

**Communicable disease  
risk assessment and interventions**

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Sichuan earthquake: the People's Republic of China  
May 2008



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## **Preface**

The purpose of this technical note is to provide health professionals in United Nations agencies, nongovernmental organizations, donor agencies and local authorities working with populations affected by emergencies with up-to-date technical guidance on the major communicable disease threats faced by the emergency-affected population in China.

The endemic and epidemic-prone diseases indicated have been selected on the basis of the burden of morbidity, mortality and epidemic potential in the area, as previously documented by WHO.

The prevention and control of communicable diseases represent a significant challenge to those providing health-care services in this evolving situation. This technical note is designed to facilitate the coordination of activities to control communicable diseases between all agencies working among the populations affected by the crisis.

# 1. BACKGROUND AND RISK FACTORS

On 12 May 2008, an 8.0 magnitude earthquake struck 92km north-west of Sichuan's provincial capital, Chengdu, in China. The area affected by this earthquake is vast, and includes eight provinces<sup>1</sup> and 852 counties, with a population of 348 million. An estimated 5 million buildings have collapsed, and more than 21 million buildings are damaged in the earthquake-affected areas. The destruction and damage has resulted in massive population displacement. As of 26 May, more than 14 million people were reportedly displaced by the earthquake according to China's Information Office of the State Council.

Transport infrastructure (roads and railways) has been damaged by the earthquake or blocked by landslides triggered by aftershocks, further hampering access. According to the Ministry of Agriculture, 33 300 hectares of farmland and crops have been damaged in the 13 worst-hit cities and counties. Sichuan Province is one of China's most heavily industrialized and densely populated areas with a wide array of agricultural and industrial activities present, creating a potential source of environmental health risks in the earthquake-affected areas.

According to the Information Office of the State Council, as of 26 May 2008 over 65 000 people are reported dead with the overall number of dead and missing estimated to be in excess of 88 000. Over 360 000 are reported injured. Additionally, more than 83 000 injured people have been hospitalized after the earthquake. Among them, 53 247 have been discharged from hospitals, 17 168 still remain in hospital and 5914 were transferred to other parts of China for treatment.

Many health clinics have been affected by the earthquake. Access to the public health system is therefore severely affected, adversely impacting all aspects of health-care delivery including the capacity of the surveillance system to detect and respond to epidemics. Efforts are continuing to reach the displaced populations with food, water, fuel, and to improve access to health care. The Government of China has deployed thousands of health workers to the affected area.

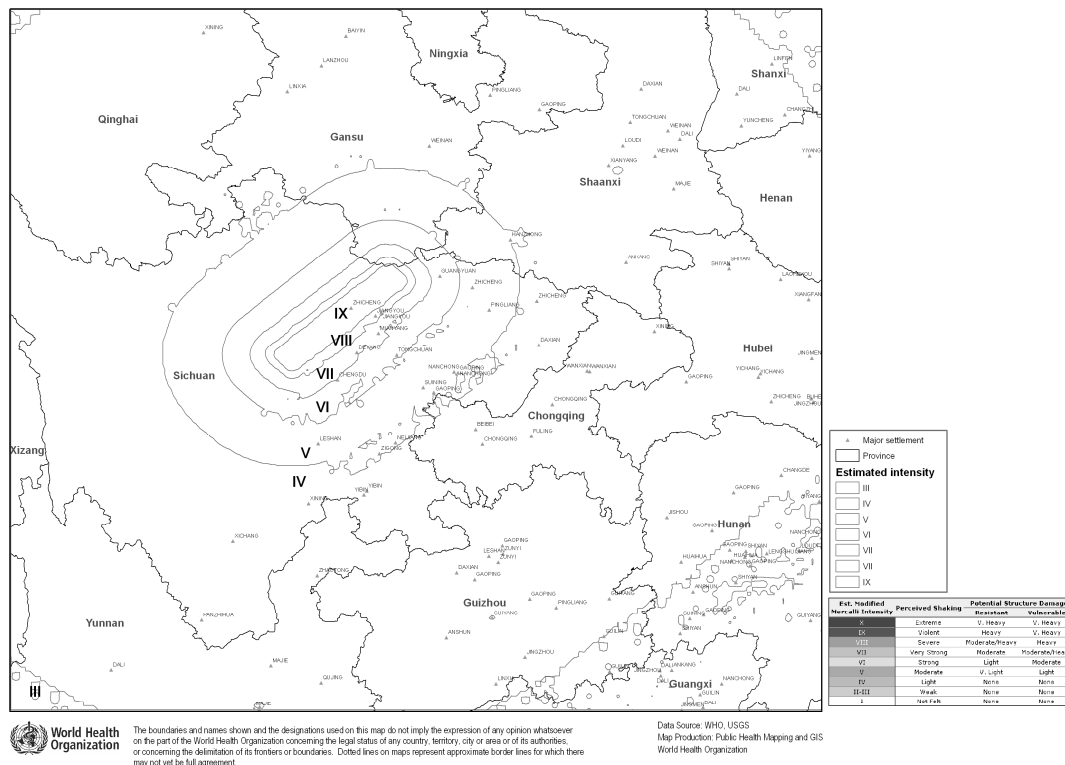
Initial search and rescue efforts have largely been completed. Emergency teams continue to provide essential first-aid to injured victims, and to clear roads and organize the procurement of much-needed food, blankets, shelter and essential medicines. WHO is working with the United Nations Disaster Management Team and the MoH to identify priority needs and obtain needed supplies. The focus has shifted to the mitigation of risk factors for communicable disease transmission among the displaced populations, primarily regarding access to safe food, water and shelter.

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<sup>1</sup> Sichuan (the province most severely affected), Gansu, Shaanxi, Chongqing, Yunnan, Shanxi, Guizhou and Hubei.

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**Figure 1: China earthquake situation map**



**Risk factors for increased communicable disease burden**

- 1. Interruption of access to safe water and sanitation facilities.** The populations displaced by the earthquake are at immediate and high risk of outbreaks of **water/sanitation/hygiene-related** and **foodborne diseases** such as **cholera, shigellosis due to Sd1, typhoid fever, and hepatitis A and E.**
- 2. Population displacement with overcrowding.** Populations in the affected areas and relief centres are at immediate risk of diseases spread by **respiratory transmission** such as **measles and pneumonia.** Increased risk of **meningitis** is also associated with overcrowding.
- 3. Increased exposure to disease vectors.** Displacement of populations due to earthquake-related destruction of housing can result in increased exposure to disease-carrying vectors, including those for **Japanese encephalitis.**
- 4. Poor access to health services** is of immediate concern. The degradation of the health infrastructure and of the means of communication prevent access to usual services, as well as to emergency medical and surgical services put in place in response to this crisis.
- 5. When deaths result from a natural disaster, exposure to dead bodies is not associated with disease transmission.** There is no evidence that corpses pose a risk of epidemics after natural disasters. Standard infection control precautions should be observed when handling human corpses.

## 2. PRIORITY COMMUNICABLE DISEASES

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

The displaced populations in China are at high risk from outbreaks of water, sanitation, and hygiene-related diseases, as well as foodborne diseases, due to reduced access to safe water and sanitation systems. Disruption of usual water sources and contamination of water by destroyed sewage infrastructure may result in unsafe drinking-water being consumed, increasing the risk of exposure. **Cholera** has been reported in Sichuan Province recently, and the strengthening of prevention and treatment of cholera has been a focus of the MoH. *Salmonella typhi* (causing typhoid fever), **hepatitis A** and **hepatitis E**, and ***Shigella dysenteriae* type 1 (Sd1)** are also present and have epidemic potential. Diarrhoea is a major cause of under five mortality; WHO estimates that diarrhoea accounts for 12% of under-five deaths in China.

**Leptospirosis** is a bacterial zoonosis present worldwide. Infection in humans may occur indirectly when the bacteria comes into contact with the skin (especially if damaged) or the mucous membranes. It can also result from contact with moist soil or vegetation contaminated with the urine of infected animals, or with contaminated water as a result of swimming or wading in floodwaters, accidental immersion or occupational abrasion.

### 2.3 Vector-borne diseases

Population displacement can result in an increased exposure to vectors, and therefore to vector-borne diseases. Additionally, movement of susceptible populations into higher-risk areas can increase the risk of transmission. With the vast destruction associated with this earthquake, pools of water suitable for vector breeding may develop with subsequent rains.

**Japanese encephalitis (JE)** occurs in the Asian region, transmitted by the *Culex* mosquitoes which breed particularly in flooded areas and rice fields. Inadequate shelter, rains in the earthquake-affected area, and the disruption of vector control programmes due to the earthquake could lead to an increased exposure to vectors. The virus circulates in Ardeidae birds (herons, egrets), and pigs act as amplifying hosts for the virus. (Sichuan Province is a major pig-producing source for China and neighbouring countries). Humans are incidental hosts, and infection occurs primarily in children. A national programme to vaccinate school-age children against JE free of charge has recently commenced, but coverage is estimated to be low. Culicine mosquitoes are normally zoophilic (feeding mainly on animals) but may also bite humans. China CDC maintains an annual surveillance and monitoring of JE in this region. Vector control methods and personal protection information can be found in section 3.7.

Human **plague** cases have been reported in the past in the mountain regions of Sichuan, where known natural foci for *Yersinia pestis* circulate among the wild rodents and their fleas. The disturbance of the natural enzootic cycle can result in increased contact between the wild and domestic rodent populations increasing the chance of exposure of people to potentially infective rodents. Populations displaced by the earthquake may be at higher risk of exposure to rats and fleas carrying *Y. pestis*, not only in Sichuan but possibly in surrounding provinces where plague is endemic (including Gangsu, Xinghai, Yunnan, and Guizhou). Detection and management of cases, as well as methods for control of pests and environmental contamination, should follow MoH guidance.

There is no significant risk of **malaria** transmission within the earthquake-affected areas of Sichuan Province. Although malaria remains a serious public health problem in China, it occurs primarily in Yunnan and Hainan Provinces where risk of transmission of *P. falciparum* is high. The Province of Sichuan reported 289 cases in 2003 (accounting for <1% of total malaria cases reported by the country).



*Aedes aegypti*, the primary vector for **dengue** is currently not reported in Sichuan Province. *Aedes albopictus*, a secondary vector for dengue, is present in Sichuan Province. China reported less than 600 cases of dengue in 2007, primarily in provinces further south.

## 2.4 Diseases associated with crowding

Population displacement can result in crowding in resettlement areas, raising the risk of transmission of certain communicable diseases. **Measles, diphtheria, pertussis** (see section below on Vaccine-preventable diseases), **Acute Respiratory Infections (ARI), meningococcal disease and tuberculosis (TB)** are transmitted from person to person through respiratory droplets; risk is increased in crowded living conditions, when there is close contact between individuals and with poor ventilation in houses/shelters. Crowding can also increase the likelihood of transmission of water-related and vector-borne diseases.

**Acute Respiratory Infections (ARI)** include any infection of the upper or lower respiratory system. A major concern in China is acute lower respiratory (ALRI) tract infection (pneumonia, bronchiolitis and bronchitis) in children under five, which globally kills more children than any other disease. WHO estimates that 13% of under-five deaths in China are caused by pneumonia. Low birth weight, malnourished and non-breastfed children are at higher risk of acquiring pneumonia. These children are also at a higher risk of death from pneumonia.

**Meningococcal disease** occurs sporadically throughout the world with seasonal variations and accounts for a substantial proportion of endemic bacterial meningitis.

The risk of **TB** transmission is also higher in situations of crowding. In 2005, China reached the global targets for case detection (70% of estimated cases) and cure (85% of cases). This was repeated for the second consecutive year in 2006. The Chinese National TB Programme (NTP) is working to improve access to high-quality TB care for all people with TB, including those with TB/HIV (0.3% of all TB cases in 2006), those with MDR-TB (4% of all TB cases in 2006) and among unofficial internal migrants (“floating populations”). A shortage of trained staff is one of the challenges in implementing the Stop TB Strategy. The relationship between TB dispensaries run by the NTP and general hospitals continues to be problematic. Pilot projects are under way to improve collaboration.

## 2.5 Vaccine-preventable diseases and routine immunization coverage

**Tetanus** is associated with poor treatment of wounds in a susceptible patient. *Clostridium tetani* spores present in the soil can infect trivial wounds, lacerations and burns. The incubation period is usually 3–21 days, and the case-fatality ratio is 70–100%.

Examples of tetanus-prone wounds include:

- Wounds contaminated with dirt or faeces
- Puncture wounds
- Burns
- Wounds with delayed presentation

In circumstances of poorly treated trauma, wounds and injuries should be viewed with a high degree of suspicion. Appropriate management of injured survivors should be implemented as soon as possible to minimize future disability and to avert avoidable death. Patients should systematically receive prophylactic antibiotics and tetanus toxoid vaccine if non-immune, together with tetanus immune globulin if the wound is tetanus-prone.

(For case management, see section 3.1, Essential trauma and medical care; for additional information, see section 4, Wounds and injuries, *WHO Integrated Management for Emergency and Essential Surgical Care toolkit*).

**Measles** transmission increases as a result of overcrowding. Sichuan Province conducted a province-wide measles vaccination campaign targeting children aged 8 months to 14 years in collaboration with WHO and MoH China in March 2008. County-level convenience surveys after the campaign showed coverage of over 95%.

Nationwide, immunization coverage for **polio, measles, diphtheria** and **pertussis** are all estimated to be above 90% (see Table 1), reducing the risk of transmission among the displaced populations. Crowded living conditions, however, can facilitate transmission of highly infectious diseases like measles, even in apparently adequately-vaccinated populations<sup>2</sup>.

**Table 1. Routine vaccination coverage at one year of age, 2006, China**

Antigen	% coverage*
(BCG) bacille Calmette–Guérin	92
Diphtheria–pertussis–tetanus, 3rd dose	93
Hepatitis B, 3rd dose	91
MCV (measles-containing vaccine)	93
Polio, 3rd dose	94

\* Official country estimates reported to WHO/UNICEF<sup>3</sup>

## 2.6 Other risks

**Corpses.** It is important to convey to all parties that **corpses do not represent a public health threat**. When death is due to the initial impact of the event and not because of diseases like cholera and hemorrhagic fever, dead bodies have not been associated with outbreaks. **Environmental application of disinfectant solutions in the absence of known risk is unnecessary to control communicable diseases and may divert scarce resources needed elsewhere.** Standard infection control precautions are recommended for those managing corpses. (For additional information, see section 4, Management of dead bodies).

**Injuries** are numerous due to the initial impact of the earthquake and to clean-up activities. Risk of wound infection and tetanus are high, due to the difficulties with immediate access to health facilities and delayed presentation of acute injuries. **Gangrene** is a complication of wound contamination, and prompt treatment is critical for prevention. Gangrenous wounds should be managed aggressively, with surgical removal of gangrenous tissue. There is no risk of transmission to unaffected persons. (For additional information, see section 4, Wounds and injuries, and Child health in emergencies: *Pocket book of hospital care for children*).

**Environmental risks** may exist from damaged industrial facilities (chemical, radiological, etc). Industrial leaks of **ammonia, hydrochloric acid, and sulphuric acid** have been reported from the earthquake-affected area, and displaced populations may be at risk of exposure. Water and other sources are being monitored for contamination. (For additional information, see section 4, Environmental health in emergencies, UNEP/OCHA Environmental Risk Identification).

**Interrupted power supply.** It is important to consider the implications of extended interruption to the power supply. Food which is spoiled can be a possible source of disease if consumed. Routine vaccine stocks and the cold chain can be compromised.

<sup>2</sup>Marin M et al. Measles transmission and vaccine effectiveness during a large outbreak on a densely populated island: implications for vaccination policy. *Clinical Infectious Diseases*, 2006, 42:315–319.

<sup>3</sup>WHO. China reported immunization coverage. <http://www.who.int/vaccines/globalsummary/immunization/timeseries/tscoveragebycountry.cfm?country=China>

Communicable Disease Working Group on Emergencies (CDWGE-WHO/HQ); Communicable Disease Surveillance and Response (CSR/WPRO); WHO Country Office - China. CD risk assessment and interventions, Sichuan Earthquake, China. May 2008.

**Chronic disease.** Patients with chronic disease may experience an interruption of routine supply of medication.

**Sexually transmitted infections (STIs) including human immunodeficiency virus (HIV).** When an emergency develops, people may be subjected to situations that substantially increase their exposure to **HIV, syphilis and gonorrhoea**. Risk factors include massive displacement of people from their homes, women and children left to fend for themselves, domestic violence, social services overwhelmed or destroyed, and a lack of means to prevent HIV infection.

China has a low overall HIV prevalence but high prevalence in certain population groups and in certain areas. There are geographical differences in prevalence levels within subpopulations. The main mode of transmission remains injecting drug use but sexual transmission and mother-to-child transmission have been increasing. Women are increasingly at risk of becoming infected with HIV, with a slight increase among antenatal care attendees since 1996. WHO/UNAIDS estimated that 700,000 people were living with HIV/AIDS at the end of 2007 and the estimated HIV prevalence was 0.05%, with 40.6% infected through heterosexual transmission. In Sichuan Province, HIV prevalence is high among injecting drug users.

**Avian influenza (A/H5N1).** The first laboratory-confirmed H5N1 human case occurred in China in November 2003. To date there have been 30 human cases of H5N1 avian influenza in China. Human avian influenza cases are associated with exposure to poultry infected by H5N1. Circulation of H5N1 in birds has been reported in Sichuan Province and H5 vaccination of poultry is routinely performed. China has an estimated 14 billion poultry – of which 60%–70% are located in backyard farms in rural areas. Public health systems remain weak in many areas, and detection and treatment of potential human cases poses a challenge.

**Malnutrition.** In certain areas of western China, energy intake remains below the recommended level, particularly for children between 6 and 24 months. Undernutrition is an important underlying factor contributing to childhood mortality rates, and has been linked to impaired cognitive development. More than 40% of children born in the western provinces are considered mildly or moderately stunted. Anaemia in pregnant women and pre-school children is considered to be a moderate public health problem. In 2002, 71.6% infants less than 4 months old were breastfed (66.4% in urban areas and 74.6% in rural areas).

**Anthrax** is known to occur in some areas affected by the Sichuan earthquake. The highest risk of infection is associated with the cleaning and consumption of contaminated meat. Anthrax spores can survive for extended periods in soil, and may be exposed in areas recently disrupted by seismic activity. Natural anthrax foci occur in Sichuan, Gansu, Qinghai, Guizhou and Yunnan Provinces.

Other diseases such as infection with *Streptococcus suis*, **visceral leishmaniasis (kala-azar)**, and **schistosomiasis** occur in Sichuan Province however the risk of infection is unlikely to increase post-earthquake.

**Staff preparation for deployment to China.** Emergency settings differ vastly in their nature but also in epidemiological context. It is essential that medical preparation be as comprehensive as possible (with the limitations imposed by departure at short notice) and tailored specifically for China.

There is no significant risk of malaria transmission within the earthquake-affected areas of Sichuan Province. However, personal protection against mosquito bites (long-sleeved clothes, repellents, mosquito nets), day and night, is important to prevent vector-borne diseases such as Japanese encephalitis.

Medical kits including chlorine tablets for water purification, surgical masks, gloves, food and water should also be considered. (For additional information, see section 4, Travel advice).

See Table 2 for vaccination recommendations for staff being deployed to China.

**Table 2. Vaccination recommendations for staff deployed to China**

<b>NB: A Yellow Fever vaccination certificate is required from travelers coming from infected areas</b>			
	<b>Vaccine</b>	<b>Validity</b>	<b>Comments</b>
<b>Essential</b>	Diphtheria	10 years	Can be combined with tetanus.
	Tetanus	10 years	Booster dose is recommended if not taken in the last 10 years
	Polio	10 years	Potential risk of importation of wild virus with displaced populations.
	Typhoid	3 years	
	Hepatitis A	life	If there is no proof of immunity by vaccine or illness, even if departure at short notice. Can be combined with hepatitis B.
	Hepatitis B	15 years	
	Cholera	2 years	If there is sufficient time before departure, 2 oral doses should be taken (with a one week interval between doses). Immunity is obtained one week after the second dose of a combination oral cholera & ETEC (enterotoxigenic <i>E.coli</i> ) vaccine (brand name DUKORAL™).
<b>Optional</b>	Japanese encephalitis	3 years	Low risk for individuals staying less than one month although area is endemic. If time permitting, 3 doses recommended (Day 0, Day 7 and Day 28)
	Measles		Potential risk in emergency situation. If not fully immunized in childhood, consider vaccination.

**Table 3. Priority interventions for immediate implementation to reduce communicable disease risk**

- Early warning surveillance and response for epidemic-prone diseases, with focus on acute watery diarrhoea, acute bloody diarrhoea, acute respiratory infection, measles, meningitis, jaundice syndrome, unexplained fever, unexplained cluster of events.

The surveillance system should include:

- Involvement of all healthcare providers
  - Standardized case definitions, data collection and reporting
  - Immediate reporting of epidemic alerts to MoH
  - Readily-available epidemic investigation kits, including sampling kits for stool, CSF, and blood
  - Rapid field investigation of suspected cases of epidemic-prone diseases
  - Immediate response with implementation of control measures
  - Laboratory support with procedures for collection, shipment, and priority testing of specimens
- Epidemic preparedness and stockpiling for epidemic-prone diseases
    - Formation of a multisectoral outbreak rapid response team, with specific duties assigned to members
    - Rehydration supplies (e.g., ringer's lactate, ORS), treatment stockpiles (e.g., ciprofloxacin, amoxicillin, doxycycline) and personal protective equipment
    - Immunization materials for vaccine-preventable diseases (vaccines, injection materials, cold chain capacity)
  - Case management protocols and essential drugs/supplies for likely high-burden conditions (diarrhoeal diseases, pneumonia, trauma/wound care) (see section 3.4)
  - Provision of safe food, water, sanitation and hygiene facilities (see sections 3.1, 3.3, 3.8), and adequate temporary shelter (see section 3.2)
  - Continuation (or resumption) of treatment for those on medications for chronic conditions including ARVs and anti-TB medications (see section 3.4)

### 3. INTERVENTIONS FOR COMMUNICABLE DISEASE CONTROL

#### 3.1 Water and sanitation

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

- UNHCR, WHO and SPHERE recommend that each person be supplied with **at least 15–20 litres** of clean water per day for drinking, cooking, and washing.
- Free **chlorine is the most widely and easily used**, and the most affordable of the drinking-water disinfectants. It is also highly effective against nearly all water-related 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 has to be determined for each situation. After 30 minutes, the residual concentration of active chlorine in the water should be 0.5 mg/litre, which can be determined by using a simple field test kit.
- The provision of appropriate and sufficient water containers, cooking pots and fuel can reduce the risk of cholera and other diarrhoeal diseases by ensuring that water storage is protected and that food is properly cooked.
- Key messages on hygiene should be promoted to sensitize communities to the relevant health risks.
- In addition, **adequate sanitation facilities** should be provided in the form of latrines or designated defecation areas.

#### 3.2 Shelter and site planning

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

#### 3.3 Management of malnutrition

- Bacterial infections are very common in severely malnourished children on initial hospital admission. 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. (For additional information, see section 4, Malnutrition).
- Infants born into populations affected by the emergency should normally be exclusively breastfed from birth to 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. The quality, distribution and use of breast milk substitutes at emergency sites should be strictly controlled. Infants who are not breastfed are vulnerable to infection and can develop diarrhoea.

- The decision to use infant formula in separated and orphaned infants should be informed by results from an assessment by qualified health and nutrition workers trained in infant feeding issues. Criteria for targeting and use should be established. Given the extensive damage to water sources and sanitation facilities, only ready-to-use infant formula is appropriate as it does not need to be mixed with water. Caregivers should be encouraged to feed the ready-to-use infant formula with cup and spoon. Bottles and teats should not be provided.
- Populations dependant on food aid need to be given a food ration that is adequate in terms of quantity and quality (covering macro- and micronutrient needs). Infants from 6 months onwards and older children need hygienically prepared, and easy-to-eat and digestible foods that nutritionally complement breast milk. Attention must be paid to maintain adequate nutrition of nursing mothers. Regular assessments of households' access to food (including costs in the market) need to be undertaken and emergency food aid needs to be adapted accordingly.
- After the acute phase of the emergency, efforts should be made to improve household access to food in a more sustainable way (e.g. seed distribution, land/crop management, income generation activities) and to institute appropriate child feeding and caring practices, including diversifying diets and improved hygiene. It is important to emphasize that poor hand hygiene exacerbates the spread of diarrhoeal diseases, even in the presence of adequate nutrition.

### 3.4 Case management

#### Emergency medical and surgical care

Priority must be given to providing emergency medical and surgical care to people with **injury-related conditions**, which account for many of the health-care needs among those requiring medical attention during the acute phase of this emergency. Appropriate medical and surgical treatment of these injuries is essential in order to improve survival, minimize future functional impairment and disability and ensure a full return to community life. In order to prevent avoidable death and disability, field health personnel dealing with injured survivors should observe the following basic principles of trauma care.

- Patients should be **categorized by severity** of injury and treatment prioritized in terms of available resources and chances for survival. The underlying principle of triage is allocation of resources in a manner that ensures the greatest health benefit for the greatest number.
- **Core Principles of prevention and management of wound infections:** (see section 4, Wounds and injuries, *Prevention and management of wound infections*)
  - **Never close infected wounds.** Infected wounds have pus present. Systematically perform wound toilet and surgical debridement. Continue the cycle of surgical debridement and saline irrigation until the wound is completely clean.
  - **Wounds that are more than six hours old should not be closed.** Manage these with wound toilet, leave open (pack lightly with damp saline-disinfected or clean gauze and cover with dry dressing) and close 48 hours later. This is known as **delayed primary closure**.
  - **Contaminated wounds should not be closed.** Manage these with wound toilet and surgical debridement of dead tissue and debris, and schedule for delayed primary closure.
  - **To prevent wound infection:**
    - Restore breathing and blood circulation as soon as possible after injury.
    - Warm the victim and at the earliest opportunity provide high-energy nutrition and pain relief.
    - Do not use tourniquets.
    - Perform wound toilet and debridement as soon as possible (within 8 hours if possible).
    - Respect universal precautions to avoid transmission of infection.
    - Give antibiotic prophylaxis to victims with deep wounds and other indications.
  - **Antibiotics do not reach the source of the wound infection.** Antibiotics only reach the area around the wound; they are necessary but not sufficient and need to be combined with appropriate debridement and wound toilet as described above.

- **The use of topical antibiotics and washing of wounds with antibiotic solutions are not recommended.**
- Patients should receive **tetanus prophylaxis** if wounds were sustained either more than 6 hours before surgical treatment of the wound or at any interval after injury if wounds show one or more of the following: a puncture-type wound, a significant degree of devitalized tissue, clinical evidence of sepsis, contamination with soil/manure, burns, frostbite, and high velocity missile injuries. (For additional information, see section 3.6, Immunization and section 4, Wounds and injuries).
- Wherever possible, search and rescue workers should be equipped with **basic protective equipment** such as footwear and leather gloves to avoid puncture wounds.
- **HIV post-exposure prophylaxis (PEP)** kits should be available to health-care workers, rescue and safety workers in case of accidental exposure to contaminated blood and body fluids. **Hepatitis B** transmission is also associated with exposure to contaminated body fluids.

### Case management of communicable diseases

- Heightened community awareness of the need for **early treatment** and reinforcement of **proper case management** are important in reducing the impact of communicable diseases. The use of **standard treatment protocols** in health-care facilities with agreed-upon first-line drugs is crucial to ensure effective diagnosis and treatment for pneumonia, the main epidemic-prone diseases (including cholera, dysentery, typhoid, Japanese encephalitis, hepatitis A and B, leishmaniasis, leptospirosis, measles, and meningitis) and STIs.
- Standard **infection control practices** in accordance with national protocols should be in place.
- Provision of anti-**TB** treatment must be ensured for TB patients who were previously receiving treatment in the affected areas. Their treatment must not be interrupted and should be provided in line with the directives of the National TB Control Programme (NTP) services. All aspects of TB case management should also follow the NTP directives. The drugs used to treat the disease, such as rifampicin or streptomycin, must not be used for the treatment of other illnesses.
- The emergency response should ensure a minimum package of **HIV prevention, treatment and care services**, including the strengthening of standard precautions, with the provision of gloves, sterile needles and syringes, and safe waste disposal management in health services. Additional services should include provision of condoms, education and prevention messages, and post-exposure prophylaxis for occupational exposure and for survivors of rape. Needle and syringe exchange programmes should be maintained. Efforts should be made to ensure that HIV/AIDS patients receiving antiretroviral treatment (ART) do not have their treatment interrupted and to provide ART for prevention of pregnancy related HIV transmission. (For additional information, see section 4, Gender and Gender based violence, and HIV/AIDS).

### Case management of children under five

- China's under-five mortality rate has fallen from 45 deaths for every 1000 live births in 1990 to 24 per 1000 in 2006, a reduction of 47%. However huge inequities persist. These remain relatively unaddressed in the most densely populated areas, including those affected by the earthquake.
- Early detection and case management of ARI and diarrhoea, and case management of newborns through the Integrated Management of Childhood Illness (IMCI) will prevent unnecessary morbidity and mortality in children under five years of age.
- IMCI is being implemented in at least 97 counties in China, and is in the expansion phase. The national IMCI guidelines and the *Pocket book of hospital care for children* (see section 4, Child Health in Emergencies) could be used by trained health workers during the emergency and afterwards.



### 3.5 Surveillance/early warning and response system

The purpose of the surveillance/early warning and response system is to detect disease outbreaks and monitor epidemic-prone diseases. Rapid detection of cases of epidemic-prone diseases is essential to ensure rapid control. The surveillance/early warning and response system should:

- include **outbreak preparedness**, with development of specific outbreak response plans and adequate stockpile of supplies for interventions including outbreak investigation kits;
- complement **existing surveillance structures** and ensure prompt investigation of reports of epidemic-prone diseases;
- be sensitive to unusual emerging and re-emerging communicable diseases of major public concern;
- identify key **laboratories** for prompt diagnosis and confirmation of the main communicable disease threats, as well as protocols for transport and tracking of specimens;
- ensure that data is forwarded to the local public health authorities.

### 3.6 Immunization

- A single suspected **measles** case is sufficient to prompt the immediate implementation of mass immunization activities to control measles. Children whose vaccination status is uncertain should also receive measles vaccine.
- As the emergency situation stabilizes, vaccinations routinely offered by the national immunization programme should be made available as part of the provision of basic emergency health-care services. Provisions should be made to identify and immunize those who missed routine doses.
- Although vaccine can be used to control outbreaks in certain circumstances, **hepatitis A** vaccine is not recommended to prevent outbreaks in the affected population. Vaccination efforts should always be supplemented with health education and improved sanitation.
- Mass **tetanus vaccination** programmes to prevent disease are not indicated. Tetanus vaccine (WHO recommends combination with a reduced diphtheria toxoid vaccine or Td) AND tetanus immune globulin (TIG) are indicated for those with open wounds/lacerations who have never been vaccinated. TIG is indicated for previously vaccinated people who sustain wounds/lacerations (e.g. clean-up workers) depending on their tetanus immunization history.
- **Typhoid vaccination**, in conjunction with other preventive measures, may be useful to control typhoid outbreaks depending on local circumstances.
- **Oral cholera vaccines (OCV)**. The decision to use OCV in emergency-affected populations should be guided using a recently published WHO risk assessment tool (see section 4, Diarrhoeal diseases). Current recommendations state that OCV should not be used once an outbreak has started or if basic public health priorities are not covered.
- Special attention should be paid to the safe management and disposal of waste from immunization activities to prevent the transmission of blood-borne pathogens.

### 3.7 Vector control and personal protection

- Long-lasting insecticidal mosquito nets (LLIN) should be made universally available (one net per two people), with highest priority given to pregnant women and children aged <5 years.
- Refuse must be collected and appropriately disposed of to discourage rodent vector and fly breeding.
- Water storage containers should be enclosed or covered with mosquito-proof lids.

### 3.8 Health education: basic messages

In the current crisis in China, it may not be possible to implement all of the following recommendations. More detailed advice is available in the *Guidelines for control of shigellosis*, see section 4, Diarrhoeal diseases.

### **Safe water**

- Even if it looks clear, water can contain germs.
- Add drops of chlorine to the water, or boil, before drinking.
- 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, attached to the container.

### **Promote good hygienic practice**

- Wash hands with soap:
  - before cooking, before eating and before feeding children;
  - after using the latrine or cleaning children after they have used the latrine;
  - wash all parts of hands – front, back, between the fingers and under the nails.
- Minimum of 250 g of soap should be available per person per month.
- Use the latrine to defecate.
- Keep latrines clean.
- Promote recommended respiratory etiquette.

### **Water sources**

- Do not defecate or urinate in or near a source of drinking-water.
- Do not wash yourself, your clothes, or your pots and utensils in the source or the site dedicated for fetching drinking-water (stream, river or water hole).
- Open wells must be covered when not in use to avoid contamination.
- Buckets used to collect water should be hung up when not in use – they must not be left on a dirty surface.
- The area surrounding a well or a hand pump must be kept as clean as possible.
- Do not allow refuse and stagnant water to collect around a water source.

### **Avoid mosquito bites**

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

### **Safe food**

- The risk of disease transmission through food preparation can be minimized by adhering (as closely as practicable) to the following recommendations.
- Water should be considered to be contaminated and made safe through boiling or treatment with chlorine before it is consumed or used in food.
- Safe food is particularly important for infants, pregnant women and the elderly who are most susceptible to foodborne diseases.
- Keep clean: wash hands and sanitize equipment used for food preparation, and keep people with symptoms of disease away from food preparation areas.
- Separate raw and cooked food and never use the same equipment for raw foods and foods that are ready-to-eat, unless such equipment has been sanitized.
- Cook thoroughly until food is steaming hot, and eat cooked food immediately.
- Use safe water to cook vegetables, and peel fruits that are eaten raw; discard damaged, spoiled or mouldy food.

- “COOK IT – PEEL IT – OR LEAVE IT”.
- Do not allow sick animals or animals found dead to enter the food chain.

**Seek treatment early**

- Early diagnosis and treatment diarrhoea (within 24 hours of onset).
- Diagnosis and treatment of high or prolonged fever
- If diarrhoea, a solution of oral rehydration salts made with safe (boiled or chlorinated) water should be consumed and treatment sought at a health centre.

## 4. Information Sources

### WHO headquarters/WHO Regional Office for the Western Pacific/WPRO

Communicable Disease Surveillance and Response, WHO/WPRO

<http://www.wpro.who.int/sites/csr/overview.htm>

Disease control in humanitarian emergencies (DCE), WHO/HQ

[http://www.who.int/diseasecontrol\\_emergencies/en/](http://www.who.int/diseasecontrol_emergencies/en/)

Health Action in Crises (HAC), WHO/HQ

<http://www.who.int/hac/en/>

### Avian and Pandemic Influenza

Avian influenza

[http://www.who.int/topics/avian\\_influenza/en/](http://www.who.int/topics/avian_influenza/en/)

*Pandemic influenza preparedness and mitigation in refugee and displaced populations. Second edition*  
May 2008. (pdf -550 kb)

[http://www.who.int/diseasecontrol\\_emergencies/WHO\\_HSE\\_EPR\\_DCE\\_2008\\_3web.pdf](http://www.who.int/diseasecontrol_emergencies/WHO_HSE_EPR_DCE_2008_3web.pdf)

### Child health in emergencies

Emergencies documents

[http://www.who.int/child\\_adolescent\\_health/documents/emergencies/en/index.html](http://www.who.int/child_adolescent_health/documents/emergencies/en/index.html)

Pocket book of Hospital care for children

[http://www.who.int/child\\_adolescent\\_health/documents/9241546700/en/index.html](http://www.who.int/child_adolescent_health/documents/9241546700/en/index.html)

Acute respiratory tract infections in children

[http://www.who.int/fch/depts/cah/resp\\_infections/en/](http://www.who.int/fch/depts/cah/resp_infections/en/)

*IMCI Chart Booklet* (WHO; UNICEF, 2006)

[http://www.who.int/child\\_adolescent\\_health/documents/IMCI\\_chartbooklet/en/index.html](http://www.who.int/child_adolescent_health/documents/IMCI_chartbooklet/en/index.html)

### Dengue

*Dengue haemorrhagic fever: diagnosis, treatment, prevention and control.* 2nd edition. Geneva, World Health Organization, 1997.

<http://www.who.int/csr/resources/publications/dengue/Denguepublication/en/>

*Guidelines for treatment of dengue fever and dengue haemorrhagic fever in small hospitals,* New Delhi, World Health Organization, WHO Regional Office for South-East Asia, 1999 (PDF-255 kb)

[http://www.searo.who.int/LinkFiles/Dengue\\_Guideline-dengue.pdf](http://www.searo.who.int/LinkFiles/Dengue_Guideline-dengue.pdf)

Dengue haemorrhagic fever: early recognition, diagnosis and hospital management an audiovisual guide for health-care workers responding to outbreaks. (WHO/CDS/EPR/2006.4).

[http://www.who.int/csr/about/what\\_we\\_do/films/en/index.html](http://www.who.int/csr/about/what_we_do/films/en/index.html)

### Diarrhoeal diseases

*Acute diarrhoeal diseases in complex emergencies: critical steps.*

[http://www.who.int/cholera/publications/critical\\_steps/](http://www.who.int/cholera/publications/critical_steps/)

*Cholera outbreak: assessing the outbreak response and improving preparedness*

[http://www.who.int/cholera/publications/cholera\\_outbreak/](http://www.who.int/cholera/publications/cholera_outbreak/)

*First steps for managing an outbreak of acute diarrhoea.*

[http://www.who.int/cholera/publications/first\\_steps/](http://www.who.int/cholera/publications/first_steps/)

*Guidelines for the control of shigellosis, including epidemics due to Shigella dysenteriae type 1*

<http://www.who.int/topics/cholera/publications/shigellosis/>

*Oral cholera vaccine use in complex emergencies: What next?* Report of a WHO meeting. Cairo, Egypt, 14–16 December 2005. [pdf-3200kb]

[http://www.who.int/cholera/publications/cholera\\_vaccines\\_emergencies\\_2005.pdf](http://www.who.int/cholera/publications/cholera_vaccines_emergencies_2005.pdf)

*Background document: the diagnosis, treatment, and prevention of typhoid fever* (WHO, 2003) [pdf-230kb]

[http://whqlibdoc.who.int/hq/2003/WHO\\_V&B\\_03.07.pdf](http://whqlibdoc.who.int/hq/2003/WHO_V&B_03.07.pdf)

## **Drug Donations**

*Guidelines for Drug Donations* (WHO, revised 1999) [pdf-270kb]

[http://whqlibdoc.who.int/hq/1999/WHO\\_EDM\\_PAR\\_99.4.pdf](http://whqlibdoc.who.int/hq/1999/WHO_EDM_PAR_99.4.pdf)

## **Environmental health in emergencies**

*Guidelines for drinking-water quality, third edition, incorporating first addendum*

[http://www.who.int/water\\_sanitation\\_health/dwq/gdwq3rev/en/index.html](http://www.who.int/water_sanitation_health/dwq/gdwq3rev/en/index.html)

*Environmental health in emergencies and disasters: a practical guide*

[http://www.who.int/water\\_sanitation\\_health/emergencies/emergencies2002/en/index.html](http://www.who.int/water_sanitation_health/emergencies/emergencies2002/en/index.html)

*WHO Technical notes for emergencies*

[http://www.who.int/water\\_sanitation\\_health/hygiene/envsan/technotes/en/index.html](http://www.who.int/water_sanitation_health/hygiene/envsan/technotes/en/index.html)

*Frequently asked questions in case of emergencies*

[http://www.who.int/water\\_sanitation\\_health/emergencies/qa/en/index.html](http://www.who.int/water_sanitation_health/emergencies/qa/en/index.html)

*Four steps for the sound management of health-care waste in emergencies*

<http://www.healthcarewaste.org/en/documents.html?id=184&suiwant=25>

## **Food safety**

*Ensuring food safety in the aftermath of natural disasters*

[http://www.who.int/foodsafety/foodborne\\_disease/emergency/en/](http://www.who.int/foodsafety/foodborne_disease/emergency/en/)

5 Keys to safer food : simple advice to consumers and food handlers

<http://www.who.int/foodsafety/consumer/5keys/en/index.html>

*Guideline for the safe preparation, storage and handling of powdered infant formula* (WHO, 2007)

<http://www.who.int/foodsafety/publications/micro/pif2007/en/index.html>

## **Gender & Gender-Based Violence**

*IASC Guidelines for Gender-based Violence Interventions in Humanitarian Settings* (2005) [pdf-1900kb]

[http://www.humanitarianinfo.org/iasc/content/products/docs/tfgender\\_GBVGuidelines2005.pdf](http://www.humanitarianinfo.org/iasc/content/products/docs/tfgender_GBVGuidelines2005.pdf)

*IASC Gender Handbook in Humanitarian Action Women, Girls, Boys and Men Different Needs – Equal Opportunities* (2006) [pdf-3200kb]

[http://www.humanitarianinfo.org/iasc/content/documents/subsidi/tf\\_gender/IASC%20Gender%20Handbook%20\(Feb%202007\).pdf](http://www.humanitarianinfo.org/iasc/content/documents/subsidi/tf_gender/IASC%20Gender%20Handbook%20(Feb%202007).pdf)

*WHO/UNHCR Clinical management of rape survivors: Developing protocols for use with refugees and internally displaced persons. 2004 - Revised edition*

[http://www.who.int/reproductive-health/publications/clinical\\_mngt\\_rapesurvivors/](http://www.who.int/reproductive-health/publications/clinical_mngt_rapesurvivors/)

## **Hepatitis**

Hepatitis A

<http://www.who.int/csr/disease/hepatitis/whocdscsredc2007/en/>

Hepatitis E

<http://www.who.int/csr/disease/hepatitis/whocdscsredc200112/en/>

<http://www.who.int/mediacentre/factsheets/fs280/en/>

## **HIV/AIDS**

*Guidelines for HIV/AIDS interventions in emergency settings: Interagency Standing Committee guidelines*

[www.who.int/3by5/publications/documents/iasc/en/](http://www.who.int/3by5/publications/documents/iasc/en/)

## **Japanese Encephalitis**

*Japanese Encephalitis clinical care guidelines* (2005) [pdf-461kb]

[http://www.path.org/vaccineresources/files/JE\\_clinical\\_care\\_guidelines\\_PATH.pdf](http://www.path.org/vaccineresources/files/JE_clinical_care_guidelines_PATH.pdf)

## **Laboratory specimen collection**

*Guidelines for the collection of clinical specimens during field investigation of outbreaks* (WHO, 2002)

[http://www.who.int/csr/resources/publications/surveillance/WHO\\_CDS\\_CSR\\_EDC\\_2000\\_4/en/](http://www.who.int/csr/resources/publications/surveillance/WHO_CDS_CSR_EDC_2000_4/en/)

## **Leishmaniasis**

<http://www.who.int/leishmaniasis/en/>

## **Leptospirosis**

[http://www.who.int/water\\_sanitation\\_health/diseases/leptospirosis/en/](http://www.who.int/water_sanitation_health/diseases/leptospirosis/en/)

## **Malaria**

Global Malaria Programme: Epidemics and emergencies

<http://www.who.int/malaria/epidemicsandemergencies.html>

*Malaria control in complex emergencies. An inter-agency field handbook* (2005) [pdf-1500kb]

[http://www.who.int/malaria/docs/ce\\_interagencyfbook.pdf](http://www.who.int/malaria/docs/ce_interagencyfbook.pdf)

## **Malnutrition**

Nutrition in emergencies publications

[http://www.who.int/nutrition/publications/nut\\_emergencies/en/](http://www.who.int/nutrition/publications/nut_emergencies/en/)

*Communicable diseases and severe food shortage situations* (WHO, 2005) [pdf-250kb]

[http://www.who.int/diseasecontrol\\_emergencies/guidelines/Severe\\_food\\_shortages.pdf](http://www.who.int/diseasecontrol_emergencies/guidelines/Severe_food_shortages.pdf)

*The management of nutrition in major emergencies.*(WHO, 2000) [pdf-12 800kb]

<http://whqlibdoc.who.int/publications/2000/9241545208.pdf>

*Infant feeding in emergencies - guidance for relief workers in Myanmar and China*

[http://www.who.int/child\\_adolescent\\_health/news/2008/13\\_05/en/index.html](http://www.who.int/child_adolescent_health/news/2008/13_05/en/index.html)

*Guidelines for the inpatient treatment of severely malnourished children* (2003) [pdf-400kb]

[http://www.who.int/nutrition/publications/guide\\_inpatient\\_text.pdf](http://www.who.int/nutrition/publications/guide_inpatient_text.pdf)

Community-based management of severe malnutrition

[http://www.who.int/nutrition/topics/comm\\_based\\_malnutrition/en/index.html](http://www.who.int/nutrition/topics/comm_based_malnutrition/en/index.html)

*Management of the child with a serious infection or severe malnutrition: guidelines at first referral level in developing countries*

[http://www.who.int/child\\_adolescent\\_health/documents/fch\\_cah\\_00\\_1/en/index.html](http://www.who.int/child_adolescent_health/documents/fch_cah_00_1/en/index.html)

*Guiding principles for feeding infants and young children during emergencies* (WHO, 2004) [pdf-1800kb]

[http://www.who.int/nutrition/publications/guiding\\_principles\\_feedchildren\\_emergencies.pdf](http://www.who.int/nutrition/publications/guiding_principles_feedchildren_emergencies.pdf)

*Infant and Young Child Feeding in Emergencies. Operational guidance for emergency relief staff and programme managers* (IFE, 2007) [pdf-870kb]

<http://www.enonline.net/pool/files/ife/ops-guidance-2-1-english-010307.pdf>

## **Management of dead bodies**

*Management of dead bodies after disasters: a field manual for first responders* (2006) [pdf-1100kb]

<http://www.paho.org/english/dd/ped/DeadBodiesFieldManual.pdf>

*Management of dead bodies in disaster situations* (WHO, 2004) [pdf-780kb]

<http://www.paho.org/english/DD/PED/DeadBodiesBook.pdf>

## **Measles**

WHO/UNICEF Joint Statement on reducing measles mortality in emergencies

[http://whqlibdoc.who.int/hq/2004/WHO\\_V&B\\_04.03.pdf](http://whqlibdoc.who.int/hq/2004/WHO_V&B_04.03.pdf)

WHO measles information

<http://www.who.int/immunization/topics/measles/en/index.html>

Measles fact sheet

<http://www.who.int/mediacentre/factsheets/fs286/en/>

## **Medical waste in emergencies**

[http://www.who.int/water\\_sanitation\\_health/medicalwaste/emergmedwaste/en/](http://www.who.int/water_sanitation_health/medicalwaste/emergmedwaste/en/)

*Guidelines for Safe Disposal of Unwanted Pharmaceuticals in and after Emergencies* (WHO, 1999)

<http://www.healthcarewaste.org/en/documents.html?id=15&suiwant=16>

*Four steps for the sound management of health-care waste in emergencies* (WHO, 2005)

<http://www.healthcarewaste.org/en/documents.html?id=184&suiwant=8>

## **Mental health in emergencies**

Mental health in emergencies

[http://www.who.int/mental\\_health/resources/emergencies/en/index.html](http://www.who.int/mental_health/resources/emergencies/en/index.html)

*IASC Guidelines on Mental Health and Psychosocial support in Emergency settings* (2007) [pdf-800kb]

<http://www.humanitarianinfo.org/iasc/content/products/docs/Guidelines%20IASC%20Mental%20Health%20Psychosocial.pdf>

## **Meningitis**

*Control of epidemic meningococcal disease. WHO practical guideline*, 2nd edition (WHO, 1998)

[http://www.who.int/csr/resources/publications/meningitis/WHO\\_EM\\_C\\_BAC\\_98\\_3\\_EN/en/](http://www.who.int/csr/resources/publications/meningitis/WHO_EM_C_BAC_98_3_EN/en/)

## **Outbreak Communications**

*WHO Outbreak communication guidelines*

[http://www.who.int/csr/resources/publications/WHO\\_CDS\\_2005\\_28/en/index.html](http://www.who.int/csr/resources/publications/WHO_CDS_2005_28/en/index.html)

## **Polio**

WHO-recommended surveillance standard of poliomyelitis

[http://www.who.int/immunization\\_monitoring/diseases/poliomyelitis\\_surveillance/en/index.html](http://www.who.int/immunization_monitoring/diseases/poliomyelitis_surveillance/en/index.html)

## **Surgery - emergency surgical care**

*Integrated Management of Essential and Emergency Surgical Care (IMEESC) tool kit*

<http://www.who.int/surgery/publications/imeesc/en/index.html>

## **Travel advice**

*Guide on Safe Food for Travellers*

<http://www.who.int/foodsafety/publications/consumer/travellers/en/index.html>

*International Travel and Health* (2008)

<http://www.who.int/ith/en/>

## **Tuberculosis**

*Tuberculosis care and control in refugee and displaced populations. An interagency field manual* (2007). [pdf-960kb]

[http://whqlibdoc.who.int/publications/2007/9789241595421\\_eng.pdf](http://whqlibdoc.who.int/publications/2007/9789241595421_eng.pdf).

## **Vaccines and biologicals**

<http://www.who.int/immunization/en/>

## **Vector control**

Integrated vector management

<http://www.who.int/malaria/integratedvectormanagement.html>

Malaria vector control

<http://www.who.int/malaria/vectorcontrol.html>

*Pesticides and their application for the control of vectors and pests of public health importance* (2006)

[http://whqlibdoc.who.int/hq/2006/WHO\\_CDS\\_NTD\\_WHOPEP\\_GCDPP\\_2006.1\\_eng.pdf](http://whqlibdoc.who.int/hq/2006/WHO_CDS_NTD_WHOPEP_GCDPP_2006.1_eng.pdf)

## **Wounds and Injuries**

*Prevention and management of wound infection* [pdf-40kb]

<http://www.who.int/hac/techguidance/tools/Prevention%20and%20management%20of%20wound%20infection.pdf>

*Integrated Management of Essential and Emergency Surgical Care (IMEESC) tool kit*

<http://www.who.int/surgery/publications/imeesc/en/index.html>

– *Best Practice Guidelines on Emergency Surgical Care in Disaster Situations* [pdf-2254kb]

<http://www.who.int/surgery/publications/BestPracticeGuidelinesonESCinDisasters.pdf>

– *WHO generic essential emergency equipment list* [pdf-111kb]

<http://www.who.int/surgery/publications/EEEGenericListFormatted%2006.pdf>

## **Zoonotic diseases**

<http://www.who.int/zoonoses/resources/en/>

## 5. WHO-RECOMMENDED CASE DEFINITIONS

### ACUTE DIARRHOEA

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

### SUSPECTED CHOLERA

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

**In an area where there is a cholera outbreak:** a person aged >5 years with acute watery diarrhoea with or without vomiting.

### **To confirm a case of cholera:**

Isolation of *Vibrio cholera* O1 or O139 from a diarrhoeal stool sample (or rectal swab).

### BLOODY DIARRHOEA

Acute diarrhoea with visible blood in the stool.

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

### ACUTE FLACCID PARALYSIS (SUSPECTED POLIOMYELITIS)

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

### ACUTE HAEMORRHAGIC FEVER SYNDROME

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

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

### ACUTE JAUNDICE SYNDROME

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

### ACUTE LOWER RESPIRATORY TRACT INFECTIONS/ PNEUMONIA IN CHILDREN AGED <5 YEARS

Cough or difficulty breathing

**and**

Breathing 50 or more times per minute for infants aged 2 months to 1 year

Breathing 40 or more times per minute for children aged 1 to 5 years

**and**

No chest indrawing, no stridor, no general danger signs.

*Note: Severe pneumonia* = cough or difficulty breathing + **one or more of the following** (inability to drink or breast feed, severe vomiting, convulsions, lethargy or unconsciousness) or chest indrawing or stridor in a otherwise calm child

### MALARIA

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



*In children*

Uncomplicated malaria

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

Severe malaria

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

**MEASLES**

Fever **and** maculopapular rash (i.e. non-vesicular) **and** cough, coryza (i.e. runny nose) or conjunctivitis (i.e. red eyes).

**or**

Any person in whom a clinical health worker suspects measles infection.

**To confirm a case of measles:**

Presence of measles-specific IgM antibodies.

**MENINGITIS**

*Suspected case*

Sudden onset of fever (>38.5 °C) with stiff neck.

In patients aged ≤12 months, a suspected case of meningitis occurs when fever is accompanied by a bulging fontanelle.

*Probable case of bacterial meningitis*

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

*Probable case of meningococcal meningitis*

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

*Confirmed case of meningococcal meningitis*

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

**TETANUS**

*Adult tetanus*

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

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

*Neonatal tetanus*

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

**UNEXPLAINED FEVER**

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

**UNEXPLAINED CLUSTER OF HEALTH EVENTS**

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