

Communicable disease risk assessment and interventions

Flooding disaster: Horn of Africa

December 2006



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Preface

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

The endemic and epidemic-prone diseases outlined have been selected on the basis of the burden of morbidity and mortality in the region, 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. It is hoped that this document will facilitate the coordination of communicable disease control activities between all agencies working with flood affected populations..

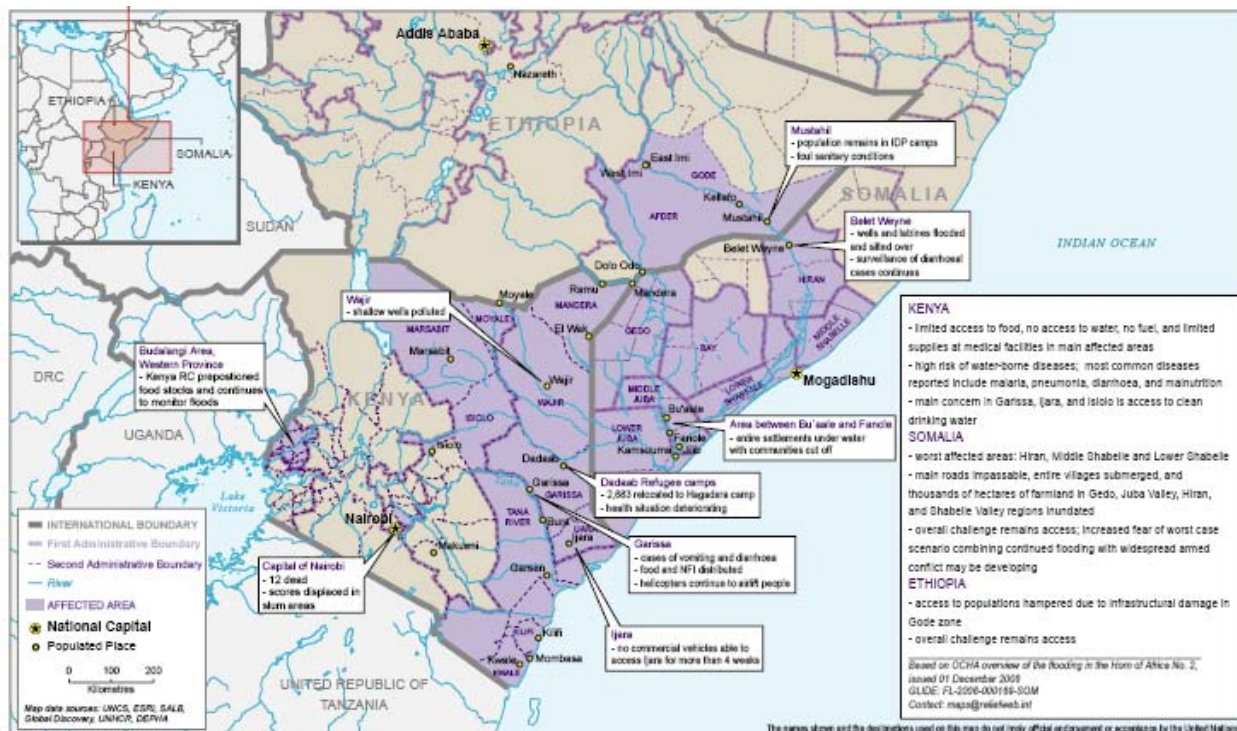
1. Introduction

1.1 Background

Unusually heavy rains during October and November have turned large parts of the Horn of Africa into flood disaster areas, resulting in death, massive population displacement, and loss of livelihoods and assets, particularly in Ethiopia, Kenya and Somalia. An estimated 1.5–1.8 million people are affected (Map 1).

The emergency response is being mounted by governments in the affected countries, United Nations agencies, nongovernmental organizations and other humanitarian partners, but the delivery of lifesaving supplies is obstructed by damaged or destroyed infrastructure, lack of fuel, ongoing security risks and continuing heavy rains in the region. The combination of a moderate El Niño effect and sea surface temperatures over the Indian Ocean favours heavy rains and continued flooding until early 2007.

Map 1 Areas affected by flood disaster, Horn of Africa, December 2006



Source: Created by the ReliefWeb Map Centre, United Nations Office for the Coordination of Humanitarian Affairs. The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

1.2 Risk factors

The following risk factors contribute to an increase in the burden of communicable diseases:

- **Interruption of safe water and sanitation supplies.** The populations displaced by flooding are at immediate and high risk of **waterborne diseases** from ongoing pre-flood outbreaks.
- **Population displacement with overcrowding.** Populations in the affected areas are at immediate and high risk for transmission of **measles**, **meningitis** and **poliomyelitis** and at increased incidence of **acute respiratory infections**.
- **Vector breeding.** Flooding can result in the proliferation of vector breeding sites, increasing the medium-term (weeks to months) risk of **malaria**, as well as **dengue** and other endemic arboviruses such as **Rift Valley fever**.
- **Poor access to health services**, as health infrastructure has been destroyed or overwhelmed, is of immediate concern.

- **Malnutrition and communicable disease transmission.** As a result of preceding droughts, the flood-affected populations have experienced ongoing severe food shortages and high rates of malnutrition. Malnutrition results in the compromise of natural immunity, leading to more frequent, severe and prolonged episodes of infections. In addition, severe malnutrition often masks symptoms and signs of communicable diseases, making prompt clinical diagnosis and early treatment very difficult.

Annex 1 summarizes the priority communicable diseases in Ethiopia and Somalia.

2. Priority communicable diseases

2.1 Waterborne and foodborne diseases

The populations affected by the flooding in the Horn of Africa region are at **immediate risk** from ongoing pre-flood outbreaks of waterborne and foodborne diseases. Population displacement, crowding and lack of access to safe water, adequate toilet facilities, and safe food preparation and handling practices are associated with transmission. Usual water sources can become unsafe for drinking due to incursion of flood waters, faecal contamination due to overflow of latrines and inadequate sanitation, contamination by dead animals, upstream contamination if water sources are interconnected, as well as potential mixing of saltwater and freshwater in coastal areas.

A **cholera** outbreak is currently ongoing in Kenya. An outbreak of **acute watery diarrhoea** in Ethiopia with confirmed *Vibrio cholerae* is also ongoing, with reports of almost 40 000 cases and more than 400 deaths. In Somalia, diarrhoeal diseases accounted for up to 40% of outpatient visits before the recent flooding. Cases of cholera have been confirmed in Jilib and Marare, Somalia.

In addition, an increased risk of further waterborne disease outbreaks is present, i.e. **typhoid fever**, **shigellosis**, and **hepatitis A and E** related to unsafe drinking-water and inadequate sanitation. **Leptospirosis** is freshwater-borne and is associated with flooding and the crowding of rodents and humans on shared dry ground.

2.2 Vector-borne diseases

Plasmodium falciparum **malaria** is endemic in the flood-affected areas of Ethiopia, Kenya and Somalia. *P. vivax* is also present, mainly in Ethiopia. These areas experience seasonal epidemics of malaria, and populations will be at increased risk due to the proliferation of vector breeding sites secondary to flooding. Rapid needs assessment by the national malaria control programmes in Ethiopia and Kenya are ongoing.

An outbreak (89 000 estimated cases) of **Rift Valley fever** occurred following flooding in the north-eastern province of Kenya and in southern Somalia in 1997–1998. Heavy rains and flooding can allow breeding of the mosquito vectors implicated in transmission to humans. Rift Valley fever is a zoonotic disease, and die-offs of animals can precede human cases. Transmission to humans can also occur by contact with blood or body fluid from viraemic animals.

Visceral leishmaniasis (Kala-Azar) cases have recently been reported from the Wajir district of northern Kenya. Population displacement may increase the risk of exposure to the phlebotomine sand fly vector, although symptoms may not occur for weeks to months following exposure.

Dengue and **yellow fever** are endemic in the affected areas, with Ethiopia and Kenya at particular risk of yellow fever outbreaks. Risk of transmission is increased among people living in inadequate shelters and/or overcrowded conditions, particularly where fresh water is stored in unprotected water containers and rainfall collects in other artificial containers, allowing mosquito vectors to proliferate.

2.3 Diseases associated with crowding

Population displacement as a result of flooding can result in crowding in resettlement areas, raising the risk of transmission of certain communicable diseases. **Measles** (see vaccine-preventable diseases), **acute respiratory infections** and **meningococcal disease** are transmitted from person to person, and risk is increased in situations of forced relocation to shared areas of high ground, often with inadequate shelter. There is currently an outbreak of meningococcal **meningitis** in Ethiopia. Crowding can also increase the risk of waterborne and vector-borne diseases.

2.4 Vaccine-preventable diseases and routine immunization coverage

There is currently ongoing **measles** transmission in all three affected countries. National measles vaccination coverage is suboptimal to prevent transmission among the population of the affected countries. Measles cases and outbreaks were reported before the flooding disaster and there is immediate risk for continued outbreaks.

There are also ongoing **poliomyelitis** outbreaks in Ethiopia, Kenya and Somalia. Coverage levels for other antigens, including **tetanus** and **diphtheria**, are below those recommended by WHO (Table 1).

Table 1 Vaccination coverage, by country, 2005

Antigen (% coverage)^a	Kenya	Ethiopia	Somalia
BCG	85	67	50
Diphtheria–tetanus–pertussis, 3rd dose	76	69	35
Hepatitis B, 3rd dose	76	–	–
<i>Haemophilus influenzae</i> type b, 3rd dose	76	–	–
MCV (measles-containing vaccine)	69	59	35
Poliomyelitis, 3rd dose	70	66	35

^a Official country estimates reported to WHO/UNICEF, as of 21 November 2006.

2.5 Recent communicable disease outbreaks in Ethiopia, Kenya and Somalia

Outbreaks of **polio**, **measles**, **meningococcal disease** and **cholera** are currently ongoing in the countries affected by the flooding. Displaced populations will face immediate and ongoing risks from these diseases.

From 1 January 2001 to 21 November 2006, WHO headquarters identified 67 outbreaks of potential international concern from a variety of information sources. WHO requested further information on all of these events and received official information for 50; 17 of the 67 events were NOT outbreaks. A summary of the 50 verified outbreaks is presented below. Of these 50 verified outbreaks of international concern, at least 25 (**50%**) are due to waterborne diseases (Table 2).

Table 2 Outbreaks of potential international concern verified by WHO headquarters, 1 January 2001 – 21 November 2006

Outbreak	No. of outbreaks reported	Countries affected, (no. of outbreaks)
Waterborne diseases		
Cholera	11	Kenya (5), Somalia (6)
Acute watery diarrhoeal syndrome	6	Ethiopia (2), Kenya (2), Somalia (2)
Acute diarrhoeal syndrome	4	Ethiopia (1), Kenya (2) Somalia (1)
Typhoid fever	4	Kenya
Leptospirosis	1	Kenya
Diseases related to crowding		
Meningococcal disease	4	Ethiopia (2), Kenya (1), Somalia (1)
Measles	2	Kenya
Poliomyelitis (also waterborne)	3	Ethiopia (1), Kenya (1), Somalia (1)
Vector-borne diseases		
Malaria	4	Kenya (2), Ethiopia (2)
Other diseases		
Acute haemorrhagic fever syndrome	1	Somalia
Acute fever and rash syndrome	2	Kenya
Plant intoxication (ergot poisoning)	1	Ethiopia
Anthrax	2	Kenya (1), Ethiopia (1)
Acute jaundice syndrome	1	Ethiopia
Aflatoxicosis	2	Kenya
Acute febrile syndrome	1	Kenya
Chemical incident	1	Somalia

Data source: WHO/CDS – Alert and Response Operations, 21 November 2006.

2.6 Other risks

1. When an emergency develops, people are subjected to situations that are known to substantially increase their **risk of contracting HIV**. Massive displacement of people from their homes; women and children left to fend for themselves; social services overwhelmed or destroyed; and a lack of information and means to prevent HIV infection, such as clean needles, safe blood transfusions and availability of condoms, occurs. Disasters can create chaotic conditions that accelerate the spread of HIV. Efforts should be made to ensure that **HIV/AIDS** patients receiving antiretroviral therapy do not have their treatment interrupted.
2. **Tuberculosis (TB)** transmission may also increase, particularly if treatment is interrupted for more than two weeks. Interventions for TB, however, can be addressed once emergency and basic health care are re-established.
3. **Injuries** sustained through navigating floodwaters, displacement of hazards, or by virtue of near drowning are likely to be a factor. Their management may be complicated by greater delays in presenting for care and limited access of skilled personnel to the affected areas.

Table 3 summarizes the communicable disease risks in flood-affected populations in the Horn of Africa region.

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Communicable disease risk assessment and interventions. Flooding disaster: Horn of Africa – December 2006

Table 3 Summary of immediate and medium-term risk of communicable diseases in flood-affected populations, Horn of Africa, November 2006

Communicable disease	Of immediate concern following floods	Of medium-term concern (weeks to months) following floods
Acute respiratory tract infections/pneumonia	+++	++
Chikungunya		++
Cholera	+++	++
Dengue fever		++
Hepatitis A and E	++	
HIV/AIDS/sexually transmitted infections		++
Influenza (seasonal)	+	
Leishmaniasis (visceral)		++
Leptospirosis	++	
Malaria	+++ (current season)	+++
Measles	+++	++
Meningitis	+++	
Poliomyelitis	+++	++
Rift Valley fever		+++
Shigellosis	+++	++
Tuberculosis		++
Typhoid fever	+++	++
Yellow fever		+++

Key: + = low risk ++ = moderate risk +++ = high risk

3. Immediate interventions for communicable disease control

3.1 Water and sanitation

- Ensuring uninterrupted provision of safe drinking-water is the most important preventive measure to reduce the risk of outbreaks of waterborne diseases.
- UNHCR, WHO and SPHERE recommend that each person be supplied with **at least 20 litres** of clean water per day.
- Free **chlorine is the most widely available, easily used** – and the most affordable – of the drinking-water disinfectants. 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 has to be determined for each situation. After 30 minutes, the residual concentration of active chlorine in the water should be between 0.2–0.5 mg/litre, which can be determined by using a special 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.
- 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 placed with sufficient space between them and, in accordance with international guidelines, aimed at preventing diseases related to overcrowding, such as measles, respiratory infections, 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.

3.3 Safe food preparation

- Water should be treated as contaminated, and boiled or made safe through treatment with chlorine before it is consumed or used in food.
- Health education targeting the general population should include simple measures related to food preparation (see health education section).
- Safe food is particularly important for infants, pregnant women and the elderly, who are most susceptible to foodborne diseases.

3.4 Case management

- Heightened community awareness of the need for **early treatment** and reinforcement of **proper case management** is important in reducing the impact of communicable diseases.
- The use of **standard treatment protocols** in health facilities with agreed upon first-line drugs is crucial to ensure effective diagnosis and treatment for acute respiratory infections, main epidemic-prone diseases (including dysentery, typhoid, hepatitis, measles, malaria, meningitis) and sexually transmitted infections. Artemisinin-based combination therapy is recommended for treatment of falciparum malaria. National protocol recommends artemether–lumefantrine as the first-line treatment for falciparum malaria in Ethiopia and Kenya, and artesunate–sulfadoxine/pyrimethamine in Somalia.
- Standard **infection control practices** in accordance with national protocols should also be in place.

3.5 Surveillance/early warning and response system

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

- focus on the **priority epidemic-prone communicable diseases** most likely to occur in the flood-affected population;
- be simple, used uniformly and include **standard case definitions** and reporting forms (see section 6 for WHO case definitions);
- include **preparedness plans** for outbreak response, including outbreak investigation kits and an adequate stockpile of supplies for intervention;
- 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;
- data should be forwarded to the local ministry of health authorities and the WHO office.

3.6 Immunization

- In crowded or camp settings, vaccination using a **measles-containing vaccine**, together with **vitamin A supplementation**, is an immediate priority health intervention. All children aged 6 months to 14 years should receive measles vaccine, regardless of previous vaccination or disease history.
- Outside of crowded/camp settings, a single suspected measles case is sufficient to prompt the immediate implementation of measles control activities. Measles vaccine, together with vitamin A, should be made available immediately to all previously unvaccinated infants and children aged 6 to 59 months. Infants and children whose vaccination status is uncertain should also receive measles vaccine.
- Given ongoing **poliomyelitis** transmission in the area, every opportunity should be taken to give **oral poliovirus vaccine** to all children less than 5 years of age, in conjunction with measles vaccination and vitamin A supplementation.
- When the situation stabilizes, vaccinations routinely offered by the national immunization programme should be made available to all infants, pregnant women and other people as part of the provision of basic emergency health-care services.
- 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 by health education and improved sanitation.
- Mass **tetanus vaccination** programmes to prevent disease are not indicated. Wounds or lacerations may occur from objects submerged in flood waters. Tetanus boosters may be indicated for previously vaccinated people who sustain open wounds and for other lacerations, 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. However, current recommendations state that OCV should not be used once an outbreak has started or if basic public health priorities are not covered.
- **Meningococcal and yellow fever vaccines**. Mass vaccination campaigns are key elements to limit the spread of the disease in case of outbreak. Global vaccine stockpiles for emergency situations are available. Requests should be sent to the *International Coordinating Group (ICG) on vaccine provision* in the event of an outbreak of these diseases, based upon an analysis of the epidemiological situation, pre-existing stocks in the country, planned intervention strategy and operational aspects of the outbreak response.

3.7 Vector control and personal protection

- Insecticide-treated bednets, preferably long-lasting insecticide-treated nets, should be made available, with priority given to pregnant women and children under 5 years of age.
- Indoor residual spraying should be instituted at the earliest opportunity, in accordance with WHO recommendations.
- Refuse must be collected and appropriately disposed of to discourage rodent vector breeding.
- Water storage containers should be enclosed or covered with mosquito-proof lids.

3.8 Health education: basic messages

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 cup or other utensil with a handle and which is attached to the container.

Promote good hygienic practice

- Wash hands with soap, ash or lime:
 - before cooking, before eating and before feeding children.
 - after using the latrine or cleaning children after they have used the latrine.
 - Wash all parts of hands – front, back, between the fingers and under the nails.
- 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 to fetch 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.
- Remove refuse and stagnant water around a water source.

Avoid mosquito bites

- Sleep under a mosquito net.
- 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 shelter.

Safe food

The risk of disease transmission through food preparation can be minimized by adhering (as closely as practicable) to the following recommendations:

- 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; 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.

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- Use safe water and raw materials, preferably cook vegetables and peel fruits that are eaten raw, discard damaged (flooded), 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 for fever and diarrhoea are vital (within 24 hours of onset).
- 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. Relevant publications

Guidelines published by WHO headquarters (WHO/HQ), WHO Regional Office for Africa (AFRO) and WHO Regional Office for the Eastern Mediterranean (EMRO)

Disease Control in Humanitarian Emergencies, WHO/HQ
http://www.who.int/diseasecontrol_emergencies/en/

Emergency Preparedness and Humanitarian Action, EMRO
<http://www.emro.who.int/eha/>

Division of Communicable Disease Prevention and Control, AFRO
<http://www.afro.who.int/ddc/index.html>

Health Action in Crises, WHO/HQ
<http://www.who.int/hac/en/>

Child health in emergencies

<http://www.who.int/child-adolescent-health/publications/pubemergencies.htm>

Dengue

Dengue haemorrhagic fever: diagnosis, treatment, prevention and control
<http://www.who.int/csr/resources/publications/dengue/Denguepublication/en/>

Guidelines for treatment of dengue fever and dengue haemorrhagic fever in small hospitals
http://w3.whosea.org/LinkFiles/Dengue_Guideline-dengue.pdf

Dengue haemorrhagic fever: early recognition, diagnosis and hospital management. An audiovisual guide for health-care workers responding to outbreaks
http://www.who.int/csr/don/archive/disease/dengue_fever/dengue.pdf

Diarrhoeal diseases

Acute diarrhoeal diseases in complex emergencies: critical steps
http://www.who.int/topics/cholera/publications/critical_steps/en/

Cholera outbreak: assessing the outbreak response and improving preparedness
http://www.who.int/topics/cholera/publications/cholera_outbreak/en/

First steps for managing an outbreak of acute diarrhoea
http://www.who.int/topics/cholera/publications/first_steps/en/

Environmental health in emergencies

http://www.who.int/water_sanitation_health/hygiene/emergencies/en/

Food safety

Ensuring food safety in the aftermath of natural disasters
http://www.who.int/foodsafety/foodborne_disease/emergency/en/

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

HIV/AIDS interventions in emergency settings: Interagency Standing Committee guidelines.
www.who.int/3by5/publications/documents/iasc/en/

Leptospirosis

http://www.who.int/water_sanitation_health/diseases/leptospirosis/en/

Leishmaniasis

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

Malaria

Malaria control in complex emergencies - An inter-agency field handbook.
http://www.who.int/malaria/docs/ce_interagencyfhbook.pdf
<http://www.who.int/malaria/epidemicsandemergencies.html>

Management of dead bodies

Management of dead bodies after disaster situations: A field manual for first responders

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

Management of dead bodies in disaster situations

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

Measles

WHO guidelines for epidemic preparedness and response to measles outbreaks:

http://www.who.int/csr/resources/publications/measles/WHO_CDS_CSR_ISR_99_1/en/

Medical waste in emergencies

http://www.who.int/water_sanitation_health/medicalwaste/emergmedwaste/en/

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

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

Mental health in emergencies

http://www.who.int/mental_health/resources/emergencies/en/index.html

Inter Agency Standing Committee (IASC) guidance is on mental health in emergencies – English, draft of May 2006

http://www.humanitarianinfo.org/iasc/content/documents/subsidi/tf_mhps/IASC%20guidance%20Peer%20review%20version.pdf

IASC guidance is on mental health in emergencies – French draft version of May 2006

http://www.humanitarianinfo.org/iasc/content/documents/subsidi/tf_mhps/La%20sant%20mentale%20et%20le%20soutien%20psychosocial%20%28%20IASC%20guidance%20Peer%20review%20version%29.pdf

Meningitis

Control of epidemic meningococcal disease. WHO practical guidelines

http://www.who.int/csr/resources/publications/meningitis/WHO_EM_C_BAC_98_3_EN/en/

Laboratory specimen collection

http://www.who.int/csr/resources/publications/surveillance/WHO_CDS_CSR_EDC_2000_4/en/

Pandemic influenza preparedness and mitigation in refugee and displaced populations

http://whqlibdoc.who.int/hq/2006/WHO_CDS_NTD_DCE_2006.2_eng.pdf

Rift Valley fever

<http://www.who.int/csr/disease/riftvalleyfev/en/index.html>

<http://www.cdc.gov/ncidod/dvrd/spb/mnpages/dispages/rvf.htm>

<http://www.geis.fhp.osd.mil/GEIS/SurveillanceActivities/RVFWeb/indexRVF.asp>

Travel advice

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

Vaccines and biologicals for emergencies

<http://www.who.int/vaccines/en/emergencies3.shtml>

Vector control

http://whqlibdoc.who.int/hq/2006/WHO_CDS_NTD_WHOPES_GCDPP_2006.1_eng.pdf

Yellow fever

http://www.who.int/csr/resources/publications/yellowfev/WHO_CDS_CSR_EDC_2000_2_EN/en/

Zoonotic diseases

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

5. WHO-recommended case definitions

ACUTE DIARRHOEA

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

Suspected cholera case:

In an area where cholera is not known to be present. Person aged over 5 years with severe dehydration or death from acute watery diarrhoea, with or without vomiting.

In an area where there is a cholera outbreak. Person aged over 5 years with acute watery diarrhoea, with or without vomiting

To confirm case of cholera:

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

BLOODY DIARRHOEA

Acute diarrhoea with visible blood in the stool.

To confirm case of epidemic bacillary dysentery:

Take 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 under 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 (less than 3 weeks' duration) 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 INFECTION / PNEUMONIA IN CHILDREN AGED <5 YEARS

Cough or difficult breathing

and

Breathing 50 or more times per minute for infants aged 2 months up 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 difficult breathing **plus** any general danger sign (unable to drink or breastfeed, vomits everything, convulsions, lethargy or unconsciousness) or chest indrawing or stridor in a calm child

MALARIA

Person with onset of 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, myalgia), 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 in children over 5 years of age.

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 case:

Presence of measles-specific IgM antibodies

MENINGITIS

Suspected meningitis case:

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

In patients under one year of age, a suspected case of meningitis occurs when fever is accompanied by a bulging fontanelle.

Probable bacterial meningitis case:

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

Probable meningococcal meningitis case:

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

Confirmed meningitis case:

Suspected or probable case, as defined above, with either positive CSF antigen detection for *Neisseria meningitidis* **or** positive culture of CSF 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 sardonius*
- 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, can no longer suck normally, or any neonate who becomes stiff or has spasms or both.

UNEXPLAINED FEVER

Fever (body temperature >38.5 °C) for more than 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.

Annex 1 Communicable Disease Summary

Ethiopia

<p>Background</p>	<p>Estimated population: 77.43 million Projected number needing food aid: 1.7 million (2.20%)</p> <p>Key underlying issues:</p> <ul style="list-style-type: none"> – Drought – Refugees – High food prices – Overpopulation
<p>History of other humanitarian emergencies</p>	<p>Border war and insecurity: a brutal border war (1998–2000) with Eritrea in which tens of thousands died on both sides. The two countries signed a peace agreement in December 2000. The lack of central government in neighbouring Somalia and factional disputes contribute to current tensions along the boundaries of the two countries.</p> <p>A prolonged drought: chronic drought leading to recurrent crop failure in traditional cropping areas has led to very high food prices.</p>
<p>Priority communicable diseases</p>	<p>Diarrhoeal diseases, acute respiratory tract infections and measles are the high-burden communicable diseases of immediate concern.</p> <p>Malaria</p> <p>Malaria is a leading public health problem in Ethiopia, where an estimated 48 million people (68% of the population) live in areas at risk of malaria. In 2002–2003, the disease was the primary cause of reported morbidity and mortality, accounting for 16% of outpatient visits, 20% of hospital admissions and 27% of hospital deaths.</p> <p>Malaria transmission in Ethiopia is unstable and characterized by frequent and often large-scale epidemics. In 2003, large-scale malaria epidemics occurred from April to December, resulting in 2 million clinical and confirmed cases and 3000 deaths affecting 3368 localities in 211 districts. However, as a large number of cases and deaths that occur at community level are not included in health facility reports, the actual number of cases and deaths that occur during epidemics is likely to be much higher.</p> <p><i>Plasmodium falciparum</i> and <i>P. vivax</i> are the dominant malaria parasites in Ethiopia, distributed all over the country and accounting for 60% and 40% of malaria cases respectively. <i>P. malariae</i> accounts for less than 1% and <i>P. ovale</i> is rarely reported. The parasite is principally transmitted by the major mosquito vector known as <i>Anopheles arabiensis</i>. In some areas, <i>Anopheles pharoensis</i>, <i>A. funestus</i> and <i>A. nili</i> also transmit the disease.</p> <p>Meningitis</p> <p>Ethiopia is in the African meningitis belt and is regularly affected by both the endemic and epidemic forms of the disease. Outbreaks have been recorded since 1935. A major outbreak affecting the whole country occurred in 1988–1989, with nearly 50 000 cases and 990 deaths and an overall attack rate of 133 per 100 000. The most recent outbreak was reported in early 2006.</p>

Year	Month (as of)	Cases	Deaths	Case-fatality rate (%)	Areas affected
2002	February	1332	85		SNNPR ^a region: Sidama
2001	September – December	391	37		SNNPR : Sidima zone (Dale and Sheedino woredas)
2001	January – June	6266	311	5.0	Amhara Oromiya Gambella Somali Tigray SNNPR
2000	March – August	855 (A -90%, C -10%)	19		Amhara (Kobo district) Tigray (Alamata district) Addis Ababa

^a SNNPR: Southern Nations Nationalities Region. (Data source: WHO/CDS/EPR, 2006.)

Cholera

Major epidemics of diarrhoeal disease commonly occur in the region. The last officially reported cholera outbreak occurred in 2004 in which 16 cases were reported. An outbreak of acute watery diarrhoea is currently (November 2006) ongoing in Ethiopia, with reports of almost 40 000 cases and more than 400 deaths.

Year	Cases	Deaths	Case-fatality rate (%)
2004	16	0	0.00
1971	2187	124	5.67
1970	850	72	8.47

(Data source: WHO Global Task Force on Cholera Control.)

Poliomyelitis

By 2002, the indigenous poliovirus reservoirs in Ethiopia were polio-free, with no new polio cases reported for over a year. From 26 April 2005 to 25 April 2006, 12 polio cases reported in the country were all confirmed as importations linked to the remaining polio global foci. Polio was reported in 2006 (importation).

Year	Acute flaccid paralysis cases with adequate stool specimens (%)	Wild-virus confirmed polio cases	Importations
2005	79	22	*1
2004	84	1	*1
2003	79	0	
2002	69	0	
2001	65	1	
2000	45	152	
1999	23	131	
1998	13	55	
1997	23	19	
1996	0	264	

*(Data source: WHO/IVB, 2006)

Yellow fever

Given the favourable ecological factors for transmission of the virus and official notification of at least one case of yellow fever since 1950, Ethiopia is considered at risk for yellow fever epidemics. A major outbreak occurred in 1961–1962 in which about 100 000 cases and 30 000 deaths were reported. In early 2006, suspected cases were reported in northern Ethiopia.

Year	Cases	Deaths	Case fatality rate
1966	350	0	0
1962	10	6	60%
1961	100 000	30 000	30%

(Data source: WHO/EPR, 2006)

HIV/AIDS

The HIV epidemic has evolved in Ethiopia from 2 reported AIDS cases in 1986 to a cumulative total of 147 000 by mid-2003. It is currently estimated that 1.5 million people are living with HIV/AIDS, approximately 96 000 of whom are children aged under 15 years. Estimated national adult HIV prevalence in 2003 was 4.4% with uneven geographical distribution: 12.6% urban prevalence and 2.6% prevalence in rural settings; gender distribution is estimated at 3.8% male and 5% female. There were an estimated 539 000 AIDS orphans (children having lost one or both parents) in 2003; a cumulative total of 90 000 adults and 25 000 children had died of AIDS by the end of 2003.

Country HIV and AIDS estimates, end 2003^a

Adult (15-49) HIV prevalence rate	4.4%	(range: 0.9–7.3%)
Adults (15-49) living with HIV/AIDS	1 400 000	(range: 890 000–2 100 000)
Adults and children (0-49) living with HIV/AIDS	1 500 000	(range: 950 000–2 300 000)
Women (15-49) living with HIV/AIDS	770 000	(range: 500 000–1 200 000)
AIDS deaths (adults and children) in 2003	120 000	(range: 74 000–190 000)

(Data source: UNAIDS, 2006)

^aNo estimates have been made where sufficient data for the past six years were not available.

HIV sentinel surveillance among women attending antenatal care clinics has improved since 1999; surveys are conducted annually and 34 sites were used in 2001. Data on HIV prevalence among women attending antenatal care clinics in Addis Ababa were also available for 2002. Out of the 34 sites, 20 reported a prevalence rate >10% in 2001; however, 7 sites reported rates <5%. HIV infection rates among women attending antenatal care clinics in this country have remained relatively stable since 1997. Time trends among women attending four clinics in Addis Ababa show that median HIV prevalence was 18.6% in 1996, 15.2% in 2000 and 15.1% in 2002. In 2000, overall HIV prevalence among rural military recruits was 3.8%, compared with 7.2% among urban recruits.

See: UNAIDS/WHO *Epidemiological fact sheet – 2004 update*.
http://data.unaids.org/Publications/Fact-Sheets01/Ethiopia_EN.pdf

Tuberculosis (TB)

The number of TB patients treated each year in Ethiopia continues to increase.

TB burden, 2004 estimates

Incidence (all cases per 100 000 population/year)	2.6
Incidence (sputum smear-positive per 100 000 population/year)	353
Trend in incidence rate (% per year)	154
Prevalence (all cases per 100 000 population)	533
Mortality (deaths per 100 000 population per year)	79
Prevalence of HIV in adult TB patients (15–49 years, %)	21
New TB cases multidrug-resistant (%)	1.4
Previously treated TB cases multidrug-resistant (%)	7.1

Source: *Global tuberculosis control: surveillance, planning, financing. WHO report 2006.* Geneva, WHO, 2006.

Information on the association between HIV and TB in Ethiopia is limited. In 1994, 44% of 450 TB patients in Shashemene (Oromiya Region) were HIV-positive, and 25% of 78 cases with laboratory-confirmed TB of the lymph nodes in 1997 in Butajira Southern Nations, Nationalities and Peoples Region (SNNPR) were HIV-positive. A cross-sectional survey of smear-positive TB patients in Addis Ababa showed 45% coinfection. Of 51 consecutive culture-proven TB patients in Addis Ababa in 2000, 47% were HIV-positive. Data generated from various regions suggest that the majority of hospitalized TB patients are HIV-positive (40–70% in Amhara Region).

Recent communicable diseases outbreaks

Outbreaks officially reported to WHO.

Disease	Year(s)/area affected	Cases	Deaths	CFR%
Poliomyelitis	2006	2		
Poliomyelitis	2005	22		
Poliomyelitis	2004	1		
Cholera	2004	16	0	0
Meningitis	Sept. 2001 – Mar. 2002 Areas affected – Kobo – Alamata	2 329	118	
Meningitis	Jun. 2001 Areas affected: – Amhara Region – Tigray Region	6 266	311	5.0%
Meningitis	1 Jan. – 31 Mar. 2001 Areas affected – Amhara – Tigray – Gambella	149	14	4.3% 12.0% 15.63%
Anthrax	2000 Area affected: – Afar Region			
Meningitis	1999–2000 Areas affected: – Addis Ababa			

	<ul style="list-style-type: none"> - Tigray - Gambella - Amhara 																									
	Meningitis	1988–1989 Areas affected: Nationwide, with attack rate of 133 per 100 000 population	nearly 50 000	900																						
	Leishmaniasis	1998 Areas affected: - Tigray Region																								
(Data source: WHO/EPR, 2006) CFR = case-fatality rate																										
Seasonality	<p>Malaria transmission is seasonal and largely unstable in character. The major transmission season (September–December) follows the June–September rains, while the minor transmission season (April–May) follows the February–March rains. Areas with bimodal patterns of transmission are limited and restricted to a few areas that receive the small/Belg rains. The major transmission season occurs in almost every part of the country.</p> <p>–</p>																									
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Summary risk assessment, control measures and recommendations	<p>Routine immunization vaccine-preventable diseases, meningitis and yellow fever</p> <p>Maintenance of high levels of routine immunization coverage among children under 1 year of age is required for the successful prevention and control of measles, diphtheria, pertussis, eradication of polio and prevention of reinfection from importation of the virus from polio-endemic areas. Yellow fever vaccination is not included in the national routine immunization schedule. Outbreak response vaccination campaigns particularly for yellow fever,</p>																									

meningitis and poliomyelitis should be implemented in accordance to WHO recommendations.

HIV/AIDS

HIV testing and counselling began in Ethiopia in the late 1980s and expanded during the 1990s. Counselling and testing services are available to anyone who seeks an HIV test regardless of whether the person has a known or suspected HIV risk. Special target groups for voluntary counselling and testing include people seeking services at clinics for sexually-transmitted infections, blood donors, partners of people living with HIV/AIDS and people seeking services at family planning clinics, antenatal clinics and youth facilities.

Clinical guidelines on the use of antiretroviral drugs have been developed in accordance with international standards. The recommended first-line drug regimens are lamivudine + stavudine + nevirapine; (zidovudine + stavudine) + nevirapine; lamivudine + stavudine + efavirenz; and (zidovudine + stavudine) + efavirenz.

The current model for delivering ART is physician-led and hospital-based. The health centres provide services for HIV/AIDS chronic care, identify and refer eligible people, follow up people living with HIV/AIDS who are stable and provide information on ART. The community level provides services for treatment adherence, literacy and preparedness. Antiretroviral drugs are distributed by licensed pharmacists at authorized outlets.

TB

The national TB control programme addresses the challenge of improving access to DOTS. The cost of TB control per patient is the lowest among African high-burden countries, and most of the funding for TB control comes from the Global Fund to Fight AIDS, Tuberculosis and Malaria. New and existing health-care workers have been trained, community-based TB care and collaborative TB/HIV activities are being pilot tested and there are plans to strengthen the laboratory system.

Malaria

The population is currently at significant risk of malaria following the major transmission season (September–December) which follows the minor rainy season (February–March) and major rains (June–September). Major epidemics typically occur between September–December, while the smaller epidemics occur between April–May.

The malaria prevention and control activities include:

- Early diagnosis and prompt treatment with the updated malaria treatment protocol using artemether–lumefantrine (AL), quinine (QN) for *P.falciparum* malaria and chloroquine for *P.vivax* malaria.
- Epidemic forecasting and prevention as well as early detection and control .
- Selective vector control including insecticide-treated bednets (ITNs).
- Malaria prevention and control in pregnancy.

Species	Uncomplicated		Treatment failure	Severe malaria	Pregnancy	
	unconfirmed	lab-confirmed			treatment	prevention
<i>P. falciparum</i>	AL	AL	QN (7d)	QN(7d)	QN(7d)	–
<i>P. vivax</i>	CQ					

(Source: WHO/Global Malaria Programme, 2006)

Somalia

Background	<p>Estimated population: 8.22 million Projected number needing food aid: 1.7 million (20.7%) Livestock accounts for 65% of export earnings</p> <p>Key underlying issues:</p> <ul style="list-style-type: none"> - Conflict during 15 years of civil war - Prolonged droughts and poor rains - Piracy hampering food aid deliveries 																
History of other humanitarian emergencies	<p>The health status of Somalia's population has been profoundly affected by a decade-long civil war that has claimed up to half a million lives and left the country with some of the worst health indicators in the world. After 13 years without a central government, the country is now at a crossroads, as the conclusion of the 2004 peace talks resulted in the formation of a new transitional government that promises to end years of political instability and violence. However, security for Somalis and aid agencies remains fragile. A long-running border dispute between the self-declared independent Republic of Somaliland and the self-declared autonomous Puntland State of Somalia, has led to restrictions on United Nations and NGO operations.</p> <p>Somalia's people live in extreme poverty and suffer from chronic food insecurity and severe droughts. More than 350 000 remain refugees, while 370 000–400 000 have been internally displaced, often for years. Recurrent inter- and intra-clan conflict triggers fresh waves of displacement. Poverty, disease and limited educational and employment opportunities take their toll on the health, welfare and dignity of the population.</p>																
Recent communicable disease outbreaks	<p>Outbreaks officially reported to WHO</p> <table border="1" data-bbox="448 1173 1114 1554"> <thead> <tr> <th>Disease</th> <th>Year</th> </tr> </thead> <tbody> <tr> <td>Poliomyelitis</td> <td>September 2006</td> </tr> <tr> <td>Poliomyelitis</td> <td>March 2006</td> </tr> <tr> <td>Poliomyelitis</td> <td>September 2005</td> </tr> <tr> <td>Meningitis</td> <td>October 2001 – January 2002</td> </tr> <tr> <td>Cholera</td> <td>October – November 2000</td> </tr> <tr> <td>Cholera</td> <td>January – May 2000</td> </tr> <tr> <td>Rift valley fever</td> <td>1997 – 1998</td> </tr> </tbody> </table> <p>(Source: WHO/EPR, 2006)</p>	Disease	Year	Poliomyelitis	September 2006	Poliomyelitis	March 2006	Poliomyelitis	September 2005	Meningitis	October 2001 – January 2002	Cholera	October – November 2000	Cholera	January – May 2000	Rift valley fever	1997 – 1998
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<p>Summary risk assessment, control measures and recommendations</p>	<p>Vaccine-preventable diseases</p> <p>Coverage rates for vaccine-preventable diseases are low. Efforts to increase levels of routine immunization coverage among children under 1 year of age are required for the successful prevention and control of outbreaks of measles, diphtheria, pertussis and poliomyelitis, and for the eradication (and prevention of reintroduction) of polio. Outbreak response vaccination campaigns, particularly with regard to meningitis and poliomyelitis, should be implemented in accordance with WHO recommendations.</p> <p>Malaria</p> <p>Priorities for malaria control vary across the country, according to variations in endemicity. In the north, the priorities are to reduce transmission through vector control and to ensure epidemic preparedness. In the more endemic south and central areas, the priorities are to reduce malaria morbidity and to prevent mortality in high-risk groups through early diagnosis and prompt treatment and personal protection through ITNs.</p> <p>The Global Malaria Programme (GMP) has initiated activities to reduce vector density, improve response to outbreaks and ensure early diagnosis and prompt treatment. Other preventive and curative measures include the promotion of ITNs, and the use of antimalarial drugs. Sentinel surveillance and antimalarial drug efficacy studies have been established. Studies have been conducted in Jamane, Janale and Jowhar for AQ and ASU+SP, and the antimalarial drug policy updated.</p>																					

National malaria policy, as of June 2006

Species	Uncomplicated		Treatment failure	Severe malaria	Pregnancy	
	unconfirmed	lab-confirmed			treatment	prevention
<i>P. falciparum</i>	AQ+SP	AS+AP		QN(7d)	QN(7d)	SP

(Source: WHO/Global Malaria Programme, 2006.)

Other strategies requiring support to ensure the effective implementation of the programme include: human resource development, education and communication, operational research, health management information system, and monitoring and evaluation.

Other considerations and activities

Refugees, internally displaced persons and drought-affected populations constitute a large percentage of the region's population. Persistent migration of the population is an important characteristic that renders planning and implementation of public health interventions in the region very difficult. Any development or investment for the health sector is heavily influenced by the political, social and economic factors prevailing in the region. However, the humanitarian response for emergency-affected populations can renew momentum and be a magnet for a special focus from development agencies to reform their respective regional plans. For the region to develop reliable systems for preparedness and response, specific consideration should be given to appeal for a sustained and long-term commitment by the international agencies, NGOs and the central authorities.

The disproportionate representation of international and local relief organizations in some geographical locations can result in the apparent *en masse* migration of displaced populations into particular towns and villages. The public health impact of the response of the international agencies on the displaced populations is often varied and characterized by different approaches and capabilities. Efforts to ensure implementation of standardized procedures are essential.

Ongoing collaboration by WHO and other United Nations agencies, international NGOs, partners and with local authorities works to address longstanding gaps in various programmes. WHO works in conjunction with local authorities and NGOs to support various programmes, facilitate the supply of affordable and effective treatments including vaccination campaigns and cholera outbreak response kits.