

Disaster Risk Management for Health

COMMUNICABLE DISEASES

Key points

- Risks of communicable disease outbreaks arising from natural disasters are frequently over-estimated.^{1,2}
- Outbreak potential is related primarily to population displacement and the consequent living conditions.
- Outbreaks are less frequent in disaster-affected populations than those affected by conflict.³
- Communicable diseases have potential to cause society-wide emergencies such as influenza pandemics.²
- The main communicable disease causes of morbidity and mortality in disasters are:
 - diarrhoeal diseases
 - acute respiratory infections
 - measles and vector-borne diseases
- High vaccine coverage reduces the incidence of vaccine preventable diseases
- Provision of safe drinking water is the most important preventive measure.
- Rapid detection of cases of epidemic-prone diseases is essential to ensure rapid control.
- Management of disease vectors in endemic areas is required to reduce vector

Why is this important?

The last 2 decades have seen at least 1 billion people affected by natural disasters with millions suffering infection with communicable diseases.⁴

Communicable diseases can cause epidemics and pandemics which have the potential to overwhelm the capacity of communities; hence, they are also considered disasters.

During the last century 4 influenza pandemics have occurred resulting in excess of 50 million deaths.⁵

'New' pathogens with potential to cause pandemic continue to emerge. Severe Acute Respiratory Syndrome (SARS) caused fewer than 10,000 cases with 774 deaths but had a major impact upon national economies especially upon trade and tourism.⁶

What are the health risks?

Communicable diseases are a major cause of mortality and morbidity in disaster situations, particularly, where there is:

- population displacement
- collapsing health services
- lack of disease control programmes
- poor access to health care in urban and/or rural areas
- malnutrition
- interrupted supplies and logistics
- poor coordination among agencies

The risk of communicable diseases is associated primarily with the size and characteristics of the affected population⁷ specifically:

- amount and availability of safe water
- functioning latrines;
- nutritional status of the displaced population;
- level of immunity to vaccine-preventable diseases such as measles
- level of access to health care services.

Communicable diseases, and the associated risk factors, can be grouped as follows:

Water-borne diseases

Lack of access to safe water and inadequate sanitation facilities transmission of water-borne and food-borne pathogens. Diarrhoeal diseases such as cholera, typhoid fever and shigellosis can cause epidemics with high rates of mortality.⁸ Hepatitis E has resulted in jaundice and increased mortality in pregnant women.⁹

Leptospirosis is associated with flooding and the increased proximity of rats to humans.

Vector-borne diseases¹⁰

Malaria is endemic in over 80% of areas affected by natural disasters.

Increased risk of death from malaria arises from weakened immunity due to:

- malnutrition
- co-infection
- increased exposure to vectors owing to inadequate shelter
- collapse of health services

Other vector-borne diseases in risk areas include arboviruses, such as dengue, yellow fever, Japanese encephalitis and Rift Valley fever, and tick-borne illnesses including Crimean–Congo haemorrhagic fever and typhus.

Diseases associated with overcrowding

Measles spreads easily in unvaccinated populations in the crowded conditions and outbreaks are common. Crowding also facilitates the transmission of:

- meningococcal disease
- acute respiratory infections
- tuberculosis infection
- diarrhoeal diseases.

Vaccine-preventable diseases

Increased risk of polio, tetanus, pertussis and diphtheria is evident when levels of baseline immunization coverage are low.

Risk management considerations

Governments and communities can manage the risk of communicable diseases in or causing disasters by:

Safe water, sanitation, site planning:

- Provision of safe drinking water is the most important preventive measure.
 - Planners and engineers are key to ensuring safe water and sanitation infrastructure.
 - Chlorine is widely available, inexpensive, easily used, and effective against nearly all waterborne pathogens.

Primary care:

- Access to primary care at community level is critical for prevention, early diagnosis, and treatment of a wide range of diseases.

Surveillance/early warning system:

- Rapid detection of cases of epidemic-prone diseases is essential to ensure rapid control.
- Surveillance and early warning systems should be quickly established to detect outbreaks and monitor priority endemic diseases.

- International Health Regulations IHR¹¹ Implementation of country and sub-national reporting to IHR provides an early warning of new and re-emerging epidemic prone diseases.

Immunization:

- Mass measles immunization and vitamin A supplementation are immediate health priorities in areas with inadequate coverage.

Prevention of malaria and dengue:

- Specific preventive interventions for malaria based on an assessment of the local situation could include improving drainage to reduce vector breeding sites.

References and further reading

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