

Public health impacts and responses to floods

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INTRODUCTION

A flood, as defined by Merriam-Webster, is “a rising and overflowing of a body of water especially onto normally dry land”. Flooding can occur when a river, lake or any body of water overflows its boundaries, or when heavy rains lead to accumulation of water in an already saturated area with no escape channels. These waters can rise quickly and rapidly – as in flash floods – or rise slowly over a long period of time. Floods can be local, impacting a small community, or very large, affecting entire river basins and regions.

Floods are happening more often than before around the world, as they have most recently in South Sudan. Here they have led to displacement of thousands of people in large parts of the country, and consequently to food shortages, hunger and malnutrition especially among children.¹ Elsewhere, drought and short rainy seasons are the other extreme conditions affecting communities worldwide. Climate change, which is partly attributed to global warming due to increased levels of CO₂ in the atmosphere, as well as phenomenon such as El Nino and La Nina are being blamed for these floods.

Floods cause disruption of farms, and destruction of homesteads and communities, as well as causing diseases and preventing access to health care services, which is a public health concern – the focus of this article.

PUBLIC HEALTH IMPACTS OF FLOODS

The effects of floods as a public health concern can be direct or indirect.²

Direct effects of floods

The direct effects of floods on communities can be classified as immediate, early or late.

a. Immediate effects

The immediate health effects of floods occur at the time of the floods or within days. Drowning during floods and deaths from injuries are of huge concern at this time. Drowning is generally dependent on either the occurrence of a flash flood or a flood of gradual onset. People drown in their vehicles or homes, or after being carried away by flood waters. Another immediate effect can be severe hypothermia.

b. Early effects

The early effects are defined as occurring within 10 days of the flood. The risk of infection, such as infected wounds and lacerations, is high at this stage. Adequate wound care, removal of foreign bodies and debridement of devitalized tissue may be sufficient, without the need for antifungal therapy, to prevent wound infection. In areas with poor hygiene and sanitation, typhoid, diarrhoeal diseases such as cholera and viral gastroenteritis can happen. Other disease like hepatitis A and E can occur.²

c. Late effects

Late effects occur after 10 days. The longer the flood waters stand, the likelier the occurrence of vector-borne infections like malaria and dengue fever, depending on the location. Lack of access to health care services and drugs for the management of noncommunicable diseases like diabetes and heart conditions can lead to deaths. Other conditions that are generally overlooked include mental health issues like post-traumatic depression.

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Indirect effects of floods

The indirect effects of floods on health can result from destruction of the road infrastructure making it difficult for the emergency response to get to the flooded areas and help affected communities. Also, because farms and food reserves are destroyed, lack of food can lead to famine and malnutrition in the population.

PUBLIC HEALTH RESPONSES DURING FLOODS

The World Health Organization (WHO) details some key preventive immediate and long-term measures that can greatly reduce the risk of communicable diseases from floods, as summarized below.^[3]

Short-term measures

Provision of clean drinking water: Because of contamination of water during floods, access to clean water is key in preventing diarrhoeal and other water-borne diseases. Distribution of chlorine tablets following floods ensures availability of clean drinking water.

Malaria prevention: Although mosquito numbers do not increase immediately during floods, preventive measures should be implemented early such as indoor residual spray and distribution of insecticide treated bed nets. Public health workers should monitor cases of malaria post-floods.

Vaccination against hepatitis: Vaccination of high-risk groups against hepatitis A, such as persons involved in the management of drinking water, waste water or sewage might be considered where relevant. During outbreaks of HepA, contacts of confirmed cases should also be vaccinated. WHO does not recommend mass immunization.

Health education: This should continue to promote good hygienic practice, ensure safe food preparation techniques and boiling or chlorination of water and early diagnosis and treatment of malaria.

Handling human remains: There is no evidence that corpses pose a risk of disease “epidemics” after natural disasters, according to WHO. However, “workers who routinely handle corpses may have a risk of contracting tuberculosis, bloodborne viruses (such as Hepatitis B/C and HIV), and gastrointestinal infections (such as rotavirus diarrhoea, salmonellosis, E. coli, typhoid/paratyphoid fevers, hepatitis A, shigellosis and cholera)”.

^[3] The public and emergency workers alike should take adequate precautions when handling the dead.

Long term measures^[3]

“Legislative/administrative issues:

- Create Disaster-Preparedness Programmes and Early Warning Systems.
- Improve surveillance on a local, national, international and global level.
- Promote tap-water quality regulation and monitoring.
- Enforce high standards of hygiene.

Technical issues:

- Improve water treatment and sanitation.
- Keep infectious disease control programmes active and efficient.”



A MSF worker paddles a boat through floods in Pibor (Credit Samir Bol, MSF)

CONCLUSION

Floods are happening more frequently and becoming more severe over the past few years. Global warming is seen as a cause of the extreme weather patterns due in part to rising CO₂ levels in the atmosphere. Public health concerns of floods can be early, immediate or late. Drowning, communicable diseases and post-traumatic stress disorder can occur. The main public health responses to preventing communicable diseases should include the provision of safe drinking water and health education. Long term measures include creation of Disaster-Preparedness Programmes.

References

1. International Organization for Migration (IOM). Heavy flooding causes extreme destruction and ongoing displacement in South Sudan <https://bit.ly/2FsE0ZP>
2. Paterson et al, Health risks of flood disasters. *Clinical Infectious Diseases* 2018;67(9):1450–1454. <https://doi.org/10.1093/cid/ciy227>
3. World Health Organization (WHO). Flooding and communicable diseases fact sheet. <https://bit.ly/39KSUbM>