



Epidemic Preparedness and Response in Refugee Camp Settings

Guidance for Public Health Officers

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ACRONYMS AND ABBREVIATIONS

BCC	Behaviour Change Communication
BCP	Business Continuity Plan
CHW	Community Health Worker
CTC	Cholera Treatment Center
HPAI	Highly Pathogenic Avian Influenza
HIS	Health Information System
IEC	Information, Education and Communication
MoH	Ministry of Health
OCT	Outbreak Control Team
OIE	World Organisation for Animal Health
PPE	Personal Protective Equipment
PHO	Public Health Officer
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
WASH	Water, Sanitation and Hygiene
WFP	World Food Programme
WHO	World Health Organization

INTRODUCTION

Since 2008, significant amounts of resources have been mobilized worldwide to improve readiness to respond to the threat of pandemic influenza and its potentially high mortality and morbidity. Lessons have been learnt notably in planning different components of pandemic preparedness, which are to some extent applicable to other communicable diseases with outbreak potential.

This guidance takes stock of what has been accomplished and provides the United Nations High Commissioner for Refugees (UNHCR) operations and specifically country level Public Health Officers (PHO) and partners with guidance on how to develop and establish outbreak preparedness and response capacities for communicable diseases in refugee camps and settlements.

Communicable disease control is indeed a challenge in most UNHCR operations. During an acute emergency, the living conditions in camp settings present a favourable environment for epidemics of communicable disease. In more protracted refugee camp situations, even if overall living condition of refugees has improved, many emergency standards (e.g. water availability, sanitation and living space) are often just met.

Prevention of communicable diseases is always a priority intervention. However, preparedness to recognize and manage an outbreak of communicable disease is essential.

This guidance outlines practical steps to establish and maintain an epidemic/pandemic preparedness and response in refugee camp settings and settlements.

The term **epidemic** has been used in this manual to mean occurrence of more cases of a disease than expected in a given area or among a specific group of people over a particular period of time. The term **outbreak** has been used interchangeably with epidemic but with a notion of a localized as opposed to generalized epidemic. **Pandemic** means an epidemic occurring over a very wide area (several countries or continents) and usually affecting a large proportion of the population. A glossary is available in the annex.

STRATEGIC ASPECTS OF EPIDEMIC PREPAREDNESS AND RESPONSE

COORDINATION

Coordination with all actors is crucial to ensure that the programme is able to respond quickly and that it is linked to the national outbreak and response programme. Coordination must ensure:

- Consistency with national preparedness and response activities.
- Advocacy for inclusion of refugees into national plans for specific disease outbreak responses.
- Rapid two-way flow of information between relevant authorities, agencies and health facilities.
- Consistency in risk-communication messages being disseminated.
- Transfer of specimens and referral of patients if necessary.
- Overall improved cost-effectiveness of preparedness and response activities.

Coordination takes place at three levels: national, district and camp. Coordination at global and regional level is not considered here. Coordination involves all actors including the Ministry of Health (MoH), other essential government services, UNHCR partners in the refugee camp, the World Health Organization (WHO), United Nations Children Fund (UNICEF) and other United Nations (UN) agencies.

Contact can be initially made with MoH, WHO, and/or UNICEF. National Red Cross/Red Crescent and other organizations may produce useful IEC materials. Donor agencies or embassies may provide advocacy support. In UNHCR operations where PHOs are not based in the capital, coordination with agencies at the national level becomes more challenging. In this situation, UNHCR may appoint capital-based staff to attend national level coordination meetings regularly. However, the PHOs in the field should endeavour to attend these meetings every quarter or semester while at the same time strengthening provincial and district level coordination.

The outbreak control team (OCT) should be active and meet regularly with minutes of meetings documented and shared with all participating agencies and individuals. The role of the OCT before an epidemic will mainly focus on setting up and maintaining a contingency plan, identifying critical functions and setting up a business continuity plan. During an epidemic, its role will be broader and include coordination of essential services, implementation of public health measures, management of public health information and limiting social disruption.

Key Actions:

At the national level, the PHO should:

- Proactively participate in coordination meetings related to epidemic preparedness planning.
- Collect and share with partners all related documents and materials including epidemic or pandemic national preparedness and response plan(s) as well as Information, Education and Communication (IEC) materials.
- Advocate for inclusion of refugees in all outbreaks related national plans (e.g. disease specific outbreak or pandemic plans, natural disaster plans).

At provincial and district levels, the PHO should:

- Facilitate and actively participate in coordination meetings with authorities, implementing and operational partners, and promote preparedness activities against actual threats of epidemics. The target population should encompass all people living in the region including refugees.
- Advocate for the setup of an OCT, if it does not exist yet, and play an active role within it.

At the refugee camp level, the PHO should:

- Ensure epidemic preparedness and response is mainstreamed in camp coordination activities.
- Promote the establishment of a Camp Outbreak Preparedness and Response Team that involves all camp actors including authorities, partners and refugees.
- Ensure outbreaks are discussed and appropriate decisions/next steps are made in periodic health coordination meetings.

BUSINESS CONTINUITY PLANNING

Major crises like natural disasters (e.g. earthquakes, floods) but also outbreaks of highly contagious diseases in non-immune population (e.g. pandemic influenza) may result in severe disruption of routine activities including vital ones. This should be anticipated and coping mechanisms planned. The Business Continuity Plan (BCP) is a global issue; plans should be developed in all sectors and in all organisations. UNHCR has its own internal BCP. Focus in this document is on its public health components. However, in practice many sectors are inter-related (e.g. logistic, security, food). The public health component of the BCP should be developed in full awareness of what other sectors have planned.

Identify critical public health functions and back-up capacity

One of the important roles of the PHO in the BCP is to identify all critical health functions that will need to continue during a major crisis. Prior training may be necessary for the critical staff to carry out their roles.

Non-essential functions that will be temporarily halted also need to be identified as staff currently assigned to these activities can be used to back-up essential functions. Regular updates of the staff list (at least once a year or quarterly if rapid turnover) are critical, and should preferably be done by human resource officers of UNHCR and implementing/operational partners.

Key Actions:

- Identify essential functions and assign responsibilities for them (i.e. who will perform them).
- Identify non-essential functions that can temporarily be halted and re-assign staff to support essential functions as appropriate.
- Ensure the list of essential staff able to perform critical function is regularly updated.
- Organize refresher training as necessary.

Business continuity plan

Further to the identification of critical functions and staff, the OCT should make a detailed plan as to how the delivery of essential services will continue. In order to do so, the OCT should take into consideration the diminished capacity owing to staff illness and absenteeism, evacuation of international staff, etc... and establish the plan taking into consideration all inter-related sectors.

Key Actions:

Planning of the following services/activities must be considered:

- **Food distribution:** joint planning with the World Food Programme (WFP) regarding food pipeline, food distribution, and related aspects taking into account potential system breakdowns during emergencies such as pandemics and the public health risk of doing business as usual.
- **Water supply:** existing water supply systems need to be maintained by ensuring availability of personnel, supplies such as fuel, and equipment such as generators and spare parts.
- **Provision of essential health services:** this involves the provision of emergency medical care and treatment of common ailments during emergencies. This will require availability of adequate qualified personnel, drugs and supplies and their protection, among other issues. Plans of re-structuring of services including services delivery points, extension of structures, etc... should also be considered.
- **Ensuring security for the population and staff.**
- **Ensuring internal and external communication with various networks and agencies.**

ANIMAL HEALTH SURVEILLANCE

The presence of poultry in refugee camps and the threat of highly pathogenic avian influenza (HPAI) outbreaks have made this issue pertinent. In refugee settings, animals often live closely with humans. In general, income-generating activities from raising animals have positive effects on the well being of the refugees and should not be halted for incorrect reasons. In principle, strategies to mitigate the risk of transmission of HPAI among refugees should be similar to those existing in the surrounding population.

UNHCR and partners should ensure animal health surveillance is in place. This includes identifying the camp focal person, clarifying the information flow channel, identifying the appropriate health/veterinary official and updating contacts. In the HPAI context, the

objective of animal health surveillance is to minimize contact of humans with sick or dead birds/animals.

Establishing coordination mechanisms and operational links with national/regional veterinary authorities is important to prevent and respond appropriately to diseases originating from animals, while avoiding over reactions such as inappropriate culling of poultry as soon as a few bird deaths have been rumoured.

Key Actions:

- Train/retrain community health workers (CHW) on animal surveillance.
- Arrange IEC activities for the refugee population on animal health, surveillance and bio-security, and sensitize population on an ongoing basis about animal surveillance and precautions to be followed in case of sick or dead birds/animals.
- Support refugees to separate their animals from living areas if feasible.
- Create and maintain contact with district/regional veterinary authorities and World Organisation for Animal Health (OIE) through OCT.
- Establish pathways of sample collection and testing from sick animals in the camps.
- Ensure appropriate facilities to dispose of sick or dead animals.
- Establish clear decision making processes to respond to the suspicion of sick birds/ animals found in the camps or in the surrounding host areas.

PUBLIC HEALTH SURVEILLANCE OF COMMUNICABLE DISEASES¹

All camp must have active disease surveillance with early warning systems in place including the outbreak prone diseases in the area. Early detection of cases will allow:

- Early initiation of control measures to reduce morbidity and mortality.
- Activation of outbreak operational plans: health resources will be organized to receive the expected increase in patients and to continue essential services.

¹ See UNHCR's Health Information System: <http://www.unhcr.org/461388c2.html>

Early detection requires:

- Existing, knowing and using the case definitions.
- Recognizing and reporting first cases in a timely manner.

Prioritization of diseases under surveillance will improve the overall reactivity of the system. It is therefore recommended to focus on communicable diseases for which early detection matters. A list of those diseases must be made according to context and should be reviewed periodically.

Key Actions:

- Ensure a functioning disease surveillance system in the camps.
- Ensure diseases under surveillance have case definitions that are known and used by the health workers.
- Train/retrain health workers on using the case definitions.
- Identify and train surveillance focal person(s) in each camp to ensure correctness of data collected and to analyze the camp-based data.
- Define clear data reporting pathways and ensure regular reporting and appropriate action.

COMMUNITY MOBILIZATION

Community mobilization is key to successful prevention and control of epidemics. Community mobilization activities should focus on the following areas:

1. Enhance awareness on the concerned diseases, outbreaks and hygiene in communities.
2. Encourage and involve refugees to adopt behaviours in favour of the prevention and control of outbreaks.
3. Enhance level of alertness and preparedness for epidemics.
4. Maximize impact of surveillance and case management.
5. Build community capacity to take care of the sick at home during outbreaks.
6. Ensure community has key role in active case detection.

Key Actions:

The PHO should ensure proper planning of community mobilization activities.

This includes:

- Establishing strategic framework: which diseases/conditions should be part of IEC activities depending on local potential of outbreaks, which kind of messages/materials should be used for each potential outbreak/conditionⁱ, ongoing IEC activities, IEC activities during an outbreak, etc...
- Involving communities: in order to ensure ownership and acceptability of the information, cultural appropriateness of the messages and the methods to disseminate are important.
- IEC: Identifying IEC partners and workers, training of CHWs, creation of IEC bank listing sourcesⁱⁱ and availability of materials during and outside an outbreak, reproducibility etc...
- Populations in transit (influx or return or moving to new location): ensure mass information for this population in case of risk of potential epidemic or different disease patterns in areas they are moving to (e.g. malaria, cholera).
- Essential messages: these should be disseminated using innovative and attractive ways and different channels of communication:
 - Written information, IEC materials such as leaflets, posters, banners, comic books etc...
 - Health centres, health promoters and outreach groups.
 - Women groups, peer education and other group activities.
 - Mass media including national and local television and radio channels.
 - Outreach visits with special attention to patients and their families.
 - Public events, religious gatherings, schools, theatres, health fairs, festivals etc.
 - Country or area entry/exit points (e.g. posters and banners at airports and check points).
 - Press conferences aired by television or radio channels.
 - Sports and quiz competitions.
 - Web sites and journals.

i Preferably established in coordination with national authorities for maximum coherence of messages.

ii Regional office may facilitate the procurement of IEC materials used in the country of origin of the refugees.

HEALTH FACILITIES AND HEALTH SERVICES PLANNING

Stockpiles/supplies of medicines and materials

During an epidemic, essential supplies will be needed urgently while transportation maybe disrupted. Stockpiling is therefore crucial. However, pre-positioning costs money and takes effort to manage the stocks on an ongoing basis. So a balanced approach is necessary while planning for stockpiling. The decision regarding its location (e.g. camp, district or regional) will depend on the storage capacity and disturbances expected in transportation during the outbreak. The latter is disease specific (e.g. pandemic influenza is likely to have more impact than cholera).

Key Actions:

The PHO in collaboration with partners should:

- Prepare a list of medicines and materials with emphasis on infection controlⁱ that should be pre-positioned and integrated into the normal supply system as a buffer stock.
- Identify local sources of procurement and include them in preparedness plans.
- Monitor the stock at least once a year (e.g. usage, expiry dates, spoilage).

i Health education materials, soap, disinfectants, cleaning equipment, antibiotics, IV fluids, other relevant medical supplies, Personal Protective Equipments (e.g. masks, gloves) and tents for additional isolation areas as needed with appropriate equipment (e.g. bed, linen).

In case of an outbreak of a vaccine preventable disease like measles, which may include the possibility of mass vaccination, availability and procedures for the procurement of vaccines and vaccination materials, usually from MoH and/or UNICEF, must be identified.

Extension of health facilities and isolation wards²

The need to expand health facilities and/or create an isolation ward may arise suddenly in certain circumstances. Contingency plans should address this eventuality.

Key Action:

- PHO in collaboration with site planner, water and sanitation engineers and partners should decide where an isolation ward could be situated and do all necessary preparation work.

INFECTION PREVENTION AND CONTROL IN HEALTH CARE SETTINGS

Infection prevention is not specific to an outbreak but represents a major task in epidemic control and mitigation. The principal objectives of infection prevention and control are to protect patients, protect care providers, auxiliary staff and reduce spread of the infection.

Key Actions:

- PHO should monitor and ensure that partners have developed and adhere to infection prevention protocols.
- Necessary infrastructure adjustment (e.g. installation of running water in health facilities, building of incinerators) should be budgeted and implemented.
- Refresher training on infection prevention and control in health care setting for health and hygiene staff should be given in all camps at least every two years, depending on staff turn-over.
- Posters should be displayed on walls to remind health staff of basic infection prevention and control measures, such as hand washing.
- A joint UNHCR/partner systematic evaluation of all aspect of infection prevention and control should be done at least annually.

² Also discussed in Chapter vi: Case Management under Outbreak Management Plan.

EPIDEMIC PREPAREDNESS AND RESPONSE PLANS

The UNHCR Country PHO in coordination with the health partners is responsible for developing the country specific plans (i.e. contingency plan and disease-specific management plans annexed to the contingency plan) for refugee camps/settlements.

Disease-specific management plans should include only the most common/probable diseases according to disease prevalence and history of epidemics in the area (they should be limited to maximum of 3 diseases). The plans should be updated on a yearly basis.

OUTBREAK CONTINGENCY PLAN

An outbreak contingency plan is country specific. It should be seen as a working document that outlines progress made in the readiness to manage a crisis situation caused by an outbreak according to possible scenarios. The information contained in the document are meaningful only if updated regularly and presented in a clear format.

Outbreak contingency plans in refugee camp settings should have details according to the areas listed below and should be made according to a strategy discussed earlier.

Coordination

- a) Identification of lead agencies and focal points.
- b) Identification of critical functions.
- c) Establishment of OCT with clear roles.
- d) Business continuity plan: provision of key services and upkeep of essential staff (e.g. food, water, health care).
- e) Security plan for pandemics.
- f) Communications plan.

Surveillance, early warning and response

- a) Simple case definitions for human and animal surveillance.
- b) Identification and training of staff.
- c) Protocols and pathways for laboratory and veterinary services.

Social mobilization, health information and education

- a) Health education activities related to potential outbreak.
- b) Consistency of health education messages: what messages to give out, how and where.
- c) IEC materials collected and stored in data bank.
- d) Case finding in the community.

Health facilities and health services planning

- a) Estimating health needs.
- b) Identification of area for case management and possible extension of services.
- c) Case management including referrals protocols.
- d) Supplies: stockpiles, local sourcing etc...
- e) Planning for appropriate water supply and sanitation facilities.

Protection of personnel

- a) Universal precautions.
- b) Disease specific protection plan and related trainings.
- c) Supplies: PPEs, other medicines and materials.

Outbreak management plans

- a) List of potential epidemics by camp, depending on local situation and past history.
- b) Guidelines on the way a specific disease outbreak will be responded to.

OUTBREAK MANAGEMENT PLAN

An outbreak management plan is disease specific. It is part of the contingency plan, should be annexed to the contingency plan, and will be used to initiate response at the time of an outbreak.

Some of the points listed here have already been mentioned in previous chapters. They should, however, be reviewed in light of specific outbreak planning.

Outbreak alert

Alert is an early warning of an outbreak. Outbreak alerts usually come from:

1. Clinical staff (most frequently).
2. Surveillance data (when threshold is reached).
3. Affected persons/groups.

Key Actions:

- Establish list of trigger events that may alert an outbreak for a specific diseaseⁱ.
- Define alert threshold for outbreak prone diseases in the surveillance system, either as a multiple of baseline or quantitative number.
- Maintain awareness of the local health practitioners about trigger events and reporting lines (e.g. use outbreak alert form to notify an alert to relevant PHOs)ⁱⁱ.
- Define clearly in writing who will make decision to investigate (or not) an alert and how.

i e.g. Alert for cholera: severe dehydration or death from acute watery diarrhea in patient aged 5 years or more.

ii See UNHCR Health Information System: <http://www.unhcr.org/4613888c2.html>

With an alert, the Outbreak Control Team should be activated.

Mobilization of an OCT

Representatives of local authorities, UNHCR, partners, health educators and community leaders are usually part of the OCT, among others.

The OCT will start the investigation and make quick a decision as to whether assistance from external experts should be requested. National outbreak investigation teams exist and are on standby in certain countries. Depending on the suspected disease, a wide range of specialists may be required including epidemiologists, microbiologists, clinicians, veterinarians, vector control, and water and sanitation engineers. Those experts are primarily found in MoH, WHO, and sometimes in research institutes.

Key Actions:

- During the planing phase, assess the presence in the region of experts, national outbreak investigation offices, research institutes (national or international) who, if needed, could be quickly mobilised to investigate an outbreak.
- Ensure required resources for outbreak investigation are available such as materials and transport.

Investigation – First Steps

Confirmation of the existence of an outbreak

Key Actions:

- Verify the data/information and analyze it in terms of person, place and time.
- Examine clinically some patients and eliminate obvious diagnosis errors.
- Review critically the data and eliminate artefacts such as seasonal variation, changes in the surveillance system or in the diagnostic techniques.

Immediate control measures should be launched at this stage including the activation of the camp outbreak response team.

Confirmation of diagnosis

Laboratory confirmation for the first few cases is required, when available. Once the diagnosis of the disease in question is confirmed, then there is no need for systematic confirmation of subsequent cases. Testing protocols and techniques required vary according to the disease. Those specific requirements should be known, reference laboratories identified, and procedures for collection and transport of specimens clarified. Transportation of specimens could be hazardous, and must be submitted according to strict regulations. MoH and WHO can assist providing those regulations.

Key Actions:

- Assess laboratory facilities capacity.
- Sign agreement with lab(s), ensure means for proper transportation (e.g. materials, financial, logistics).

Chad / Sudanese refugees from the Darfur region of Sudan / A young refugee boy is vaccinated against polio by UNICEF and IRC, Bahai, July 8, 2004. UNHCR / H. Caux



Developing a case definition and counting cases

Once an outbreak is confirmed, a simple case definition must be established in order to diagnose, count and manage subsequent cases. This definition called “outbreak case definition”³ might be different from “surveillance case definition” and:

- Must be easy to use by all health workers (e.g. obtain from quick clinical examination).
- Must be standardized and be used by all health workers in the camps.
- Should be relatively sensitive to detect most true cases.

When the number of cases is high, the predictive positive value of the case definition is also higher. At the end of the outbreak, the case definition should be switched back again to the more specific surveillance case definition.

Key Actions:

- Establish outbreak case definition with MoH and WHO, and train all staff to use it.
- Start active case finding and reinforce passive surveillance.
- Calculate and report indicators (e.g. attack rate, case fatality rate).



Democratic Republic of Congo (DRC) / Internally displaced people (IDPs) queue for a UNHCR distribution. Fearing a possible cholera outbreak or typhoid at Kibati camp, UNHCR is in the process of distributing 100,000 bars of soap and 28,000 jerry cans. Kibati camp is located 5 kilometers north of Goma, in the Democratic Republic of Congo. / UNHCR / P. Taggart / November 2008

3 Surveillance case definitions are relatively more specific while outbreak case definitions are more sensitive.

Investigation – Further Steps

These are not systematic and will depend on the disease in question. For well known diseases, some steps may not be required.

Descriptive epidemiology

Define the extent of the outbreak according to time, person and place. Answers to the basic questions of Who? Where? and When?

Sufficient information needs to be gathered on each case. In addition to collecting retrospective information, it is important to ensure sufficiently detailed ongoing (prospective) data are being collected. This may mean implementing a registration system for the specific disease or reinforcement of the existing surveillance system.

Determine the population at risk

Identify the high-risk groups reviewing the epidemiological data and using knowledge of the disease and context.

Determine the potential spread of the epidemic and accordingly, the size of the population at risk (those susceptible) using census figures or population estimates. This will eventually help prioritize a response towards the high risk groups and estimate roughly the expected number of hospital admissions and outpatient attendees in the affected areas.

Generate and evaluate a hypothesis

Knowledge of the disease (e.g. usual source, modes of transmission, risk factors) and reviewing the epidemiological data (descriptive analysis) can generate a hypothesis regarding the source(s) and route(s) of the outbreak. Identifying and eliminating the source of infection may prevent additional cases. Even if an outbreak is essentially over, further investigation may be indicated for other reasons, such as to make recommendations for strategies to prevent future outbreaks, to learn more about the disease, evaluate existing prevention strategies (e.g. vaccination programmes), and address public concerns.

Control of an outbreak

Control strategy and related activities are summarized in the table below:

Control Source	Protect Susceptible People	Interrupt Transmission
<ul style="list-style-type: none"> ▪ Treatment of cases and carriers ▪ Isolation of cases ▪ Surveillance of suspects ▪ Control of animal reservoirs ▪ Notification of cases 	<ul style="list-style-type: none"> ▪ Immunization ▪ Chemoprophylaxis ▪ Personal protection ▪ Better nutrition 	<ul style="list-style-type: none"> ▪ Environmental hygiene ▪ Personal hygiene ▪ Vector control ▪ Disinfection and sterilization ▪ Restrict population movements

Key Actions:

- Disease specific outbreak management plans should provide details about the control strategy, activities and supplies needed (e.g. medicines, materials).
- Procurement strategy including stockpiling, local sourcing, emergency ordering etc... should be planned according to the anticipated need and control measures (e.g. restriction of movement).
- Staff should be identified and trained in outbreak control.

Case management

Treatment protocols

Treatment protocols should be “standard” (approved by MOH and/or WHO), updated according to the latest knowledge (especially for emergent diseases), and presented in a clear and simple format. If possible, diagnosis and management of cases should be illustrated in flowchart allowing staff with minimum training to use them correctly.

Patient care strategy

In large epidemic situations (e.g. pandemic influenza), camp-based health facilities would be quickly saturated. Home based management will constitute a big component of case management. In the preparedness plan, home-based management strategies should be illustrated (e.g. community-based non-pharmaceutical interventions for influenza) and guidelines be introduced to the population during the community mobilization phase. Contrary to pandemic influenza, most cholera patients will require treatment in health

facilities, whether mild or severe; this needs to be planned for. Most measles patients can be managed on an out-patient basis with hospitalization only for complicated cases.

Patient Isolation

To prevent hospital contamination, separate units are preferred for both out-patient and in-patient departments. If relevant, distancing between patients in out-patient waiting room should also be considered.

Key Actions:

- Prepare to quickly disseminate updated standard protocol (preferably as flowchart).
- Plan patient care strategy.
- Plan isolation needs and draw isolation centre plans.
- Plan staffing needs to run an isolation centre and train the staff.

Reporting and communication

An initial report illustrating the alert, investigation and confirmation followed by periodic reports updating the situation and describing the response should be made available.

Key Actions:

- Verbally inform the country and technical (regional/headquarters) reporting line managers of the alert.
- Complete the initial, weekly update and end of outbreak standard reporting forms and send them to outbreak@unhcr.org and cc the Regional PHO.

ANNEXES

ANNEX 1: GLOSSARY

The definitions given below apply to the terms as used in this manual. They may have different meanings in other contexts.

Active case finding: The process of seeking out cases or health events under surveillance (e.g. house visits by community health visits to identify certain cases or active searching of health records to identify cases based on signs and symptoms documented).

Attack rate: The proportion of those exposed to an infectious agent who become ill. It is the cumulative incidence of infection in a particular group observed for limited periods and under certain circumstances, such as in an epidemic. It is usually expressed as a percent but could also be expressed as per 100 or 1 000 persons.

Case definition: A set of standard criteria for deciding whether a person has a particular disease or health-related condition, by specifying clinical criteria and limitations on time, place, and person.

Case fatality rate: The proportion of persons with a particular condition (cases) who die from that condition. The denominator is the number of incident cases and the numerator is the number of cause-specific deaths among those cases.

Cluster: Aggregation of relatively uncommon events or diseases in space and/or time, in numbers that are believed or perceived to be greater than could be expected by chance.

Descriptive epidemiology: The aspect of epidemiology concerned with organizing and summarizing health-related data according to time, place, and person.

Endemic: The constant presence of a disease or infectious agent within a geographical area or population group.

Epidemic: The occurrence of more cases of disease than expected in a given area or among a specific group of people over a particular period of time.

High-risk group: A group in the community with an elevated risk of disease.

Incidence rate: A measure of the frequency with which an event, such as a new case of illness, occurs in a population over a period of time. The denominator is the population at risk; the numerator is the number of new cases occurring during a given time period.

Outbreak: An epidemic limited to a localized increase in the incidence of a disease.

Pandemic: An epidemic occurring over a very wide area (several countries or continents) and usually affecting a large proportion of the population.

Positive predictive value: A measure of the predictive value of a reported case or epidemic; the proportion of cases reported by a surveillance system or classified by a case definition that are true cases.

Public health surveillance: The systematic collection, analysis, interpretation, and dissemination of health data on an ongoing basis, to gain knowledge of the pattern of disease occurrence and potential in a community, in order to control and prevent disease in the community.

Sensitivity: The ability of a system to detect epidemics and other changes in disease occurrence. The proportion of persons with disease who are correctly identified by a screening test or case definition as having disease.

Specificity: The proportion of persons without disease who are correctly identified by a screening test or case definition as not having disease.

Universal precautions: A set of standard recommendations to minimize the risk of transmission of bloodborne pathogens, particularly HIV and Hepatitis B, by health care and public safety workers.

ANNEX 2. MONITORING CHECKLIST FOR EPIDEMIC PREPAREDNESS AND RESPONSE

Preparedness component		Indicator	Capital	Camp 1	Camp 2	Camp 3	Comments
Coordination	1	OCT established and active with terms of reference updated					
	2	Inter-agency preparedness plan exists and updated					
	3	Refugee integration in national/regional planning					
Surveillance & detection	4	Surveillance system with an early warning mechanism in place					
	5	Outbreak investigation capacity (including team and kits)					
	6	Surveillance focal person/team identified and trained					
	7	Surveillance-related training given to staff					
Laboratory	8	Capacity for collection of samples (e.g. equipment, specimen containers with appropriate media, training on sampling techniques)					
	9	Means available for safe handling/packaging of samples during collection and transport					
	10	Means available to transport of samples to local/reference laboratory					
	11	Reference lab facility identified and agreed to testing of samples					
Case management	12	Camp-specific contingency plan available and updated					
	13	Standard treatment protocols available					
	14	Clinical staff trained in case management and treatment protocols					
	15	Referral system including transport is available					
	16	Out-patient and in-patient departments appropriately organized and capable of managing cases with possibility of expansion					
		Patient isolation room available					
Stockpiling	17	Adequate supply of bio-medicals (e.g. antibiotics, ORS, infusions) available					
	20	Adequate stock of personal protective equipment available					
		Staff trained in use of personal protective equipment					
	21	Adequate stock of antiseptics and disinfectants available					
	22	Adequate stock of soap available					

Preparedness component		Indicator	Capital	Camp 1	Camp 2	Camp 3	Comments
Vaccines and cold chain	23	Vaccination plan in place					
	24	Sources of vaccines identified					
	23	Adequate vaccine storage and transport capacity available					
	25	Vaccination teams formed and trained					
	26	Appropriate cold chain management in place					
	27	Sharp boxes available and utilized					
	28	Transport, fuel and other logistics available					
	29	Social mobilization and education for vaccination planned					
Infection control in Health Care Facilities	30	Isolation for in-patient treatment including surge capacity (e.g. ward, tents)					
	31	Use of PPE (e.g. gloves, masks, aprons, goggles)					
	32	Safe disposal of waste (e.g. incineration, pits)					
	33	Disinfection of all non-disposal supplies and equipment					
	34	Safe water available for hand washing					
	35	Toilet facilities available					
	36	Morgue/body bags/ safe burials available					
	37	Staff trained in infection control related topics (e.g. use of PPE, disinfection, waste management, barrier nursing and universal precautions)					
Social mobilization and health education	38	Social mobilization teams available and trained					
	39	Health education messages and materials available and disseminated					
	40	Active case finding implemented					
Business continuity	41	Core staff from partners and UNHCR identified					
	42	Core staff trained					
	43	Protection of core staff (PPE, other) adequate					
	44	Water, sanitation, healthcare and food supply continuity plan					
	45	Communication strategy					
	46	Security management plan					

ANNEX 3: FORMAT FOR AN INITIAL REPORT OF AN OUTBREAK⁴

Summary/abstract

- Confirmation of the outbreak – threshold used.
- Features of the outbreak; who, where, when.
- How serious – potential for spread, mortality and complications.
- Possible source and modes of transmission.
- Ongoing action (capacity).
- Recommendations – further action required.

Introduction/background

- Population demographics.
- Surveillance data.
- Previous similar outbreaks.
- Description of area/site/facility.
- Any unusual points or contributing factors?

Outbreak description

- The 'initial' story – how was the outbreak reported? Steps taken to confirm it?
- Why was an investigation undertaken? Objectives of the investigation.
- What was the response to date – was a team set up to coordinate response, what investigation already done by others, what control measures already taken?

⁴ Source: Guidelines for Epidemics – General Procedures: MSF, 2nd edition, 2005.

Methods

- Epidemiological – case definition, case finding.
- Laboratory confirmation (if any).
- Case control study (if conducted).
- Environmental assessment (if undertaken).

Results

- Epidemiological findings including number of cases, epidemic curve (time), age specific attack rates, incidence rates, and case fatality rates (person), geographical distribution of cases - spot maps (place), particular groups at risk.
- Laboratory confirmation (if done).
- Results of additional epidemiologic studies and/or environmental assessments (if done) – have source(s) and routes of transmission been identified?
- Brief description of existing national and international response capacity (human, material, medical, etc...).

Discussion

- Conclusions, with clear interpretation of main results.
- Limitations and possible biases.
- Initial responses – have they been adequate?

Recommendations

- What should be done to control this outbreak? – operational priorities and strategies, what can be done to prevent future outbreaks?
- Be specific – to whom the report is targeted?
- Be realistic - propose feasible actions.

ANNEX 4: OUTBREAK WEEKLY REPORT FORMAT⁵

Outbreak Weekly Update

MONTH.....DATE: FROM.....TO.....YEAR.....EPI WEEK.....

Country: Location: Outbreak: Date first reported:									
I. Diagnosis									
ii. Data									
New and cumulative cases and deaths									
	Epidemic Week ^a								Total
	1	2	3	4	5	6	7	8	
New cases									
Cum ^b cases									
New deaths									
Cum ^b deaths									
iii. Actions									
<p>a Use the numbers of the epidemiological weeks</p> <p>b Cum = cumulative</p>									

- Cell # 1= represents first week of epidemic appearance; write the actual number of the epidemic week based on WHO calendar or UNHCR's HIS calendar if you are using HIS.
- Cell # 8 (or above if any!) = must represent week when epidemic declared closed (internally within UNHCR) and NO further reporting is required.
- Not all columns should be filled from the onset of epidemic. It comes with progress till closure.

⁵ Source: UNHCR.

ANNEX 5: END OF OUTBREAK REPORT FORMAT⁶

End of outbreak report

Report date: _____

1	Reporting Officer:	2	Title:	3	Organization:
4	Country:	5	Affected Location(s) / Camp(s):		
6	Type of outbreak:				
7	Date and epi-week outbreak started:				
8	Date and epi week outbreak officially declared over:				
9	Diagnosis (state laboratory confirmed or suspected):				
10 Data	1. Cumulative total cases (A)		3. Attack Rate (A/Total population) x 100%		
	2. Cumulative total deaths (B)		4. Case Fatality Rate (CFR) (B/A) x 100%		
11	Brief description of person, place and time:				
12	Outbreak response:				
13	Evaluation/Conclusions:				
14	Key recommendations for future improvement:				

⁶ Source: UNHCR. Available at: <http://www.unhcr.org/4bc579619.html>

ANNEX 6: MEASLES LINE LISTING FORMAT

(sample to be adapted for specific location)

MEASLES LINE LISTING AND REPORTING FORM

COUNTRY: HOSPITAL: CAMP: EPI WEEK: DATE: from to	Laboratory	Final lab result	Positive/ Negative																
		Date lab specimen taken	dd/mm/yy																
		Lab specimen taken?	Y/N																
	Illness history	Date of death (if applicable)	dd/mm/yy																
		Outcome	Alive/Dead																
		Decision	Admitted/ Discharged																
		Coryza (runny nose)	Y/N																
		Red eyes	Y/N																
		Cough	Y/N																
		Date of rash onset (If applicable)	dd/mm/yy																
		Rash	Y/N																
		Fever	Y/N																
		Patient characteristics	Date of arrival in camp	dd/mm/yy															
	Self-reported measles vaccine doses		# doses																
	Sex		Female/Male																
	Age		# Years /Months (Specify)																
Block	Location where person lives																		
Camp																			
Name	Person/ Caretaker																		
Case detection	Location of case detection	Community/ Outpatient/Inpatient																	
	Date of case detection	dd/mm/yy																	
	No.		1	2	3	4	5	6	7	8									

ANNEX 7: CHOLERA LINE LISTING FORMAT

(sample to be adapted for specific location)

CHOLERA LINE LISTING

COUNTRY: HOSPITAL: CAMP: EPI WEEK: DATE: from to

No.	Name	Age Yr/Mo	Sex (M/F) (specify)	Address Block/No.	Date of onset	Date of detection	Lab specimen			Treatment Given ^a	Where ^b		Outcome (I/R/D) ^c	Final Classification (S/C) ^d
							Y/N	Type	Result		OPD	IPD		
1					dd/mm/yy	dd/mm/yy				ORS/IV	ATB			
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
a	Treatment given: ORS = Oral rehydration salts IV = Intravenous fluid ATB = Antibiotic				b	Where: OPD = Out-patient department IPD = In-patient department		c	Outcome: I = Currently ill R = Recovering D = Died		d	Final classification: S = Suspected case with clinical diagnosis C = Confirmed case with laboratory diagnosis		

ANNEX 8: MENINGITIS LINE LISTING FORMAT

(sample to be adapted for specific location)

No.	Date of admission	Date of discharge	Name	Age	Sex	Refugee/Local	Address	History of recent travel (≤2 weeks)	Initial Diagnosis	Vaccination Self reported	Lab confirmation	Outcome
	dd/mm/yy	dd/mm/yy		Years	M/F		Camp/ block	Y/N		Y/N		Alive/ Dead
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

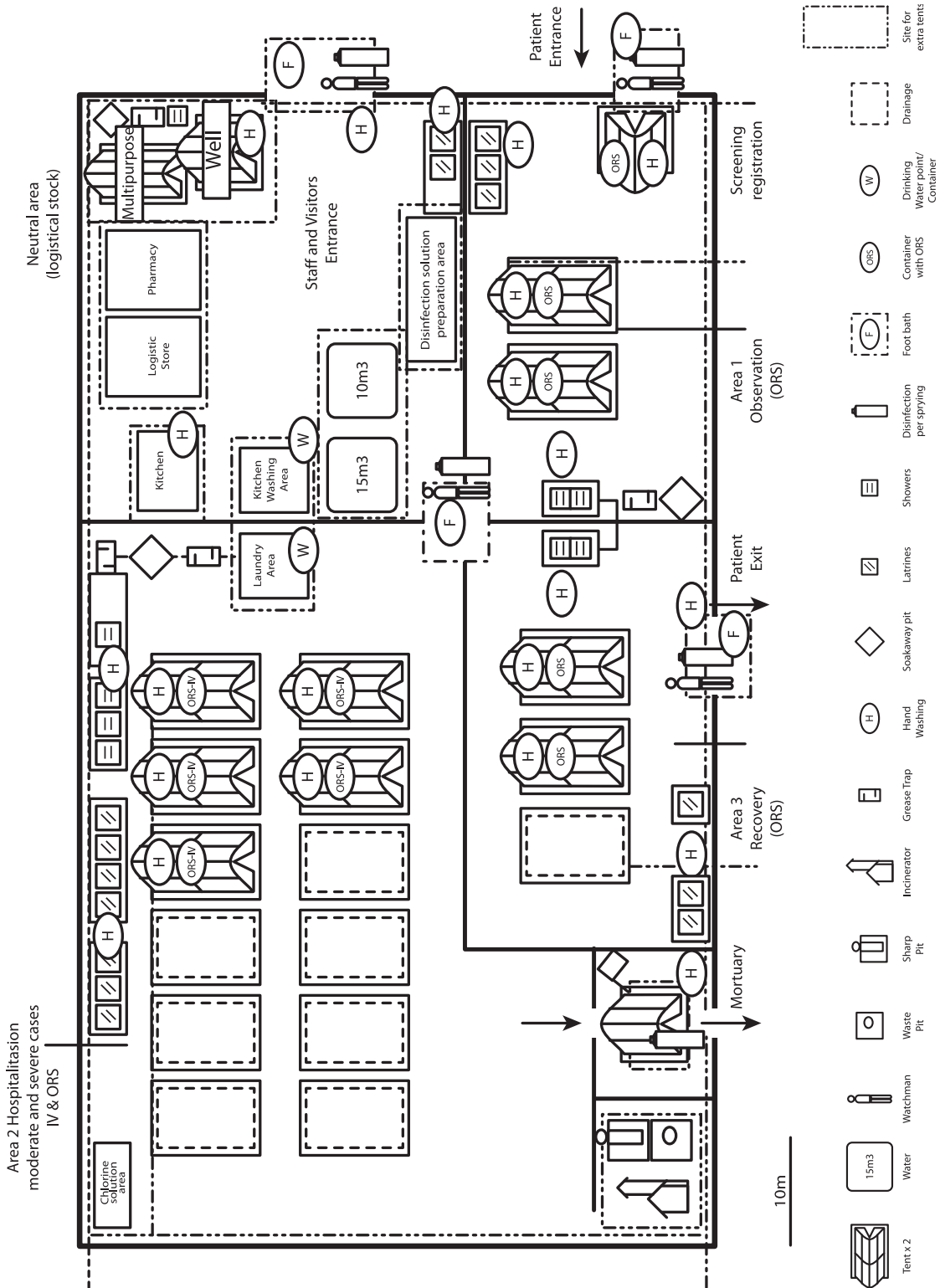
ANNEX 9: CRITERIA TO CHOOSE A CHOLERA TREATMENT CENTRE (CTC) LOCATION⁷

Summary of criteria for selecting a CTC:

Facility character	List of criteria
Position	<ul style="list-style-type: none"> ▪ Do not select low ground or depression. High ground with good drainage is the best option. ▪ Consult local leaders about the most appropriate spot.
Distances	<ul style="list-style-type: none"> ▪ To market ≥ 100 m ▪ To water source ≥ 40 m on sandy soil, ≥ 15 m if clay. ▪ To other buildings and especially dwellings ≥ 100m
Floor and walls	<ul style="list-style-type: none"> ▪ Concrete floor or, if temporary structure, a plastic sheeting cover to facilitate cleaning.
Ventilation	<ul style="list-style-type: none"> ▪ Well ventilated.
Access	<ul style="list-style-type: none"> ▪ Trucks are needed for water, food, etc... Therefore, a good road is important.
Space and surface	<ul style="list-style-type: none"> ▪ Space should be adequate for future expansion if required. ▪ Ward capacity = 2.5 m^2 per patient + 1 attendant. ▪ 30m^2 tent can accommodate 10 patients + attendants. ▪ 80m^2 tent can accommodate 30 patients + attendants.
Light	<ul style="list-style-type: none"> ▪ Hospitalization wards need good light (placing an IV line with a flashlight is not easy!). ▪ All available light sources are needed (e.g. kerosene lamps, solar lamps, generator). ▪ Ensure regular supplies of kerosene, fuel, etc... ▪ Generator is advised, even if there is local electricity, as a backup.

⁷ Adapted from: Preparedness and response plan for acute watery diarrhoea in Dolo-Ado refugee camps, 2011. Acute Diarrhea Technical Working Group convened by Ethiopian Health and Nutrition Research Institute, Federal Ministry of Health, Ethiopia.

ANNEX 10: SAMPLE DIAGRAM OF CHOLERA TREATMENT CENTER⁸



8 Adapted from: Cholera Guidelines, 2nd edition: MSF, 2004.
Available at: <http://www.bvdsde.paho.org/texcom/cd045364/choleraguide.pdf>

ANNEX 11: RECOMMENDED SAMPLES TO BE COLLECTED FOR SUSPECTED OUTBREAKS

Suspected Disease	Specimen	Diagnostic Test	Additional Info
Cholera	Fresh stool/rectal swab	Culture, RDT ^a	Antibiotic sensitivity
Measles	Serum	IgM	
Hepatitis A/E	Serum (+4 C)	Antigen detection	
Malaria	Blood	Slide reading, RDT	
Shigellosis	Fresh stool/rectal swab	Culture, RDT	Antibiotic sensitivity
Typhoid fever	Blood in culture bottles	Culture	

a RDT = Rapid diagnostic test

ANNEX 12: CALCULATION OF EXPECTED CASELOAD IN PANDEMIC INFLUENZA⁹

Within a 2-month period	For 100,000 people
Attack rate: 15-30% of population may become sick	15,000 to 35,000
Hospitalization: 4 to 5% of population	4000 to 5000 (limited by capacity)
Secondary infection: 10 to 25% of sick people	1500 to 8750
Case fatality rate: 1 to 2 % of sick people	150 to 700

⁹ Source: Pandemic influenza preparedness and mitigation in refugee and displaced populations: WHO training modules for humanitarian agencies. Available at: http://www.who.int/diseasecontrol_emergencies/training/influenza/en/index.html

ANNEX 13: CALCULATION OF RESOURCES NEEDED IN CHOLERA OUTBREAK¹⁰

General assumptions:

1. At risk population to be identified.
2. Attack rate = 2% (0.02) or calculate and use the exact figure if previous data are available.
3. Expected number of severe cases = 20% or calculate the exact figure if previous data are available.
4. Pregnant mothers = 2%

Items	Assumptions	Formula
Oral rehydration salts sachets (1 liter each)	650 sachets for 100 cases	Expected number of cholera cases x 6.5
Ringer's lactate (1 liter, with giving set) ^a	120 bag for 20 severe cases	Number of severe cases x 6
Intravenous cannula	1 cannula for 1 severe case	Number of severe ADULT cases x 1
Scalp vein sets	1 cannula for 1 severe case, and 50% require it	50% of number of severe CHILD cases x 1
Adult naso-gastric tube	1 tube for 1 severe case, and 15% require it	15% of number of severe ADULT cases
Pediatric naso-gastric tube	1 tube for 1 severe case, and 15% require it	15% of number of severe CHILD cases
Tetracycline 250mg ^b or Doxycycline, 100mg	24 capsules for 1 severely ill case, or 3 capsules for 1 severely ill case	Number of severe cases x 24 or Number of severe cases x 3
Erythromycin 250mg	12 capsules for 1 severely ill PREGNANT case	2% of number of severe cases
Amoxicillin 250mg/5ml susp, 100 ml/bottle	1 bottle for 1 severely ill CHILD case	15% of number of severe cases
Large water dispensers with tap (marked at 5- and 10-liter levels) for making ORS solution in bulk	2 for every 100 patients	2 x number of patients expected/100
Bottles (1 liter) for ORS (e.g. empty IV bottles)	20 for every 100 patients	20 x number of patients expected/100
Bottles (0.5 liter) for ORS	20 for every 100 patients	20 x number of patients expected/100
Tumblers, 200 ml	40 for every 100 patients	40 x number of patients expected/100
Teaspoons	20 for every 100 patients	20 x number of patients expected/100
Cotton wool	5 kg for every 100 patients	5 x number of patients expected/100
Reels of adhesive tape	3 for every 100 patients	3 x number of patients expected/100
Cholera treatment center		

a If Ringer's lactate is unavailable, normal saline can be substituted.

b Antibiotic should be adapted according to drug sensitivity testing.

¹⁰ Adapted from: Preparedness and response plan for acute watery diarrhoea in Dolo-Ado refugee camps, 2011. Acute Diarrhea Technical Working Group convened by Ethiopian Health and Nutrition Research Institute, Federal Ministry of Health, Ethiopia.

ANNEX 14: REFERENCES AND LINKS TO USEFUL TECHNICAL DOCUMENTS RELATED TO EPIDEMIC PREPAREDNESS AND RESPONSE

Measles:

WHO Guidelines for epidemic preparedness and response to measles outbreaks, 1999.
http://www.who.int/csr/resources/publications/measles/WHO_CDS_CSR_ISR_99_1/en/

Response to measles outbreaks in measles mortality reduction settings. WHO, 2009
http://whqlibdoc.who.int/hq/2009/WHO_IVB_09.03_eng.pdf

Cholera:

Prevention and control of cholera outbreaks: WHO policy and recommendations.
http://www.emro.who.int/csr/Media/PDF/cholera_whopolicy.pdf

Acute diarrhoeal diseases in complex emergencies, critical steps: WHO, 2004.
http://whqlibdoc.who.int/hq/2011/WHO_CDS_CPE_ZFK_2004.6_Rev.1_eng.pdf

Cholera outbreak: Assessing the outbreak response and improving preparedness: WHO, 2004.
http://whqlibdoc.who.int/hq/2004/WHO_CDS_CPE_ZFK_2004.4_eng.pdf

First steps for managing an outbreak of acute diarrhoea: WHO, 2010.
<http://www.who.int/cholera/publications/firststeps/en/index.html>

Cholera guidelines: MSF, 2004.
<http://www.bvsde.paho.org/texcom/cd045364/choleraguide.pdf>

Shigellosis:

Guidelines for the control of shigellosis, including epidemics due to *Shigella dysenteriae* type 1. WHO, 2005
<http://whqlibdoc.who.int/publications/2005/9241592330.pdf>

Meningitis:

Managing meningitis epidemics in Africa: A quick reference guide for health authorities and health-care workers: WHO, 2010.

http://whqlibdoc.who.int/hq/2010/WHO_HSE_GAR_ERI_2010.4_eng.pdf

Management of epidemic meningococcal meningitis: MSF, 2008.

http://www.refbooks.msf.org/MSF_Docs/En/Meningitis/Mening_en.pdf

Pandemic Influenza:

Pandemic influenza preparedness and response: WHO, 2009.

http://whqlibdoc.who.int/publications/2009/9789241547680_eng.pdf

Pandemic influenza preparedness and mitigation in refugee and displaced populations: WHO, 2008.

http://whqlibdoc.who.int/hq/2008/WHO_HSE_EPR_DCE_2008.3_eng.pdf

Malaria:

Prevention and control of malaria epidemics: 3rd Meeting of the Technical Support Network: WHO, 2002.

http://whqlibdoc.who.int/hq/2002/WHO_CDS_RBM_2002.40.pdf

Systems for the early detection of malaria epidemics in Africa: An analysis of current practices and future priorities: WHO, 2006.

http://whqlibdoc.who.int/publications/2006/9789241594882_eng.pdf

South Africa / Xenophobic violence / One of the biggest refugee “shelters” in Johannesburg is outside the Rand Airport in Germiston. Their future in the balance and on the day that the camp was supposed to close, most people went about their daily routine as usual. Mild chaos erupted as people queued for asylum cards from Home Affairs and for food handouts. Some refugees could be seen packing. Others sent their belongings to friends/family in other areas like Spruitview for safekeeping, until their future becomes clear. / UNHCR / J. Oatway / August 15, 2008



