Rapid Public Health Risk Assessment
Tropical Cyclone Winston
Republic of Fiji

March 2016

A joint assessment by the Ministry of Health and Medical Services and the World Health Organization.

This assessment should be considered in the context of the Ministry’s Health Emergency and Disaster Management Plan (HEADMAP).

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ABBREVIATIONS

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<tr>
<th>Abbreviation</th>
<th>Definition</th>
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<tbody>
<tr>
<td>AFR</td>
<td>acute fever and rash</td>
</tr>
<tr>
<td>ALRI</td>
<td>acute lower respiratory tract infection</td>
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<tr>
<td>ARI</td>
<td>acute respiratory infection</td>
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<tr>
<td>ART</td>
<td>antiretroviral therapy</td>
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<tr>
<td>BMS</td>
<td>breast-milk substitute</td>
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<tr>
<td>DHF</td>
<td>dengue haemorrhagic fever</td>
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<tr>
<td>EPI</td>
<td>Expanded Programme on Immunization</td>
</tr>
<tr>
<td>EWARN</td>
<td>Early Warning and Response Network</td>
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<tr>
<td>GLEAN</td>
<td>Global Leptospirosis Environmental Action Network</td>
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<tr>
<td>HBV</td>
<td>hepatitis B Virus</td>
</tr>
<tr>
<td>HEV</td>
<td>hepatitis E</td>
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<tr>
<td>IEHK</td>
<td>Interagency Emergency Health Kits</td>
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<tr>
<td>ILI</td>
<td>influenza-like illness</td>
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<tr>
<td>IMCI</td>
<td>Integrated Management of Childhood Illness</td>
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<td>IRN</td>
<td>indoor residual spraying</td>
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<tr>
<td>JMP</td>
<td>Joint Monitoring Programme</td>
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<td>MCH</td>
<td>maternal and child health</td>
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<tr>
<td>MoHMS</td>
<td>Ministry of Health and Medical Services, Fiji</td>
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<td>MISP</td>
<td>Minimum Initial Service Package</td>
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<tr>
<td>MOU</td>
<td>Memorandum of Understanding</td>
</tr>
<tr>
<td>NCD</td>
<td>noncommunicable diseases</td>
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<tr>
<td>NDMO</td>
<td>National Disaster Management Office, Fiji</td>
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<tr>
<td>PLHIV</td>
<td>people living with HIV</td>
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<tr>
<td>PMTCT</td>
<td>prevention of mother to child transmission</td>
</tr>
<tr>
<td>SOP</td>
<td>standard operating procedures</td>
</tr>
<tr>
<td>STIs</td>
<td>sexually transmitted infections</td>
</tr>
<tr>
<td>TB</td>
<td>tuberculosis</td>
</tr>
<tr>
<td>TIG</td>
<td>tetanus immune globulin</td>
</tr>
<tr>
<td>UNHCR</td>
<td>Office of the United Nations High Commissioner for Refugees</td>
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<td>UNICEF</td>
<td>United Nations Children's Fund</td>
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<tr>
<td>VBD</td>
<td>vector-borne disease</td>
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<tr>
<td>VHW</td>
<td>village health worker</td>
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<tr>
<td>VPD</td>
<td>vaccine-preventable disease</td>
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<td>WHO</td>
<td>World Health Organization</td>
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EXECUTIVE SUMMARY

The Republic of Fiji was hit by Tropical Cyclone Winston, a Category 5 cyclone, on 20 and 21 February 2016, causing widespread destruction and damage to buildings, infrastructure and loss of communication. Early reports indicate there have been at least 44 fatalities with more than 35,000 people displaced to evacuation centres.

This rapid health risk assessment provides government workers, local authorities, health professionals in United Nations agencies, nongovernmental organizations, donor agencies and local authorities working with populations affected by the TC Winston emergency in Fiji, with baseline health information and up-to-date technical guidance on the major health threats. The health issues and risk factors addressed were selected on the basis of known burden of disease in Fiji, and potential impact on morbidity, mortality, response and recovery.

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 between all agencies working among the populations affected by the crisis.

Immediate priorities:
1. Provision of safe and nutritious food, safe drinking-water, appropriate sanitation, shelter and other essential non-food items including soap and fuel for cooking
2. Trauma care for the wounded with tetanus prevention
3. Provision of medicines and medical supplies
4. Establishment of emergency primary- and secondary-care services for medical, surgical and obstetric emergencies
5. Strengthen surveillance for selected communicable disease that is prone to post-disaster outbreaks such as diarrhoea, respiratory infection and measles; and for timely, informed decision making
6. Risk communication for the purposeful exchange of information with the public
7. Ensuring continuity of care for chronic diseases, such as diabetes, hypertension and chronic infections such as TB and HIV.

Short-term priorities:
1. Re-establishment of essential health care services (primary, referral and hospital care)
2. Emergency mental health care and psychosocial support
3. Waste management
4. Strengthen vector-borne disease surveillance and promote personal protection against these diseases

Medium-term priorities:
1. Post-surgical care treatment and management of disabilities
2. Routine immunization
3. Health of victims who have migrated and potential returnees
4. Management of acute malnutrition including medical complications
1. BACKGROUND

1.1 Fiji

Fiji has the largest population of all the South Pacific island countries, with an estimated 2010 population of 854,000. Fiji consists of 332 islands covering a total land area of 18,333 square kilometres in 1.3 million square kilometres of the South Pacific Ocean. The population occupies around one-third of the 332 islands and is concentrated on the two largest, Viti Levu and Vanua Levu, with the nation’s capital, Suva, located on Viti Levu.

1.2 Tropical cyclone Winston

On the 20th and 21st February, Category 5 Severe Tropical Cyclone Winston cut a path of destruction across Fiji’s islands, blowing off roofs, destroying buildings, flooding rivers and bringing down trees and power lines. Initial aerial surveillance suggested extensive damage extending to all four Divisions. The cyclone is reportedly, one of the most severe ever to hit the South Pacific.

While the extent of the damage continues to be assessed, there are reports of deaths and serious injuries, many homes have been damaged or destroyed, and access to health services, food and clean water is either limited or unavailable in the beginning. On 25 February 2015, the National Disaster Management Office (NDMO) confirmed 44 fatalities. An estimated 35,000 people were displaced in 424 evacuation centres located in all four divisions.

The cyclone filled roads with debris, destroyed bridges and caused extensive flooding. Electricity went out in many areas and communication systems disrupted before it was slowly restored. The NDMO initial assessments indicated that thousands of houses across Fiji may need to be demolished as a result of the extent of damage by TC Winston and therefore presenting significant shelter challenges over the months ahead.

Levels and types of health services provided in Fiji as of 2014, are summarized in Annex 1. Number of government health workers (established posts) as of 2014 is presented in Annex 2. While the three major hospitals were operating, there was significant damage to health facilities in the severely affected areas. This reduced the overall capacity of facilities to respond to patients with acute health concerns, such as trauma, and to ongoing, emerging health issues.

In the face of this disaster, a 30 day State of Natural Disaster has been declared and international assistance has officially been requested by the Fiji Government.

Table 1. Demographics of affected population by distance from the eye of cyclone

<table>
<thead>
<tr>
<th></th>
<th>30km</th>
<th>40km</th>
<th>50km</th>
<th>100km</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>208070</td>
<td>258732</td>
<td>347728</td>
<td>844008</td>
</tr>
<tr>
<td>Male</td>
<td>106875</td>
<td>133405</td>
<td>178886</td>
<td>429656</td>
</tr>
<tr>
<td>Female</td>
<td>101195</td>
<td>125327</td>
<td>168842</td>
<td>414353</td>
</tr>
<tr>
<td>Children under 18</td>
<td>70218</td>
<td>88909</td>
<td>120153</td>
<td>289891</td>
</tr>
<tr>
<td>Children under 5</td>
<td>20887</td>
<td>26528</td>
<td>36213</td>
<td>87387</td>
</tr>
<tr>
<td>Children under 1</td>
<td>2103</td>
<td>2667</td>
<td>3643</td>
<td>8796</td>
</tr>
<tr>
<td>Pregnant and lactating mothers</td>
<td>4550</td>
<td>5658</td>
<td>7605</td>
<td>18458</td>
</tr>
</tbody>
</table>
1.3 Priority areas for health

- Trauma and Injury
- Increased communicable disease transmission and potential for outbreaks of diseases
- Diseases associated with overcrowding
- Increased exposure to vector-borne diseases
- Loss and damage of health infrastructure
- Disruption of chronic treatment for communicable and noncommunicable diseases
- Nutrition and food security concerns
- Mental illnesses and symptoms associated with the traumatic experience

2. PRIORITY AREAS

2.1 Trauma and Injuries

Wounds and injuries are frequently associated with the immediate post-cyclone period due to strong winds, collapsed structures and debris or from near-drowning. The management of all injuries may be complicated by delays in patients’ presenting for care and limited access of skilled personnel at the affected areas. Complications of untreated injuries are death, infections, tetanus and long-term disability.

2.1.1 Tetanus

Tetanus (“lock-jaw”) is a disease caused by a toxin produced by the bacterium, *Clostridium tetani*, affecting the nervous system. *Clostridium tetani* bacteria are found in dust and animal faeces. Infection
may occur after minor injury (sometimes unnoticed punctures to the skin that are contaminated with soil, dust or manure) or after major injuries causing tetanus prone wounds such as open fractures, dirty or deep penetrating wounds, and burns. Neonatal tetanus can occur in babies born to inadequately immunized mothers, especially after unsterile treatment of the umbilical cord stump. Neonatal tetanus has a case fatality rate of 70–100% without medical treatment and is globally underreported. The incubation period is usually 3 to 21 days.

Maternal and neonatal tetanus is assumed to have been eliminated from Fiji. Tetanus vaccination is part of the national childhood immunisation programme with coverage rate in 2013 estimated above 95% and maternal tetanus toxoid coverage at 74%. The vaccination coverage for all Expanded Programme on Immunization (EPI) vaccines has varied in past years, which implies a group of susceptible persons that did not receive the tetanus vaccination. An older age group that was never vaccinated was also at risk.

The management of wounds due to trauma should consider the probability of tetanus. However, it is more important for wounds to be kept clean, removing all necrotic tissue and foreign material.

Health-care workers operating in disaster settings should be alerted by the occurrence of dysphagia (difficulty swallowing) and trismus (facial muscle spasm), which often are the first symptoms of the disease. A booster dose of tetanus vaccine should be given to patients with no known previous tetanus vaccination and tetanus immune globulin given to patients with signs of tetanus. The later requires supportive therapy and maintenance of an adequate airway.

2.2 Interruption of critical Infrastructure: water, sanitation and hygiene

In Fiji the percentage of persons with improved water sources was 100% in urban areas and 91% in rural areas in 2015. The percentage of persons with improved sanitation was 93% in urban areas and 88% in rural areas in 2015.

Severe windstorms can render water sources unsafe for drinking due to the incursion of floodwaters, faecal contamination caused by overflowing latrines, inadequate sanitation and upstream contamination of interconnected water sources. Population displacement, overcrowding, poor access to and storage of safe drinking-water, inadequate hygiene and toilet facilities, and unsafe practices in handling and preparing food may cause outbreaks of diseases such as acute watery diarrhoea, typhoid fever, shigellosis, viral enteritis and hepatitis A and E.

2.3 Diseases associated with overcrowding

Population displacement caused by flooding can result in overcrowding in resettlement areas or evacuation centres, increasing the risk of transmission of communicable diseases. Acute respiratory infection, measles, diphtheria, and pertussis are transmitted from person to person through respiratory droplets during coughing and sneezing. The risks are increased when shelters are overcrowded and inadequately ventilated. The transmission of meningitis infections, water-related and vector-borne diseases also increase in crowded environments.

Overcrowding is associated with communicable disease transmission and outbreaks of diseases such as:

- acute respiratory infections
- measles and rubella
- diarrhoeal disease (bacterial and viral)
- hepatitis A
- Leptospirosis
- meningococcal disease
- typhoid
2.3.1 Acute respiratory infection (ARI)

A major concern is acute lower respiratory tract infection (ALRI), such as pneumonia, bronchiolitis and bronchitis, particularly in children under-5. ALRI kills more children globally than any other disease. Low birth weight, malnutrition and non-breastfed children, and living in overcrowded conditions are at higher risk of pneumonia or its severe form that leads to death. Exclusive breastfeeding, adequate nutrition, immunization and regular visits to the clinic can help reduce ALRI infection rates.

Early detection and case management of pneumonia and other common illnesses in children are described in the Integrated Management of Childhood Illness (IMCI), with the primary purpose to prevent morbidity and mortality in children under-5 years of age. Trained health workers should refer to the national IMCI guidelines for the management of childhood illnesses during and after the emergency.

2.3.2 Diarrhoeal disease

The risk of diarrhoeal disease transmission is likely to increase with overcrowding, disruption of sanitation and limited access to safe drinking-water. Acute gastroenteritis (bacterial or viral) is often highly contagious and the risk of outbreaks is high. Transmission occurs directly from person to person and through contaminated food and water. Clusters of diarrhoea are already being reported from some badly affected areas.

Bacillary dysentery is the most important cause of acute bloody diarrhoea in the post-disaster setting. It is caused by bacteria of the genus *Shigella* – of which *S. dysenteriae* type 1 causes the most severe disease and the largest outbreaks. Bacillary dysentery is endemic in most low- and middle-income countries. Without prompt, effective treatment the case fatality rate can be as high as 10%.

Rotavirus outbreaks are well documented in the Pacific, and small children in particular are at high risk of developing severe dehydration, which can lead to death if not treated promptly with oral or intravenous fluids. Rotavirus vaccination has been part of the national childhood immunisation programme since October 2012 so the risk of a large rotavirus outbreak is low.

Large post-disaster outbreaks of diarrhoea have been documented in the Pacific in the context of floods. In 2014, Solomon Islands experienced a very large post-flood diarrhoea epidemic that resulted in more deaths than the initial flash-flood emergency. In that emergency, as is consistently reported, children under 5-years bore the greatest burden both in terms of morbidity and mortality: children under-5 years were almost 20 times (versus eight times at baseline) more likely to suffer from diarrhoea than those five-years of age and older.

In the current context with large numbers of persons living in close proximity in evacuation shelters the risk of person-to-person transmission in particular is high; provision of sufficient water and soap for regular hand-washing is essential as is ensuring adequate sanitation facilities. Prevention of severe disease and death due to diarrheal disease can almost always be achieved by ensuring early health-seeking behaviour (particularly for those children aged under 5 years) and systematic clinical assessment for and treatment of dehydration by health care practitioners.

The vast majority of deaths from diarrheal disease are preventable with simple and routine interventions including ORS and zinc tablets for mild to moderate dehydration and intravenous crystalloid fluids for moderate to severe dehydration.

2.3.3 Hepatitis

Hepatitis A can cause outbreaks and hepatitis outbreaks have been reported in Fiji, most recently in Ba Sub-Division in 2013. Given the current disruption in water, hygiene and sanitation, the risk of sporadic hepatitis A cases or clusters of cases is increased. In most low- and middle-income countries, hepatitis exposure, infection and life-time immunity, occurs at a young age, when disease severity is low. Although small clusters of hepatitis A disease may occur in the disaster setting, large outbreaks are unlikely given high likelihood that most of the population are immune due to prior infection. Vigilance in
appropriate water and food preparation techniques prior to consumption is, however, strongly recommended.

2.3.4 Leptospirosis

Leptospirosis is a bacterial zoonosis present worldwide. Outbreaks of leptospirosis commonly occur following flooding, due 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 pigs, cattle, rodents or other infected animals. If we are to observe a leptospirosis outbreak, the initial increase in cases would likely be observed in the first 1-3 weeks post-cyclone. So far in the first six weeks of 2016 there have 23 reported cases of Leptospirosis in Fiji, with cases predominantly occurring in the Western and Northern divisions.

In 2012, two successive tropical depressions caused severe flooding and resulted in two outbreaks of leptospirosis in Fiji, with 576 reported cases and 40 deaths (7% case-fatality) (Fiji MoHMS). The post-disaster outbreak caused more deaths than the initial flood emergency. The peaks of the outbreaks were 35 and 24 days after the first and second floods respectively. A country-wide sero-prevalence study in 2013 identified high rates of prior infection among the general population (19.4%) and indicated that pigs and cattle may be important drivers of disease under given normal endemic transmission patterns (Lau C, et al. Human Leptospirosis Infection in Fiji: An Eco-epidemiological Approach to Identifying Risk Factors and Environmental Drivers for Transmission, PLoS NTD, 2016). Given the substantial environmental impact of the cyclone, leptospirosis transmission pathways may be different in the current post-cyclone environment than reported in the Lau et al study.

The Global Leptospirosis Environmental Action Network (GLEAN) has developed preliminary set of recommendations for the control of disaster-related leptospirosis outbreaks; these recommendations include: laboratory screening of suspected cases, empiric treatment of probable cases, and prevention with the use of barrier protection if there is a potential to come into contact with contaminated water. If individual exposure occurs when cleaning up after disasters, the affected body areas should be immediately cleaned with soap and clean bottled water. Use of mass chemoprophylaxis is not recommended, nor is mass decontamination of water.

2.3.5 Measles and rubella (vaccine preventable diseases)

Fiji provides immunization for children against vaccine-preventable diseases (VPDs) including: tuberculosis, diphtheria, pertussis (whooping cough), tetanus, hepatitis B, haemophilus influenza type B (Hib), polio, measles, rubella, pneumococcal pneumonia and rota diarrhoea. Human papillomavirus vaccine is given to girls at 13 years as part of comprehensive cervical cancer control programme.

During August and September of 2013 the Fiji MoHMS conducted a nationwide survey to assess the immunization coverage for vaccines listed on the national schedule for children and for women of childbearing age. Nationally, full coverage with all ten antigens on the childhood immunisation schedule is at 95%. Immunisation coverage is close to or above the level needed for herd immunity for all vaccines. There is believed to be a moderate variation in vaccination coverage across the country, with lower coverage rates noted in the Eastern division.

2.3.6 Meningococcal disease

*Neisseria meningitidis*, the bacterium causing meningococcal disease, is spread from person to person through respiratory droplets from infected people. There are two classical clinical presentation of meningococcal disease: meningitis and severe sepsis, although cases may present with overlapping features. Transmission is facilitated by close contact and crowded living conditions. Health care workers need to be vigilant for cases of meningococcal disease, and urgently report any cases. The Case Fatality Rate of meningococcal disease is 5-10%, even with appropriate and rapid antibiotic treatment.
2.3.7 Tuberculosis

Fiji, with an estimated tuberculosis (TB) incidence of 100 cases per 100 000 population in 2013 has a moderate TB burden.

In the acute phase of this emergency, follow-up and continuity of treatment of patients already on care should be maintained when feasible and for that purpose stocks of anti-TB medicines shall be ensured. Due to the demonstrated link between emergencies and TB, once response to trauma-related emergency has been provided, service provision in terms of TB detection by smear microscopy should be conducted to displaced communities to identify cases and avoid TB transmission.

2.3.8 Typhoid fever

Typhoid fever is a serious bacterial disease caused by Salmonella typhi. The infection is transmitted by ingestion of contaminated food or water contaminated by the faeces or urine of patients or carriers. Populations displaced by natural disasters are often at increased risk of typhoid outbreaks due to disruption of their usual water supplies and sanitation, and increased risk of transmission by contaminated food or water. Outbreaks of typhoid can be delayed for 1-2 months post-disaster, or longer, due to the long incubation period of typhoid fever. Typhoid fever is an ongoing risk in Fiji with cases regularly reported which are sometimes linked to localised outbreaks. There were 36 laboratory-confirmed cases reported in the first six weeks of 2016, including cases from the Northern Division (50%), Central Division (28%), and Western Division (22%).

In 2010, following the category 4 cyclone Tomas that caused extensive population displacement and damage to water and sanitation infrastructure in March 2010, a typhoid vaccination campaign was conducted as part of the post-disaster response. During June–December 2010, 64,015 doses of typhoid Vi polysaccharide vaccine were administered to persons 2 years of age, primarily in cyclone-affected areas that were typhoid endemic. Annual typhoid fever incidence decreased during the post-campaign year (2011) relative to preceding years (2008–2009) in three subdivisions where a large proportion of the population was vaccinated and increased or remained unchanged in 12 subdivisions where little to no vaccination occurred (Scobie et al, Impact of a Targeted Typhoid Vaccination Campaign Following Cyclone Tomas, Republic of Fiji, 2010. Am J. Trop Hyg, 2014). There were no post-cyclone typhoid outbreaks but we are unable to confirm if this was related to the vaccination campaign or not.

2.4 Vector-borne diseases

There is an increased risk of vector-borne diseases (VBD) such as dengue, Zika, and chikungunya. Flooding may initially flush out mosquito breeding, which can restart when the waters recede. The lag time is usually 6–8 weeks before the onset of increased VBD transmission.

2.4.1 Dengue

Dengue is a viral disease transmitted by certain types of Aedes mosquito and is endemic in Fiji as it is in most parts of the Pacific. The risk of dengue 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 mosquitoes to proliferate.

Dengue causes a severe influenza-like illness. Occasionally a severe form of the disease with potentially lethal complications including haemorrhage, shock, hepatitis and encephalopathy can occur. Severe dengue can affect all age groups and is more likely when people are re-infected with a different serotype. 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, especially if treatment is delayed. Early detection and treatment of severe dengue can reduce the case-fatality ratio from 20% to less than 1%. Supportive treatment supplies should be stockpiled.

Dengue serotype 1 has been circulating in Fiji for >10 years and the majority of population have likely been infected and are now immune. Dengue serotype 3 caused a very large outbreak in 2013 with
approximately 27,031 confirmed and suspected cases; because most dengue cases are mild or subclinical, the true figure is likely much higher and a large portion of the at risk population likely immune. As such, large outbreaks by dengue serotypes 1 or 3 are unlikely. In the first six weeks of 2016 there have been 131 cases of laboratory-confirmed dengue reported. Dengue cases in recent weeks have been predominantly from areas of the Northern Division which have not been severely affected by TC Winston. However, these recent cases have been predominantly due to dengue serotype 2 which has not been common in Fiji in recent years and which could lead to an increased risk of DHF if it spreads into communities affected by the cyclone.

2.4.2 Zika

Zika virus is a newly emerging disease that is spreading rapidly. Zika virus infection usually results in a mild disease characterized by low grade fever and rash and nearly 80% of infected people are asymptomatic. However, is can cause complications such as Guillain-Barre syndrome or severe neurological malformations such as microcephaly or brain stem dysfunction. Outbreaks have been reported in recent years from French Polynesia, the Federated States of Micronesia, New Caledonia, Cook Islands and Solomon Islands. Since November 2015, local transmission of Zika virus has been reported from American Samoa, Marshall Islands, Samoa, and Tonga. Two cases of Zika virus were confirmed in in Suva in July 2015, but no further cases have been detected despite enhanced clinical and laboratory surveillance. Fiji remains at high risk of importation of the virus by infected travellers from affected areas, with local outbreaks able to be sustained by local Aedes mosquito species.

On 1 February 2016, the World Health Organization announced that the recent cluster of neurological disorders and neonatal malformations that may be associated with Zika virus infection reported in the Americas region constitutes a Public Health Emergency of International Concern (PHEIC).

2.4.3 Chikungunya

Chikungunya fever is of moderate risk and presents very similarly to dengue usually with swelling and pain in large joints, although haemorrhagic complications are rare. A significant proportion of patients develop a long-term debilitating arthritis that lasts for months to years. Both infections are transmitted by Aedes mosquitoes that breed in close proximity to human settlements. Collections of water in debris and damaged houses can contribute to increased mosquito breeding sites.

Outbreaks of chikungunya have been reported in a number of PICs in recent years. A small number of chikungunya cases were detected in Fiji during 2015, predominantly in people with a travel history to a known affected country or area. Although chikungunya is not believed to be currently circulating in Fiji, competent mosquito vectors are present so there remains a risk of local outbreaks if it is introduced. As with Zika virus, there is no evidence of significant prior transmission in Fiji and therefore the majority of the population are likely susceptible and potentially large outbreaks are possible.

2.5 Loss of health infrastructure

Under the umbrella of public health services, the Ministry of Health operates via a system of four decentralised divisional offices, geographically based: Central and Eastern (often combined) in Suva, Western in Lautoka, and Northern in Labasa, which are further divided into 20 sub-divisions including Rotuma. The divisional offices are responsible for provision of public health services, operation of the sub-divisional hospitals, health centres and nursing stations.

Overall there are 3 main divisional hospitals, 17 sub-divisional hospitals, 84 Health Centres and 98 nursing posts. See Annex 1 for a summary of Fiji health services (Table 1) and the numbers of government health workers in established posts in 2014 across the various cadres (Table 2). There were 168 vacancies in 2014 from established posts. The MoHMS has 429 doctors, 2266 nurses and 1022 support staff. There are known shortages in the number of health professionals located in rural areas and there is a high rate of emigration overseas.
2.6 Food security and malnutrition

Food security can be adversely affected by disruptions in the food system, including spoilage, crop loss, the inability to replenish stock due to transport constraints, and the inability to store and process foods. This may lead to limited availability of safe and nutritious food and consumption of potentially unsafe food and/or inadequate food consumption, with low dietary diversity and poor nutrient quality. Vulnerable groups include children, particularly children under-5 years, pregnant and lactating women and older people. The risk of severe acute malnutrition is exacerbated by illness particularly diarrheal disease in young children. Assuring the prompt detection and control of diarrheal disease clusters can minimize the risk of malnutrition. The risk of acute malnutrition is not an immediate threat but may increase in the coming weeks and months due to widespread destruction of crops in the severely affected areas.

In 2014, the underweight prevalence for the under-5 age group was 2.6% and the stunting prevalence (the percentage of children under-5 who have low height for their age) was 6.8% in Fiji. During emergency situations such as Tropical Cyclone Winston, disease and death rates among children under-5 are usually higher than for any other age group; the younger the infant the higher the risk. Mortality risk is particularly high because of the combined impact of a greatly increased incidence of infectious diseases, diarrhoea and malnutrition.

Breastfeeding provides critical protection from infection in environments without safe drinking-water supply and sanitation. In 2012, the initiation of breastfeeding (within 1 hour of giving birth) was reported to be 57.3%, with the exclusive breastfeeding rate among infants 0–5 months of 39.8%. During emergencies, it is even more critical to encourage and support mothers to initiate breastfeeding within one hour after the delivery, to exclusively breastfeed up to six months and for those with infants under 6 months who "mix feed", to revert back to exclusive breastfeeding if possible [14].

In accordance with internationally accepted guidelines, donations of infant formula, bottles and teats, and other powdered or liquid milk and milk products should not be made. Experience with past emergencies in other countries has shown an excessive quantity of products, which are poorly targeted, endangering infants’ lives. Any procurement of breast-milk substitutes (BMS) should be based on careful needs assessment and in coordination with UNICEF. Any distribution and use of BMS should be carefully monitored to ensure that only the designated infants receive the product.

Basic interventions to facilitate breastfeeding include prioritizing mothers with young children for shelter, food, security, and water and sanitation. This will enable mother-to-mother support, specific space for skilled breastfeeding counselling and support to maintain or re-establish lactation.

The risk of foodborne disease outbreaks also increases during disaster situations. Food contamination may occur at any point of the food chain. Inadequate washing and cooking of food before consumption is often a prime cause of inadvertent contamination. Similarly, power outage, limited access to safe drinking-water and inappropriate cooking facilities increase the risk of food contamination. There may also be improvised large-scale preparation of cooked food and/or distribution of imported and locally produced food items. In this context it is important that appropriate food safety measures are implemented to ensure food safety during mass feeding operations as well as inspection of pre-packaged food distributed to affected populations (Annex Food Safety Messages).

2.7 Aggravation of existing medical conditions and other health threats

2.7.1 Noncommunicable diseases

During emergencies and disasters access to adequate nutrition and medicine is an issue, making people with noncommunicable diseases (NCDs) more vulnerable and at risk in developing acute complications. NCDs account for an increasing proportion of the disease burden in Fiji, with the prevalence of diabetes mellitus and hypertension in the adult population at approximately 29.6% and 31% in the latest survey in 2011, respectively. Older people, who already comprise 11.9% of the population, may be particularly
at risk of and vulnerable to treatment interruption, due to age-related barriers to access such as reduced mobility as well as co-morbidities.

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. Identification of NCD patients on treatment; supply of essential medicines, equipment and follow up are essential. Foot care is particularly important for diabetics who are at increased risk of infections and abscesses. It is important that inspections of feet are carried out daily by diabetics and medical help sought immediately in case of injury.

2.7.2 Skin infections

Infestations, such as scabies and lice may occur and require treatment once they occur. These infections occur due to overcrowding and as a result of a lack of water and reduced hygiene.

2.7.3 Sexually transmitted infections including HIV

Similar to most Pacific island countries, Fiji’s HIV prevalence among 15–19 years old is 0.14%; with an estimated number of 732 people living with HIV in 2015. A gradual increase has been reported from 2010-2015, averaging 60 new cases per year, compared to 30 new cases per year from 2000-2008. Fifty eight percent (58%) were females, while 42% were males. With regards to STI, a total of 2,248 cases were reported in 2014 (a mixture of syndromic and etiologic reporting, Fiji MoHMS). Prevalence of Syphilis among the general population is 16%.

During emergency situations, essential STI and HIV prevention, treatment, care and support services are usually disrupted. Further, existing gender inequalities make women and children, specifically girls, disproportionately more vulnerable to STI and HIV infection. This increased vulnerability is a consequence of mass displacement, separation from family members and/or loss of livelihood or lack of employment opportunities that may force women and girls to resort to sex work or be subjected to sexual exploitation.

People living with HIV (PLHIV) and other key populations at higher risk to HIV (sex workers and men having sex with men) may require specific measures to protect themselves from physical and sexual violence and discrimination.

The initial and essential response to the prevention and control of STI/HIV transmission includes: provision of prevention information on STI and HIV, including prevention of mother-to-child transmission (PMTCT); condom supplies and information on correct condom use; availability of STI and antiretroviral drugs to those who are already on treatment, for PMTCT and for post exposure prophylaxis (PEP); and ensuring treatment adherence among those receiving ART and STI treatment.

An expanded response can occur once the situation is better understood and additional human and financial resources have been identified to support implementation. Palliative and home-based care should also be quickly re-established.

2.7.4 Gender and violence against women

Violence against women is a major health issue. Recent global prevalence figures indicate that about 1 in 3 (35%) of women worldwide have experienced either physical and/or sexual intimate partner violence or non-partner sexual violence in their lifetime. Lifetime prevalence rates for physical and sexual violence by partner and non-partner among pacific island women is between 60-80 percent (Population and Development Profiles- PICs, UNFPA, 2014). In Fiji, 7 in 10 women (71%) have been subjected to physical and/or sexual violence by either a partner or non-partner since they turned 15 years. Almost half (47%) of the women who experienced physical abuse/sexual partner violence in their life time have been injured; more than 1 in 10 (13%) have lost consciousness (Fiji MoHMS presentation, Session 7: The SDGs and Integrating Population Issues into Development, 2015).
Disasters create conditions that intensify pre-existing sexual and gender-based violence (SGBV) risk factors such as stress and trauma. These factors in turn reduce normal coping capacities of women and children; and heighten the risk of violent response to pressure or strain by usual perpetrators. Disasters and emergency affect women, men, girls and boys differently. They use distinct coping mechanisms to these situations. Additionally, people are often displaced during or after the disaster. Affected people often spend lengthy periods of time in evacuation centres, where living conditions are routinely lower than those people are used to, specifically in terms of private spaces for couples and families. After two tropical cyclones that hit the Western division of Fiji in 2012, for example, women living in relief centres were reportedly being violently forced into sex by their husbands, in spite of their reluctance due to concerns about over-crowding and lack of privacy (Climate Change, Disasters and Gender-based violence in the Pacific, UN Women, 2015).

The same factors affecting vulnerability to STI and HIV, such as existing gender inequalities, place women and girls at higher risk of experiencing physical and sexual violence post-disaster. The initial and essential response includes ensuring safety and security in evacuation centres (e.g. good lighting and ensuring the privacy of women and girls) and putting in place mechanisms to collect evidence and file criminal complaints, monitor and respond to physical and sexual violence. Clear steps on the health sector’s response to intimate partner physical and sexual violence should be known to all health-service providers.

2.7.5 Mental health and psychosocial support

Any major loss (e.g. death of family, property) and stressful situation (e.g. shortage of food, living in emergency shelter, relocation to unfamiliar settings) will contribute to the increase of mental health conditions. Incidence of any mental disorders such as depression, anxiety, acute and post-traumatic stress, and psychosis is likely to increase, particularly in vulnerable populations such as women, children, older people, poor people, those from low-income households, displaced people.

It has been projected that in emergencies, on average, the percentage of people with a severe mental disorder (e.g. psychosis and severely disabling presentations of mood and anxiety disorders) increases by 1 per cent over and above an estimated baseline of 2–3 per cent. In addition, the percentage of people with mild or moderate mental disorders, including most presentations of mood and anxiety disorders (such as post-traumatic stress disorder, or PTSD), may increase by 5–10 per cent above an estimated baseline of 10 per cent. In most situations natural recovery over time (i.e. healing without outside intervention) will occur for many – but not all – survivors with mild and moderate disorders (IASC, 2007). Care should be taken particularly in vulnerable populations such as women, children, older people, those from low-income households, and displaced / relocated people.

Continuity of care to the known mental health cases needs to be provided, since they will have higher likelihood of relapse due to the traumatic experiences and stressful situation.

2.7.6 Neonatal and reproductive health

The fertility rate in Fiji is 2.6 children born per woman (2007). In 2013, the crude birth rate (number of births per 1000 population) was 20.44 per year. In general, the birth rate is higher in rural areas than in urban areas. Nearly 36% of teenage women, aged 15–19 years had started childbearing (2007). It was 30% in urban areas and 42% in rural areas. Total fertility rate is 2.6% at national level. Contraceptive prevalence rates (CPR) below 50% (44.3% in 2012).

The maternal mortality rate is reported to be 59.5 deaths per 100 000 live births (2012). In 2012, 99.3% of women received antenatal care from a skilled provider.

The Family Planning services are generally provided by the MoHMS Public Health Nurses through health centres and nursing stations, the Oxfam Clinic in Suva, and the HUB Centres in the Western and Northern Divisions with tubal ligations and sterilizations being provided at the division and sub-divisional hospitals. RH services in Fiji cover a wide area but the basic elements as reflected in the RH Policy and
strategies are: Safe Motherhood, Infant and Child Care, adolescent health care, FP and abortion-prevention, STI/HIV prevention and management, and Basic Infertility services and management of gynaecological morbidity including reproductive tract cancers and infections.

All health facilities in Fiji offer preventive, promotive and curative services. However, the delivery of these RH services is divided into three tiers: 1. Nursing stations, which offer primary level of care; 2. Health Centres and subdivision hospitals, which provide primary and secondary level of care but limited secondary-level clinical care is provided; and 3. Division hospitals, which offer tertiary level of care. For further information see http://countryoffice.unfpa.org/pacific/drive/FPandRHSC-FIJI.pdf.

2.7.7 Environmental risks

Environmental health comprises of those aspects of human health, including quality of life, that are determined by chemical, physical, biological, social and psychosocial factors in the environment. It also refers to the theory and practice of assessing, correcting, controlling and preventing those factors in the environment that can potentially affect adversely the health of present and future generation (WHO, 1993). There is a well-established environmental health services delivery system in Fiji Ministry of Health and Medical Services Environmental, served by 127 Environmental Health Officers. In the areas affected by the cyclone, the following environmental health risks are priorities in the acute emergency phase.

- Wastes and debris in affected communities
- Hazardous substances including pesticides, farm chemicals, arsenic and asbestos
- Unsafe and unhygienic housing condition
- Human excreta disposal related to inappropriate sanitation and hygiene facilities
- Vector borne disease from insects and animals – for example, dengue, chikungunya, zika virus, leptospirosis, etc.
- Infectious diseases – skin infection, trachoma, scabies, viral infections like flu.

The quantity of water needed for the general population is 15-20 litres per day per person. For operating water-borne sewerage systems, 20-40 litres are needed per day per person. In mass feeding centres, 20-30 litres per day per person. In field hospitals and first-aid stations, 40-60 litres per day per person.

Proper sanitation and hygiene is crucial to prevent pathogenic viruses, bacteria and eggs or larvae of parasites from entering into water or food, causing faecal-oral infections. Diarrhoea, typhoid and leptospirosis are spread and are major causes of sickness and death in disasters. Intestinal worm infections are transmitted through faeces and spread rapidly where open defecation occurs and people are barefoot, contributing to anaemia and malnutrition, and also render people more susceptible to other diseases. Children are especially vulnerable to all the above infections.

Specific measures should be taken to prevent the spread of infection (e.g. chlorinating water, providing hand-washing facilities). The first priority is to isolate and contain faeces.

2.7.8 Dead body management

Deceased persons can be traumatic for viewers and require urgent identification and proper burial. It is important to convey to all parties that corpses do not represent a public health threat. For those involved in the collection and burial of bodies, standard precautions for infection prevention and control should be followed.

2.7.9 Drugs procurement and supply chain management

In emergency situations, negotiated procurement may be used to purchase essential medicines to expedite the process by foregoing formal advertising tendering or quotation processes. The selection of a contractor will be made to the best advantage of the Government, price and other factors considered...
while ensuring that quality and safety of products are not compromised. The aim of the negotiated procurement during emergency situation is to ensure that shortages of essential drugs over the next few months are minimized. The country has to ensure that an effective supply chain management system is in place that will ensure that the amount of inventory to be held at various locations or health facilities is adequate.

2.7.10 Drug donations

Drug donations should be of maximum benefit and they must be based on the needs of the recipient country according to the country donation policy. During an emergency, the MoHMS following their due process, informs donors of their needs, approves donations and coordinates receipt and distribution. As far as possible financial donations is the most preferred forms of donation as procured products must meet the exact specification of products used in the country for example laboratory reagents and biomedical equipments to be compatible.

Guidelines for medicine donation should be adhered to, conforming to the following principles:

- Maximum benefit to recipient or country – donated drugs are very often not relevant to the emergency situation or are donated in wrong quantities. Donations should benefit the recipient to the maximum possible extent and only essential medications that are part of the national essential drug list should be sent.
- Respect for wishes and authority of the recipient – donor agencies often ignore the existence of the local pharmaceutical industry and administrative procedures for receiving and distributing pharmaceuticals and medical equipment. Donations should comply with government and organizational policies.
- No double standards quality – many donated drugs arrive expired, unsorted or labelled in languages unknown by local professionals. If the quality of drug is not acceptable in the donor country and does not comply with its standards, it is also not acceptable for the recipient. The date of expiration of the drugs must be no less than one year (12 months) from arrival in the recipient country.
- Effective communication between donor and recipient – donations are very often sent without prior consultation or consent of the recipient. Donations should be based on an expressed need.

In emergency situations, it is appropriate for a country to receive standardized Interagency Emergency Health Kits (IEHK). The IEHK provide a complete spectrum of essential drugs and medical supplies specifically adapted to emergency situations.

2.7.11 Storage and distribution

Even essential drugs can be troublesome for a recipient country when sent in excessive quantities. Local medical storage capacity is often insufficient to house an enormous influx of drugs. Very often additional storage space has to be rented at extra cost, or space in health-care facilities has to be re-purposed to accommodate donations.

Another capacity that must be secured is the logistics support of moving supplies from the central supply locations to the service locations or where it is needed as quickly as possible.

A well-designed and well-managed distribution system should:

- Keep medicines in good condition throughout the distribution process;
- Ensure medical supplies are distributed directly to health institutions in affected areas;
- Minimize medicine losses caused by spoilage and expiry;
- Maintain accurate inventory records;
- Rationalize medicine storage points;
- Use available transportation resources as efficiently as effectively as possible;
- Reduce theft and fraud; and
2.7.12 Disposal of Pharmaceuticals

As the potential consequences of the influx of non-essential, expired or poorly labelled drugs pose serious threat, most need to be disposed of. This adds further costs for local governments. Constraints in funding for disposal of waste pharmaceuticals necessitate cost-effective management. This can be achieved by sorting the material to minimize the need for expensive or complicated disposal methods.

It is not advisable to use damaged or expired products and should only be collected ready for disposal. All medicines, which need to be disposed, should be disposed of in line with the approved procedures and WHO Guidelines for Safe Disposal of Unwanted Pharmaceuticals in and After Emergencies [19]. Disposal of drugs should be by high-temperature incineration (i.e. >1200ºC) if facilities are available in which the cost of disposing of hazardous waste in this way ranges from US$ 2000 to US$ 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. Poorly-destroyed supplies in medium-temperature incinerators are as great a hazard as landfills. If facing a huge amount of damaged, expired or damaged labelled medicines, both liquid and solids, do not dispose of them but keep them in a safe place until a reliable disposal system is in place. Ensure these are not disposed of into rivers or seas.

The demand of efficient planning, procurement or sourcing, warehousing and distribution is the hallmark of a successful response to the health needs of the disaster area. Logistics integrates whole community logistics incident planning and support for timely and efficient delivery of supplies, equipment and facilities. It also facilitates and coordinates the capability and resources from the government, donor partners, private organisations and NGOs. Therefore a core team must be set up which will be as far as possible separate from the routine operations of FPBS.

2.8 Mental illnesses associated with the traumatic experiences

In emergencies, not everyone develops significant psychological problems. Many people show resilience, that is the ability to cope relatively well in situations of adversity. However, any major loss (e.g. death of family, property) and stressful situation (e.g. shortage of food, living in emergency shelter, relocation to unfamiliar settings) contribute to the increase of social and/or psychological problems, including mental disorders.

Following the disaster, survivor may go through phases of emotional recovery; The Heroic Phase (up to 1-2 weeks), The Honeymoon Phase (2 weeks to 3-6 months), The Disillusionment phase (2 months to 2 years) and The Reconstruction/Recovery Phase (2-5 years and lifetime). Individual response may vary significantly, but support provided needs to take this into account and should be provided in a timely manner when the needs arise.

To response to various levels of psychosocial needs, development of layered system of support is a key (IASC 2007, WHO 2011).

i. Basic services and security.

The well-being of all people should be protected through the (re)establishment of security, adequate governance and services that address basic physical needs (food, shelter, water, basic health care, control of communicable diseases). These basic services should be established in participatory, safe and socially appropriate ways that protect local people’s dignity, strengthen local social supports and mobilise community networks. Meeting basic needs will be a protective factor for future psychological problems.

ii. Community and family supports.
The second layer represents the emergency response for a smaller number of people who are able to maintain their mental health and psychosocial well-being if they receive help in accessing key community and family supports. In most emergencies, there are significant disruptions of family and community networks. Useful responses in this layer include, mass communication on constructive coping methods, supportive parenting programmes, livelihood activities provision of safe environment for children, women, etc and the (re)activation of social networks, such as women’s groups, cultural and spiritual gathering at the community and evacuation centres.

iii. Focused supports.

The third layer represents the supports necessary for the still smaller number of people who additionally require more focused interventions. For this layer, Psychological First Aid (PFA), a basic emotional and practical support is beneficial. It involves assessing needs and concerns, listening to people without being intrusive, comforting people and protecting people from further harm. Basic individual and telephone counselling services should be made available and accessible.

iv. Specialised services.

The top layer of the pyramid represents the additional support required for the small percentage of the population whose suffering is intolerable and who may have significant difficulties in basic daily functioning and require clinical mental health care. They could be referred to Mental Health Gap Action Programme trained health workers at health centres, Divisional Community Mental Health Teams, and Stress management wards in Divisional Hospitals.

Psychosocial support is a cross sector issue, which requires all aid agencies involvement, and coordination of the support is crucial.
3. SPECIFIC PRIORITY INTERVENTIONS FOR IMMEDIATE IMPLEMENTATION

**Immediate priorities:**
1. Provision of safe and nutritious food, safe drinking-water, appropriate sanitation, shelter and other essential non-food items including soap and fuel for cooking
2. Trauma care for the wounded with tetanus prevention
3. Provision of medicines and medical supplies
4. Establishment of emergency primary- and secondary-care services for medical, surgical and obstetric emergencies
5. Strengthen surveillance for selected communicable disease outbreaks that is prone to post-disaster outbreaks such as diarrhoea, respiratory infection and measles for timely, informed decision making
6. Risk communication to the public
7. Ensuring continuity of care for chronic diseases, such as diabetes, hypertension and chronic infections such as TB and HIV.

**Short-term priorities:**
1. Re-establishment of essential health care services (primary, referral and hospital care)
2. Emergency mental health care and psychosocial support
3. Waste management
4. Strengthen surveillance for vector-borne disease and promote personal protection against vector-borne diseases

**Medium-term priorities:**
1. Post-surgical care and management of disabilities
2. Routine immunization
3. Health of victims who have migrated and potential returnees
4. Management of acute malnutrition including medical complications

**3.1 Water and sanitation**

Provision of essential environmental health services to affected populations includes ensuring a minimal amount of clean water per day and safe disposal of excreta and wastes. Ensuring uninterrupted provision of safe drinking-water is the most important preventive measure in reducing the risk of outbreaks of water and person-to-person transmitted diseases.

- The Office of the United Nations High Commissioner for Refugees (UNHCR), WHO and the SPHERE project recommend that each person be supplied with at least 15–20 litres of clean water per day.
- Boiling of drinking water
- Chlorine is the most widely available, easily used and affordable drinking-water disinfectant. It is also highly effective against nearly all waterborne 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. Water purifying tablets may be used in the evacuation centres, the households with broken water supply systems and the communities with waterborne disease outbreak.

- Regardless of chlorination, there should be an updated water safety planning for drinking water supply in the communities and evacuation centres.
- 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. Hand washing facilities and soaps should be provided to the evacuees.
- Adequate sanitation facilities are essential to prevent open defecation with increased risk for faecal-oral disease.

### 3.2 Evacuation centre, temporary shelter and site planning

- Shelters for displaced or homeless people should be positioned with sufficient space between them and, in accordance with NDMO standards and SPHERE standards aimed at preventing diseases related to overcrowding.
- Water safety planning purifying tablets may be used in the evacuation centres, the households with broken water supply systems and the communities with waterborne disease outbreak.
- In shelter sites and during food distribution, attention and protection should be given to women, older people, unaccompanied minors and people with disabilities. Women should be included in planning and implementing 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, flies and other vectors of disease.
- Distribution of non-food items will be required, including blankets, water containers, cooking materials.

Environmental health risks in evacuation centres are a big concern. According to EHOs- SOP-EC-Fiji, the priority areas, standards, and activities are summarized in Annex 3.

### 3.4 Essential health services

Access to health services is critical for affected populations, including case-management protocols, and medications and materials to treat likely high-burden conditions (trauma/wounds, communicable and noncommunicable diseases and emergency reproductive health services).

**Standardized simple therapeutic procedures**

Therapeutic procedures should be economical in terms of human and material resources. Health personnel and supplies should support these procedures.

First line medical treatment should be simplified and aim to save lives and prevent major secondary complications or problems. Use of standardized procedures, such as extensive debridement, delayed primary wound closure or use of splints instead of circular casts, can produce a marked decrease in mortality and long-term impairment.

**Redistribution of Patients between Hospitals**

While health-care facilities within a disaster area may be damaged and under pressure from mass casualties, those outside the area may be able to cope with a much larger workload or provide specialized medical services such as neurosurgery.

The effective and equitable delivery of emergency medical treatment requires a high level of coordination among national health services and partner agencies that allows functioning hospitals to operate as part of a referral network. A network of prehospital relief teams can coordinate referrals from the disaster area.
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 disaster. Falling structures cause crush injuries, fractures, and a variety of 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. To prevent avoidable death and disability, field health personnel dealing with injured survivors should observe 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 to ensure 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). If the vaccination history is unknown, both should be given. 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 in Crisis Situations:

- 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 dysentery, typhoid, dengue and DHF, leptospirosis, measles, and meningitis) and STIs.
- Standard infection control practices should be in place in accordance with national protocols.
- Tetanus: Appropriate management of injured survivors should be implemented as soon as possible to minimize future disability and to prevent avoidable death following disasters.
- Tuberculosis: Maintenance of routine supply of TB drugs is essential. Early detection of symptomatic cases and isolation of sputum positive cases should be given a priority particularly for people in overcrowded shelters.
Noncommunicable diseases

- Continuation of treatment for people on medications for hypertension, diabetes, cancer, chronic respiratory disease and kidney disease. Where feasible, decentralization of care will increase treatment coverage given the restrictions on movement.
- People who are in shelters can be checked for a history of diabetes and high blood pressure. Management should include measuring blood pressure and blood glucose and continuing provision of any drugs. Diabetics should have feet examined daily for injury, and treated immediately if needed. Shelters and centres accommodating people should be made smoke free. Penicillin prophylaxis for rheumatic heart disease should be maintained where feasible.
- Mental health and psychosocial support should be considered in the provision of general health care. Psychological first aid should be given to distressed people who have been exposed to a crisis event. Psychological first aid involves:
  - providing practical care and support, which does not intrude;
  - assessing needs and concerns;
  - helping people to address basic needs;
  - listening to people, but not pressuring them to talk;
  - comforting people and helping them to feel calm;
  - helping people to connect to information, services and social supports; and
  - protecting people from further harm.
- Continued access to care should be assured for people with severe mental disorders. The mental health and wellbeing of the health-care workers also needs attention [22].

Environmental health services

Essential environmental health services at health facilities are to be properly provided with the inspection and enforcements by Environmental Health officers focusing on the following points:

- Water supply
  - Back up tanks with a sufficient capacity
  - Rationing the water in acute conditions
  - Refilling of tanks by WAF
  - Restoration of WAF supply
- Medical Waste Management
  - Segregation at source
  - Incinerator operational
  - Safe Disposal (transport to central incineration)
- Power supply
  - Backup generator fully functional starts automatically?
  - Enough fuel
  - Cooling time
  - Attendant to check for fuel, oil and operations
- Morgue: Monitor Temperature control in case of power out cuts
- Infection Control: Provision of gloves for infection control
- Hand hygiene: Adequate supply of soap and water
- Vector control: Provision of mosquito nets for patients
3.5 Early warning and response network (EWARN)

During large emergencies such as Tropical Cyclone Winston, the existing surveillance system needs to be enhanced to ensure the systematic, reliable, and rapid detection and response to disease outbreaks. A rapid epidemic risk assessment conducted by the MoHMS has identified several factors that increase the risk of epidemic disease transmission. These included limited access to clean water, disrupted sanitation infrastructure, high population density among the displaced population, and increased exposure to disease vectors, key findings when considering EWARN implementation. The risk of disease outbreaks due to leptospirosis, typhoid, dengue, respiratory and diarrhoeal diseases is high, and assuring high quality and timely surveillance data is essential to ensure a rapid response to any potential outbreaks. Furthermore, high quality surveillance data is important to inform and drive broader Government coordinated response activities, particularly as relates to water and sanitation but also other response activities including risk communications messaging. Any enhanced system would build on the existing Fiji Syndromic Surveillance System and ensure strengthening sustainable early warning surveillance.

To be effective, EWARN will:

- 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 (see Annex 4 for an example of EWARN diseases/syndromes under surveillance with case definitions);
- ensure detailed outbreak response plans/standard operating procedures, including for identification and training of rapid response teams and adequate stockpiles of supplies (such as oral rehydration solutions, Zinc tablets, ciprofloxacin for Shigella, amoxicillin and vitamin A for measles; and
- reinforce laboratory capacity: (i) to promptly test for the main communicable disease threats; and (ii) to assure shipping supplies and protocols are in place to facilitate international shipment for pathogen confirmation.

3.6 Immunization

- In evacuation centres 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 the disease history. Infants 6–11 months should receive 100 000 international unit (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.
- 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 who have never been vaccinated. TIG is indicated for previously vaccinated people who sustain wounds (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.
- Hepatitis A vaccine is not recommended to prevent outbreaks in the affected population.
- Typhoid vaccination, in conjunction with other preventive measures, may be useful to control typhoid outbreaks, depending on local circumstances.
- Vaccination efforts should always be supplemented by health education and improved sanitation. Special attention should be paid to the safe management and disposal of waste from immunization activities to prevent the transmission of blood-borne pathogens.

3.7 Vector control and personal protection
- Refuse must be collected and appropriately disposed of to discourage rodent and vector breeding.
- Water-storage containers should be closed or covered with mosquito-proof lids.
- Space spraying will control fly and mosquito populations, larviciding and disposal of discarded containers will contribute to reduce mosquito density, and may be desirable around displacement centres.
- Where feasible encourage the use of mosquito proof screening of windows and doors.

3.3 Prevention and management of malnutrition
- Infants should have skin-to-skin contact with their mothers within 30 seconds of birth, and breastfeeding should start when the baby shows feeding cues (usually within 90 minutes).
- Exclusive breastfeeding (with no food or liquid (including water) other than breast milk) should continue 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.
- Donations of milk-powder supplies usually increase in emergency situations and contribute to a higher number of infants with diarrhoea and pneumonia. These donations also exacerbate 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 drinking-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 may further compromise this, attention must be paid to adequate and equitable distribution of food, and maintaining nutrition of breastfeeding 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. Phases and principles of management of severely malnourished children should be followed as outlined in WHO Guidelines on the Management of Severe Acute Malnutrition in Infants and Children.
- Populations dependent on food aid need to be given a food ration of safe and adequate quantity and quality (ensuring dietary diversity, cultural acceptability and covering all macro- and micronutrient needs). Infants from six months of age onwards need hygienically prepared, and easy-to-eat, digestible complementary foods that nutritionally complement breast milk. Regular assessments of household access to adequate safe and nutritious food (including market prices) needs to be undertaken and emergency food aid needs to be adapted accordingly. Household access to facilities for the safe preparation of 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 will be needed to improve sustainable household access to food (e.g. seed distribution, land/crop management, income generating activities) and to institute appropriate child-feeding and caring practices, including diversifying diets and improved hygiene.
- Poor hand hygiene exacerbates the spread of diarrhoeal diseases, even in the presence of adequate nutrition.

4. RISK COMMUNICATIONS

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 limited. Communicating advice and guidance, therefore, is often the most important public health tool in managing a risk. Key risk communications actions are:

- As soon as possible, assess public communication capacity and research community understanding of the risks, population demographics, literacy levels, languages spoken and socioeconomic and cultural backgrounds. This will help inform an effective communications approach and messages that resonate with target audiences.
- Review how the population consumes information and identify communication partners, with appropriate language and media skills, to help get the message out to those at risk. Ministry of Health counterparts are a good place to start.
- Risks will also need to be communicated outside of the country, so identify external channels of communication. Consider designating a spokesperson – skilled at communicating using plain language – and seek opportunities to communicate with the traditional media. Explore opportunities to communicate messages regularly via social media.
- Coordinate closely with your communications partners to maintain consistent and complementary messages and to build and maintain trust.

See Annex 4 for suggested key communication messages for specific health issues.
## ANNEXES

### Annex 1: Levels and types of health services provided in Fiji, 2014

<table>
<thead>
<tr>
<th>Level of service (estimated no.)</th>
<th>Type of service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Village health workers (1,805)</td>
<td>Volunteers, from the villages or settlements; trained for six weeks (various) to provide basic first aid and health promotion to community members. MoHMS provides training, first aid kits and disposables. Some communities financially support their village health workers.</td>
</tr>
<tr>
<td>Nursing Stations (98)</td>
<td>Staffed by a single nurse who conducts outreach visits into communities within a designated nursing area. Services provided include: population health monitoring, maternal/child clinics, general outpatients, school health, family health, reproductive health and domiciliary services.</td>
</tr>
<tr>
<td>Health Centres (84)</td>
<td>Staffed by a medical officer or nurse practitioner in addition to nurses. They are the first level of referral from a nursing station. Services provided include: 24 hours on-call services, population health monitoring, maternal/child clinics, general and special outpatients, school health, family health, reproductive health and domiciliary services. Health centres vary in services based on the size of the population it serves. Larger urban health centres have a pharmacy, laboratory, radiology unit, dental unit, environmental health officers, dieticians and nurses who conduct school visits.</td>
</tr>
<tr>
<td>Sub-divisional hospitals (17)</td>
<td>Staffed with general practitioners, midwives and registered nurses. They provide a range of primary health and acute care, including: accident &amp; emergency services, general inpatient care, routine obstetrics, dental services, limited diagnostic services (laboratory and radiology) and facilitate the provision of outreach services to the nursing stations within the sub-division.</td>
</tr>
</tbody>
</table>
| Divisional hospitals (3)         | - Colonial War Memorial Hospital based in Suva in the Central Division,  
- Lautoka Hospital in the Western Division and  
- Labasa Hospital in the Northern Division.  

These three divisional hospitals provide a broad range of basic services including: accident and emergency, medical, surgical, orthopaedic, ophthalmology, obstetrics, gynaecology and paediatrics services, and outpatient clinics. More complex services are also provided. The Colonial War Memorial Hospital in Suva is the national referral hospital for Fiji and services are also accessed by other Pacific Island Countries. |
| General Practitioners (130)      | Approximately 130 private general practitioners registered in Fiji providing primary health care. The majority of these are found in urban areas. A Fiji College of General Practitioners provides professional development and support. |

*Source: 2014 Annual Report, MoHMS.*
### Annex 2. Number of government health workers (established posts), 2014

<table>
<thead>
<tr>
<th>Profession</th>
<th>Approved</th>
<th>Number of filled</th>
<th>Health workers per 10,000 population (837,271)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical officers</td>
<td>597</td>
<td>429</td>
<td>5.1</td>
</tr>
<tr>
<td>Medical assistants</td>
<td>6</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Nurses</td>
<td>2421</td>
<td>2266</td>
<td>27.1</td>
</tr>
<tr>
<td>Orderlies</td>
<td>58</td>
<td>45</td>
<td>0.5</td>
</tr>
<tr>
<td>Dental officers</td>
<td>51</td>
<td>43</td>
<td>0.5</td>
</tr>
<tr>
<td>Dental assistants</td>
<td>150</td>
<td>121</td>
<td>1.4</td>
</tr>
<tr>
<td>Laboratory technicians</td>
<td>164</td>
<td>152</td>
<td>1.8</td>
</tr>
<tr>
<td>Radiographers</td>
<td>64</td>
<td>59</td>
<td>0.7</td>
</tr>
<tr>
<td>Laboratory assistants</td>
<td>21</td>
<td>19</td>
<td>0.2</td>
</tr>
<tr>
<td>Physiotherapists</td>
<td>35</td>
<td>30</td>
<td>0.4</td>
</tr>
<tr>
<td>Dieticians</td>
<td>79</td>
<td>62</td>
<td>0.7</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>86</td>
<td>68</td>
<td>0.8</td>
</tr>
<tr>
<td>Environmental health officers</td>
<td>124</td>
<td>110</td>
<td>1.3</td>
</tr>
<tr>
<td>Administrative officers</td>
<td>178</td>
<td>142</td>
<td>1.7</td>
</tr>
<tr>
<td>Accounting staff</td>
<td>22</td>
<td>17</td>
<td>0.2</td>
</tr>
<tr>
<td>Secretarial/typists</td>
<td>52</td>
<td>43</td>
<td>0.5</td>
</tr>
<tr>
<td>Statisticians</td>
<td>13</td>
<td>13</td>
<td>0.2</td>
</tr>
<tr>
<td>Information technology officers</td>
<td>9</td>
<td>7</td>
<td>0.1</td>
</tr>
<tr>
<td>Stores officers</td>
<td>31</td>
<td>26</td>
<td>0.3</td>
</tr>
<tr>
<td>Upper salaried staff</td>
<td>20</td>
<td>18</td>
<td>0.2</td>
</tr>
<tr>
<td>Bio-medical staff</td>
<td>3</td>
<td>14</td>
<td>0.2</td>
</tr>
<tr>
<td>Other</td>
<td>34</td>
<td>31</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>4238</td>
<td>3717</td>
<td>0.4</td>
</tr>
</tbody>
</table>

*Source: 2014 Annual Report, MoHMS.*
### Annex 3. Environmental health requirements for evacuation centres

<table>
<thead>
<tr>
<th>Priority Area</th>
<th>Standards</th>
<th>Activities/Actions/agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of EC.</td>
<td>• Higher ground or areas not prone to floods.</td>
<td>Selection of EC site and management of the centre is the responsibility of other agencies. NDMO/LA</td>
</tr>
<tr>
<td></td>
<td>• Must be accessible by Road Or walkways</td>
<td></td>
</tr>
<tr>
<td>Structure</td>
<td>• Stable and Structurally safe; Window shutters, Secured doors, Adequate ventilation</td>
<td></td>
</tr>
<tr>
<td>Overcrowding</td>
<td>• Open sleeping area should be set up to prevent crowding, ideally with at least 3 feet separating each cot from the next.</td>
<td>Ensure Basic House keeping, Clean surfaces, LA /NDMO</td>
</tr>
<tr>
<td></td>
<td>• Additional rooms( 50 ft³/per person)</td>
<td></td>
</tr>
<tr>
<td>Sanitary facilities(Toilets)</td>
<td>• As per PH Act 1:20 persons for Toilets facilities for each sex. Thrash whole of 1:40 could also be applied where strict management and cleaning of these facilities are adhered to especially in Non-residential evacuation centres such as schools stadiums and churches, community halls etc.</td>
<td>Need frequent and supervised cleaning and maintenance of sanitary facilities. This increases the importance of hand hygiene Ensure that basic supplies such as hand soap, and toilet paper are maintained. LA?NDMO</td>
</tr>
<tr>
<td></td>
<td>• Fly prove Pit, Water seal, septic tank or sewerage systems</td>
<td></td>
</tr>
<tr>
<td>Water supply</td>
<td>• adequate wholesome water supply is available if no backup</td>
<td>Back up water tanks to be made available or water filters where ever possible as far as water is safe for drinking.LA/NDMO/ WAF</td>
</tr>
<tr>
<td></td>
<td>• Well water, Water tanks, Treated water backup bottle water, Purification tabs to be used or all untreated water to be boiled before drinking.</td>
<td></td>
</tr>
<tr>
<td>Hand Hygiene</td>
<td>• Before eating food.</td>
<td>Ensure availability of hand washing soaps, sinks taps, alcohol hand gel dispensers in</td>
</tr>
<tr>
<td></td>
<td>• After handling uncooked foods, particularly</td>
<td></td>
</tr>
<tr>
<td><strong>Food Services.</strong></td>
<td>方便位置在生活区域通过和在食物服务线开始，确保所有到达的居民被指示使用和可用性。</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>• Wherever possible Food service should be provided from external sources rather than attempting to set up poorly controlled on-site alternatives or allowing residents to attempt these activities individually.</td>
<td>ensuring GHP</td>
<td></td>
</tr>
<tr>
<td>• However if this is not possible, clear demarcated facilities to be provided especially for open fire cooking.</td>
<td>LA/NDMO</td>
<td></td>
</tr>
<tr>
<td>• Eat hot food, Cover your food with clean clothes, Discard all food that is left for more then 4 hrs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Refrigerate if possible.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Power Supply</strong></td>
<td>充电_PORT_等。</td>
<td></td>
</tr>
<tr>
<td>• Use of lanterns etc. in case power is shut down due to risks</td>
<td>NDMO</td>
<td></td>
</tr>
<tr>
<td><strong>Laundry services</strong></td>
<td>clear demarcated facilities to be provided for laundry services</td>
<td></td>
</tr>
<tr>
<td>• clear demarcated facilities to be provided for laundry services</td>
<td>NDMO</td>
<td></td>
</tr>
<tr>
<td><strong>Bathing facilities</strong></td>
<td>clear demarcated facilities to be provided for bathing for each sex.</td>
<td></td>
</tr>
<tr>
<td>• clear demarcated facilities to be provided for bathing for each sex.</td>
<td>Could be Temporary from traditional materials or ready-made if available. LA/NDMO</td>
<td></td>
</tr>
<tr>
<td><strong>Waste Management</strong></td>
<td>是有废物管理设施在场？</td>
<td></td>
</tr>
<tr>
<td>• Is there a waste management disposal arrangement in place?</td>
<td>Burry on site is also need to be considered</td>
<td></td>
</tr>
<tr>
<td>• Are there garbage bins, recycling bins and / or an industrial skip/s on-site?</td>
<td>LA/NDMO</td>
<td></td>
</tr>
<tr>
<td>• Are there facilities for storing waste?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Are there sufficient sanitary bins and lining bags on-site or do they need to be supplied</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Are there facilities and storage space for medical / hazardous waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
<td>Responsible Parties</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Vector Control</td>
<td>• Is the building screened, are their mosquito breeding grounds in the area around the EC</td>
<td>Regularly carry out chemical spraying to prevent insects/mosquitoes and bugs. NDMO/LA</td>
</tr>
<tr>
<td>CD control</td>
<td>• Prevention of communicable disease in ECs must be administered.</td>
<td>NDMO/LA</td>
</tr>
<tr>
<td>Infectious Disease control</td>
<td>• How are sick likely to cause cross infection isolated or kept separately</td>
<td>NDMO</td>
</tr>
<tr>
<td>Health Out reach</td>
<td>• Can a medical outreach be setup with the local area medics</td>
<td>LA/NDMO</td>
</tr>
<tr>
<td>Disinfection</td>
<td>• Is the area properly disinfected prior to use as EC</td>
<td></td>
</tr>
<tr>
<td>Special-Needs Evacuation Centers</td>
<td>• Is their provision for the elderly and disabled evacuees</td>
<td>Caregivers to be assigned, NDMO</td>
</tr>
<tr>
<td>Social Issues</td>
<td>• Is their provision of separate accommodation of females and children and adult males</td>
<td>NDMO</td>
</tr>
<tr>
<td>Security control</td>
<td>• Security to be set up for the to be manned on 24 hr basis</td>
<td>NDMO/ POLICE</td>
</tr>
</tbody>
</table>
| First Aid                      | • Kept in a separate room or screened area close to hand washing facilities  
• Access to lockable storage and refrigeration  
• Space for a few beds / mattresses / stretchers  
• Space for medical equipment                                                                 | NDMO/RED CROSS/LA                                                                  |
Annex 4. EWARN case definitions – Cyclone Winston, Fiji

<table>
<thead>
<tr>
<th>Syndrome</th>
<th>Case definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute fever and rash (AFR)</td>
<td>Sudden onset of fever (&gt;38°C) with acute non-blistering rash</td>
</tr>
<tr>
<td>Prolonged fever</td>
<td>Any fever (&gt;38°C) lasting 3 or more days</td>
</tr>
<tr>
<td>Watery diarrhoea</td>
<td>3 or more loose or watery stools in 24 hrs (non-bloody)</td>
</tr>
<tr>
<td>Bloody diarrhoea</td>
<td>Any episode of acute bloody diarrhoea</td>
</tr>
<tr>
<td>Influenza-like-illness (ILI)</td>
<td>Sudden onset of fever (&gt;38°C) with cough and/or sore throat</td>
</tr>
<tr>
<td>Acute jaundice syndrome</td>
<td>Jaundice (yellow eyes or dark urine) AND severe illness with or without fever</td>
</tr>
<tr>
<td>Suspected dengue / Zika</td>
<td>Fever (&gt;38°C) PLUS two of the following:</td>
</tr>
<tr>
<td></td>
<td>1. Aches and pains (headache, eye pain, muscle/joint pain),</td>
</tr>
<tr>
<td></td>
<td>2. Anorexia, nausea or vomiting,</td>
</tr>
<tr>
<td></td>
<td>3. Rash,</td>
</tr>
<tr>
<td></td>
<td>4. Tourniquet test positive,</td>
</tr>
<tr>
<td></td>
<td>5. Mucosal bleeding,</td>
</tr>
<tr>
<td></td>
<td>6. Abdominal pain,</td>
</tr>
<tr>
<td></td>
<td>7. Lethargy or restlessness</td>
</tr>
</tbody>
</table>
Annex 5: Communications messages (specific health issues)

Safe drinking-water

- Even if it looks clear, water can contain germs. Under the present emergency in Fiji, water in the affected areas should be assumed to be contaminated.
- Add drops of chlorine to the water, water purification tablets or boil, 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 practices

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

Avoid mosquito bites (once dwellings are re-established)

- Sleep under an insecticide-treated bed net.
- 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).
- Cook thoroughly, separate raw and cooked.
- Keep food at safe temperature (piping hot).
- Use safe drinking-water and raw materials.
- Seek treatment early (once health services are established).
  - 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.