:

- Provided over 20.7 million bottles of water
- Provided water treatment and disinfection to serve more than 393,000 families in Region VIII
- Constructed/installed latrines or toilets in evacuation centers in Tacloban City, Palo and Tanauan
- Provided hygiene kits in East Samar, Balangiga, and Tacloban and San Isidro to serve more than 90,000 individuals
- Distributed jerry cans to serve more than 270,000 individuals in areas of Eastern Samar and Tacloban.

In addition, WASH services distributed water kits (jerry cans and water disinfectant) to serve approximately 4,500 individuals in Regions VII (Cebu) and 8,200 individuals VI (Iloilo). While most of the provision of WASH supplies and assessments has focused primarily in Eastern Samar and Tacloban City thus far, the next focus for WASH-related activities will be outside of Tacloban City and around Ormoc City.

DOH, WHO and health partners have acted together in several areas to decrease the exposure of populations to potentially contaminated water and thus decrease the risk of water-borne diseases. These actions and interventions include:

- Assessment of water quality in households in 10 municipalities in Eastern Samar, and also in some areas of Leyte and Tacloban, using portable test kits that examine coliform levels as well as residual levels of chlorine
- Testing of water-pipe systems, water bladders and jerry can water to determine effectiveness of on-going treatment regimens
- Examination and construction of temporary water pipelines in Guiuan, Hernani, and Balancayan
- Provision of water sterilization tablets to the areas of Eastern Samar, Leyte and Bohol via health partner agencies
- Procurement and distribution of 12-5000 litre water bladder tanks

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- Setting up and protecting a purification water plant
- Development of locally appropriate plan for potential outbreaks of acute watery diarrhoea in Tacloban

Current challenges and ongoing risks

Follow-through investigation of the quality of some piped water, water bladders and jerry cans revealed ongoing contamination with coliforms despite chlorination of the water source. Therefore sanitation and access to clean water remains a major concern in affected areas. Diarrhoea continues to be one of the most frequently reported reasons for visits to health facilities across all affected regions. While access to clean water and sanitation remains limited the potential for outbreaks of diarrhoea remains high. Periodic monitoring of water sources and sanitation, and good coverage of surveillance systems with frequent, regular reporting in affected areas, as well as appropriate outbreak preparedness, will remain important in detecting, investigating and controlling outbreaks of diarrhoeal disease.

Acute respiratory infections

While acute respiratory infections have remained in the five main causes of morbidity, the number of cases, including those of pneumonia, has not exceeded expected norms. Appropriate shelter, continued surveillance, particularly in evacuation centers and temporary camps, as well as access to rapid treatment with antibiotics is necessary.

Measles and other vaccine preventable diseases (VPD)

The Philippines continued to report sporadic cases and outbreaks of measles (such as in 2011) prior to Typhoon Yolanda. National levels of vaccine coverage are relatively high, however local levels in some of the affected areas were reported as covering less than 20% of the population for the second dose of measles vaccine. Therefore, it was considered that there was a moderate to high risk of measles outbreak.

By 11 December, across the affected areas, a total of 35,522 children received vaccination against measles, 24,505 vitamin A supplements, and 36,095 the oral polio vaccine. As the post-typhoon vaccination campaign winds down, routine immunization programmes will be re-established through prepositioning stocks and re-establishment of the cold chain. The campaign is using social mobilizers to reach into barangay levels. Sixteen solar fridges have been supplied to Tacloban City, Leyte.

Although no large clusters of measles have been reported, suspected cases of measles and select priority communicable diseases are continuing to be reported through surveillance systems and investigated, with confirmatory testing and control measures put in place and followed up as necessary.

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Current challenges and ongoing risks

Pre-typhoon cold chain store requires urgent expansion with the shortfall in capacity varying across each Region. Recent assessment to measure the impact of the vaccination programme in Tacloban revealed 34 children in 6 evacuation centers who went unvaccinated. Social mobilization remains a challenge in informing people of expected campaigns. Investigation of suspect cases requires laboratory testing and reporting to be timely. As long as there are displaced populations living in crowded conditions, the risks of measles and other VPD remains. Targeted vaccination to areas of low coverage or to displaced or crowded populations will mitigate against these risks. Rapid follow-up of suspected cases and re-establishment of the national immunization programme remains a priority.

Tuberculosis

The Philippines has the ninth highest tuberculosis (TB) incidence in the world and the second highest in the Western Pacific Region, with an incidence of 265 cases per 100 000 population (2012). The TB burden is disproportionately high among the poor, the elderly and the male population.

Early recognition of the issues such as migration of population away from service providers and loss of health care facilities and of medical supplies made the continuation of TB treatment a priority. DOH, WHO and health partners are setting up a system to locate persons with TB and to direct these individuals to their nearest treatment center. Mapping of the current functionality of TB treatment centers, including those for multiple drug resistant TB and functional diagnostic laboratories, has been undertaken so as to allow appropriate referral of patients and reinstitution of therapy as soon as possible.

Current challenges and ongoing risks

Population movement poses challenges in ensuring TB cases continue their treatment. Revision of protocols for issuing drugs without prior testing requirements needs to be followed through with an information campaign to ensure both issuer and receiver understand the new system. The risk of not achieving this is that the burden of disease will increase in existing communities where the incidence was high and new communities may be exposed to people whose infection has been interrupted.

Vector-borne disease

Increased exposure to vector-borne diseases (VBD), such as dengue and chikungunya (and in Palawan, malaria) was identified as major risks to public health. It was acknowledged that 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.

In preparation for this, mosquito reduction activities, including community mobilization through the '4 o'clock habit' (to ensure everyone clears mosquito habitats) and instigation of

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the '4S' approach (for self and community protection), have been undertaken in some areas. There has been some distribution of insecticide-impregnated bed nets and curtains for temporary accommodation. Limited space spraying (fogging) activities have been undertaken in 6 areas and 29 barangays in Tacloban City to reduce nuisance mosquito menace. However, high mosquito densities are leading to skin irritation and infections in certain areas. Sporadic dengue cases have been reported, and there is a high clinical awareness of VBD by the foreign medical teams. Guidelines for preventing outbreaks of dengue through vector control have been prepared and shared with the DOH. Widespread blanket fogging against nuisance mosquitoes is not advocated as such a programme is very costly, environmentally hazardous and cannot be sustained over the medium and long term and will result in the emergence of resistance to insecticides. Rapid test kits have been made available and more have been ordered. Testing algorithms and data collection mechanisms have been developed and will be widely shared.

Current challenges and ongoing risks

As outlined in the first public health risk assessment, the magnitude of the impact of VBD on the population in the affected areas is likely to become apparent from now, several weeks after the disaster. Reports of proliferation of mosquitoes continue, and the risk of VBD such as dengue and chikungunya may be mitigated by actions such as focused integrated vector control in high risk locations and population education. The widespread use of insecticide needs to be regulated and reserved for dealing with disease outbreaks and monitoring for resistance should be initiated. Early detection with rapid confirmation of the diagnosis remains a major priority. This can reduce the fatality rates of cases, and will allow public health actions to be focused on the populations at risk to reduce further transmission.

Other communicable diseases

Other priority infections included meningococcal disease and leptospirosis. Although clinical awareness has remained high, to date, no cases of meningococcal disease and only sporadic cases of suspect leptospirosis have been reported. Continued vigilance must remain, particularly for leptospirosis if further rains result in widespread flooding.

Although schistosomiasis was recognized as a risk due to disruption of treatment and flooding extending the range of habitat of the snails, it is too early to assess the impact. Cases will be managed through normal programme management.

Importation of polio was also highlighted as a risk, as there were very low levels of immunization in some of the affected areas and surveillance for acute flaccid paralysis has decreased across the typhoon affected area. The mass vaccination campaign will have reduced the potential risk of cases for this disease.

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2.3 Disruption and management of health services

Disruption of health services and access to health care resulted from physical issues such as: damaged and/or flooded health infrastructure, loss of medicines and supplies, and loss of manpower because of injured or dead health staff. As a result, establishment of emergency primary and secondary care for medical, surgical and obstetric emergencies was included as an immediate intervention with re-establishment of essential health care services (primary, referral and hospital care) short term priorities.

Typhoon Haiyan impacted heavily on healthcare facilities. By 2 December, detailed assessment of damage had been undertaken on less than half of the 620 health care facilities in Region VIII. All were damaged and almost a third were non-functional with the estimated cost of damage standing at 22 million dollars.

The coordination and deployment of local and foreign medical teams has been a major undertaking. As of 11 December, 114 DOH teams had been deployed, which included 312 doctors, 530 nurses and 342 other staff. They were supplemented by 350 staff from 26 other local health responders (NGOs and private). In addition, 124 foreign medical teams had been deployed (144 doctors, 119 nurses, 786 other). Most of these were providing acute medical, surgical and reproductive health care from a range of facilities.

Current challenges and ongoing risks

Ninety-eight of the DOH teams and many of the foreign medical teams are now preparing to leave and are handing over their responsibilities. Access to and re-establishment of routine services remains a challenge in the areas of manpower and health facility logistics.

Long-term lack or intermittent electricity supplies, inadequate or non-functioning sanitation systems and health care waste management, and poor water supplies will continue to challenge many of the functioning health care facilities. This enhances the risk of hospital-acquired infection within any individual facility and also for referral facilities and the community.

Non-communicable Diseases (NCDs)

Separation of care and treatment for non-acute conditions such as diabetes, hypertension (and TB) remains an issue, with chronic diseases now one of the most commonly reported reasons for visits to health facilities.

Current challenges and ongoing risks

This includes for routine immunizations and other ongoing care activities for hypertension, diabetes and TB. A major rebuild programme will be required but this may take many years, and in the meantime, continued service provision is essential.

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Reproductive health

Reproductive health remains a high priority during this time. DOH with WHO, UNFPA and other Health Cluster partners has supported the establishment of emergency primary and secondary care including medical, surgical and obstetrical emergencies as well as rehabilitation of and provision of sterile equipment for safe deliveries by midwives. Perinatal services, neonatal care, and reinstitution of regular antenatal visits are high priority and will continue to be supported. Capacities of reproductive health referral facilities have been enhanced in Roxas City (Capiz), Estancia (Iloilo) and Guiuan (Eastern Samar) through the provision of emergency reproductive health kits that provide for clean delivery, family planning services, treatment for sexually transmitted infections and medical management of sexual violence for the needs of 10,000 people in the next 3 months. Additionally, these kits support clinical delivery, management of miscarriage and suture of vaginal tears for the needs of 30,000 people for 3 months. In addition, an emergency maternity unit has been established in Palo, Leyte; four out of 10 ambulances and 3 out of 24 E-rangers have been purchased for Tacloban, Leyte and Eastern Samar; and 5,000 hygiene kits, 900 dignity kits have now been distributed.

Current challenges and ongoing risks

The Reproductive Health Working Group has met regularly and is in process of providing DOH-approved guidance regarding the utilization of chlorhexidine in delivery. The sustainability of medications and supplies being used as well as accordance with Philippines National Guidelines is of utmost importance in the path to building back effectively and standardization of practice. Further issues regarding documentation of births and deaths need to be addressed.

In addition, 2 cases of neonatal tetanus have been reported, demonstrating that the provision of tetanus toxoid to pregnant women remains a strong health care priority.

2.4 Other risks and considerations

Malnutrition

Malnutrition was present in some affected areas of the Philippines prior to Typhoon Haiyan, particularly for children aged 6-24 months. It was recognized in the first public health risk assessment that 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. 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.

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Surveillance data from Cebu indicate that this is now issue. A small sample of data on the number of cases MAM and SAM presenting to health facilities showed only a modest increase up to 22 November, after which these increased significantly from 20 cases of MAM/week mid-November to 228 cases/week in early December. SAM increased from 2 cases/week to 54 cases over the same period.

In efforts to address malnutrition and lack of access to as well as destruction of food sources, WHO delivered 987,423 food packs in two major typhoon-affected areas as of 20 November.

Current challenges and ongoing risks

Food shortages are expected to continue as large numbers of the population have been displaced, access to food has been limited in some areas, food prices have risen due to decreased supply, and many agricultural areas have been destroyed due to both the storm as well as the resultant salt-water surge. Close coordination between WHO, other Health Cluster partner agencies as well as with the Nutrition Cluster is required for monitoring and responding to the situation. Installation of capacities to manage cases in pediatric wards in Provincial hospitals needs to be undertaken.

Mental Health & Psychosocial Support (MHPSS)

As a priority area identified early and for ongoing support, WHO guidelines have been made available. WHO, in partnership with DOH and MHPSS.NET, is developing a 4Ws of mental health and psychosocial support in disaster affected areas. The MHPSS Working Group of the Health Cluster has initiated a range of activities in the affected area. These include:

- Psychosocial first aid
- Community and family support
- Counseling
- Psychosocial processing and psycho-education sessions
- Stress management programmes
- Defusing and other activities

The first Training-of-Trainers session in Psychological First Aid was completed with the intent to then carry this forward into further training. The DOH reported to the Cebu sub-national Health Cluster that Psychological First Aid is being conducted in Cebu and Lapu-lapu City evacuation centers.

Current challenges and ongoing risks

A priority amongst partner agencies for longer-term psychological care has been recognized. This includes expanding the programme to reach as many geographical areas as possible. There is also a need to link across the broad spectrum of disease from mild to severe disease.

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Sexually transmitted infections (STIs)

No increase in numbers above expected levels have been reported to date, however continued displacement of vulnerable populations can substantially increase their exposure to STIs, including HIV.

Environmental risks

Environmental risks were identified in the initial public health risk assessment. The oil spill in Estancia, Iliolo Province led to the evacuation of 1,892 persons (548 families) families and environmental contamination, the long-term effects of which are yet to be determined.

In addition, technical advice has now been published on environmental risks that can be heightened post-natural disaster including

- Increased risk of wounds, wound infections, and tetanus due to injury
- Poor management of waste, including solid waste from destroyed structures as well as health-care, industrial, and human waste
- Asbestos exposure through damaged buildings, fittings, pipes, and other construction materials

Current challenges and ongoing risks

Awareness and communication for local inhabitants, health care workers and foreign workers needs to continue for environmental risks. This includes preparedness measures such as immunization and provision of appropriate equipment to prevent short and longer term injuries and disease

Corpses

Whilst not a public health risk, the collection and disposal of bodies after the typhoon presented a psychologically traumatic experience for the affected population. WHO purchased temporary mortuaries for the National Bureau of Investigation (NBI), with materials and equipment being purchased locally. The system for management of dead bodies was established by the DOH in partnership with a WHO Forensic Advisor and a team of 6 FETP (Field Epidemiology Training Program) Fellows and graduates. Frequently asked questions regarding dead bodies, were translated into local language and communication materiel on this disseminated. A structured system including an algorithm and forms were developed. The Management of Dead Body (MDB) system led by DOH was designed to: count the number of dead bodies; and provide a pragmatic and fast opportunity to identify the dead. This responsibility was passed by the national government to the NBI and the materiel support originally intended for DOH was accordingly transferred.

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Other issues initially identified

Other issues initially identified included snake bites and bites from displaced cats and dogs. Although animal bites are a frequent reason for attendance at a health care facility, no human cases of rabies have been reported from the affected areas. However, the often long incubation period of rabies may mean that cases have yet to present.

2.5 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 provided 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.

Disposing of unwanted or expired 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 ton. 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. Badly 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. SPECIFIC INTERVENTIONS

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 diarrhoeal 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 diarrhoea.
- 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, which contribute to an increase number of infants with diarrhoea and pneumonia and further exacerbates the low percentage of exclusively breastfed infants. For those unable to be breastfed, the following hierarchy of feeding should be followed: expressed breast milk by mother, 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 diarrhoeal 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.

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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.

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- Excess maternal and newborn morbidity and mortality should be prevented.
- Plans should be put in place for the transition to comprehensive reproductive health services.

Case management of 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.

Noncommunicable 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

- Protect infants from daytime biting mosquitoes by the use of mosquito nets
- Encourage the use of mosquito repellants to protect from day biting mosquitoes
- Sleep under an insecticide-treated mosquito nets
- If insecticide residual spraying is being done in your area, ensure your house or tent/shelter has been properly sprayed with insecticide
- Wear protective clothing at times when mosquitoes and other biting insects are active
- Use insect repellents and mosquito coils if available
- Remove debris that form water collections following rains, from around your dwellings as these could serve as mosquito breeding sites. Also destroy or empty small rain-filled containers near (up to a 100 meters) 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

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Seek treatment early

- Diagnosis and treatment of fever, diarrhoea and other illnesses should be within 24 hours from observation of first signs of symptoms.
- For diarrhoea, 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 has been utilised. Co-ordination of surveillance information through the health cluster (Department of Health and WHO) has been done to provide a more comprehensive coverage. The surveillance system informs 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 diarrhoea, acute bloody diarrhoea, measles, acute respiratory infection, dengue, , 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 diarrhoea, measles and dengue;
- 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 management of severe dengue, 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

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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, 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 by application of the WHO risk assessment tool.
- Special attention should be paid to the safe management and disposal of waste from immunization activities to prevent the transmission of bloodborne pathogens.

3.8 Vector control and personal protection

- Vector control measures should be implemented early, upon the reporting of suspected dengue cases
- Mosquito reduction activities, including community mobilization through the '4 o'clock habit' and instigation of the '4S' approach, should be encouraged in all affected areas
- Targeted fogging operations to minimize dengue outbreaks should be undertaken early in high risk locations (evacuation centres, hospitals/clinics, schools and market places) when cases are reported
- Long-lasting insecticidal nets should be made universally available to affected populations in Palawan, with priority given to pregnant women and children aged <5 years

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- Refuse must be collected and appropriately disposed of daily to discourage rodent vector breeding
- Water-storage containers should be enclosed or covered with mosquito-proof lids.
 - Limited Space spraying and larviciding to control mosquito and fly populations, especially around displacement centers

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4. STAFF HEALTH

Vaccinations and malaria prophylaxis recommended for staff deployed to the Philippines.

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 <i>E. coli</i>).

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Optional	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		Several vaccines are available. Schedules vary and should be followed as per manufacturer's instructions

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:

Medication	Start of treatment	Dosage
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.

Details can be found at

http://www.wpro.who.int/philippines/typhoon_haiyan/occupational_health_safety/en/index.html

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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 cholera* O1 or O139 from a diarrhoeal stool sample.

BLOODY DIARRHOEA

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.

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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.

DENGUE

Probable dengue case: any case with fever and two or more of the following:

- nausea, vomiting; rash; aches and pains; positive tourniquet test; leucopenia; any warning sign

Case with warning signs: a clinically diagnosed case with any of the following warning signs:

- abdominal pain or tenderness; persistent vomiting; clinical fluid accumulation; mucosal bleeding; lethargy, restlessness; liver enlargement >2cm; increase in hematocrit concurrent with rapid decrease in platelet count

Severe dengue: severe plasma leakage leading to any of the following:

- shock; fluid accumulation with respiratory distress OR severe bleeding as evaluated by clinician OR severe organ involvement of liver (aspartate amino transferase or alanine amino transferase ≥ 1000), central nervous system (impaired consciousness) or heart and other organs

MALARIA

Person with current fever or history of fever within the past 48 hours (with or without other symptoms such as nausea, vomiting and diarrhoea, 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.

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MENINGITIS

Suspected case

- Sudden onset of fever ($>38.5^{\circ}\text{C}$) 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 $>38.5^{\circ}\text{C}$) 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.

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Annex 2. Map of household damage post Typhoon Haiyan

UNOCHA MIRA report published on 7 Dec 2013:

<https://philippines.humanitarianresponse.info/document/mira-report-haiyan-20131129>

