Chapter 2.2 Measuring the health impacts of disasters

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Learning objectives

To understand the following key factors relating to measuring the health impacts of disasters:

- The importance and relevance of measuring the health impacts of disasters.
- The variety of indicators that characterize the health impacts and risks of emergencies and disasters.
- Systems and methodologies that can be used to measure health impacts.
- Challenges and issues in measuring the health impacts of disasters.
- Strategies to cope with these issues.

Importance of measuring the health impacts of disasters

- Determining the scale and scope of response needed.
- Defining the "big picture" operationally.
- Quantifying the magnitude of urgent needs.
- Ensuring response is appropriate and timely.
- Assessing progress
- Allowing comparisons to be made among different emergencies and disasters

Epidemiology and decision-making in emergencies and disasters

- Epidemiology provides a foundation for measuring, studying and using indicators that are critical to reducing risks in emergencies and disasters.
- Epidemiological methods may be used to characterize affected populations, especially vulnerable groups, assessing their vulnerability and exposure, as well to quantify impacts and generate evidence for public health interventions before, during and after emergencies.
- Public health decision-making for emergencies and disasters relies critically on information about the anticipated or actual health impacts of these events.

Common health indicators used to quantify sudden-impact health impacts from natural hazards

Effect	Health indicator	Application
Death	Number of deaths among the population	Rough assessment of disaster severity
	Number of impact-related deaths among the population of a given age	Identification of vulnerable groups for further health EDRM planning
	Number of deaths and number of houses destroyed	Assessment of building structure safety Evaluation of predisaster community rescue training
	Number of impact-related deaths per unit of time after the disaster among the population	Evaluation of self-reliance of community
Hospital admission	Number of casualties among the population	Evaluation of predisaster prevention, mitigation and preparedness measures Evaluation of warning adequacy
	Distribution of reasons for hospital admission	Estimation of emergency care available and relief needs Identification of critical services to be maintained in emergency
	Hospital bed occupancy and duration of stay in hospital	Monitoring of health facilities and medical care needs
	Geographical origin of hospitalized patients	Needs assessment for relief supplies, including field hospitals
Health-seeking behaviour	Number of consultations among the surviving population	Estimation of type and volume of medical relief and resources
	Time distribution of consultations	Scheduling of medical relief

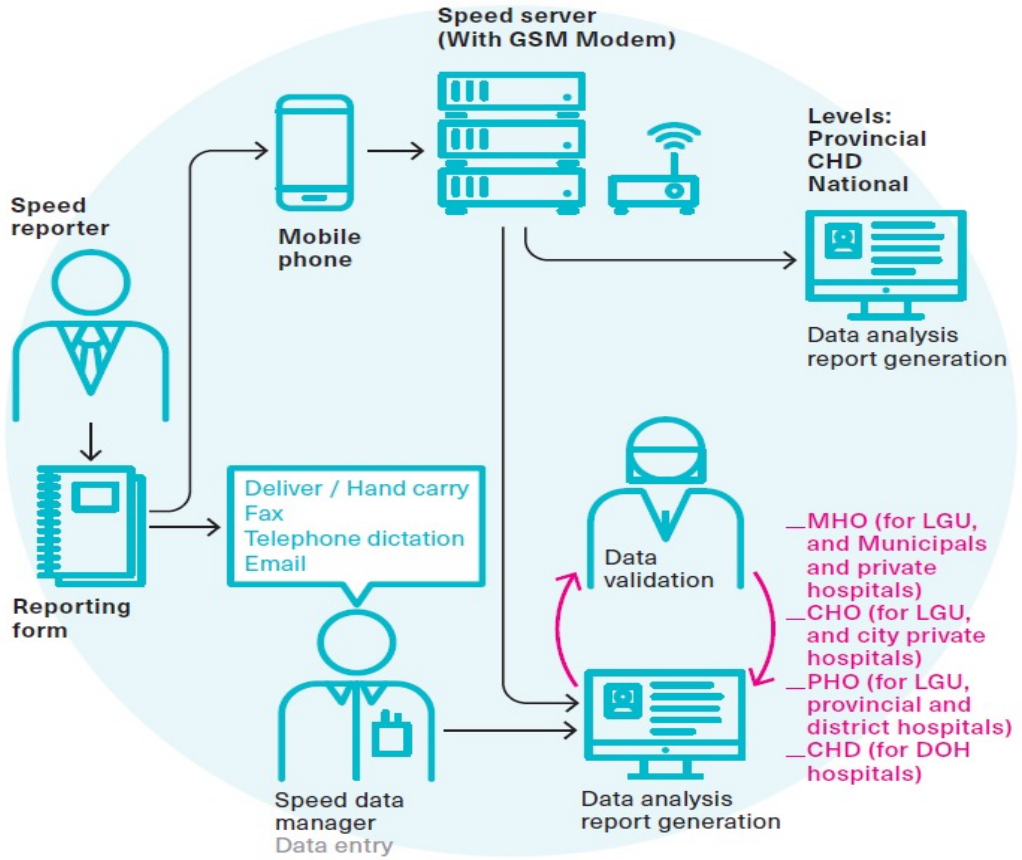
Case study: *New technologies to detect and track outbreaks: Early Warning, Alert and Response System in Bangladesh*

- From August to December 2017, an estimated 655,000 Rohingya women, men and children fled to Bangladesh.
- In tackling an outbreak of diphtheria among the Rohingya refugees, WHO used old and new public health tools.
- Contact tracing helped find people who may been exposed to the disease.
- Diphtheria treatment centers cared for those affected and contained the disease.
- A new computer programme (the Early Warning, Alert and Response System, EWARS) was used to collect field data, geographical location and affected populations, allowing response teams to act promptly.
- EWARS was developed by WHO for humanitarian and emergency settings for use by local people in at-risk communities and works without an internet connection.

Case study: *SPEED in the Philippines*

- The Surveillance in Post-Extreme Emergencies and Disasters (SPEED) is an early earning and alert system developed by the Department of Health in the Philippines, which was born out of the country's experience with a range of emergencies and disasters. It monitors consultations for health conditions arranged in syndromes.
- SPEED assesses health trends and uses web-based software that receives data via short messaging service (SMS) and converts data into customizable reports.

The SPEED reporting system



Key: MHO Municipal Health Officer; LGU Local Government Unit; CHO City Health Officer; PHO Provincial Health Officer; CHD: Center for Health Development; DOH Department of Health

Key messages

- Measuring health impacts of disasters at health system, population and individual levels is critical for appropriate and timely public health interventions in emergencies and disasters.
- Various indicators should be measured to characterize health impacts and risks of emergencies and disasters.
- It is crucial to build capacities for epidemiology, laboratory testing, public health surveillance and information management as part of Health EDRM to accurately measuring these health impacts.
- Emergencies and disasters may make measuring health impacts difficult, but pre-disaster prevention and preparedness measures, operational readiness, back-up systems and contingency plans can prevent or overcome these obstacles.

Further readings

Garfield R. Measuring humanitarian emergencies. Disaster Medicine and Public Health Preparedness 2007;1(2): 110—6.
An overview of the rationale for measuring the health impacts of emergencies and disasters.

Khan Y, Schwartz B, Johnson I. Surveillance and epidemiology in natural disaters: a novel framework and assessment of reliability. PLoS Currents Disasters 1 February 2014; 6.
Logue JN, Melick ME, Hansen H. Research issues and directions in the epidemiology of health effects of disasters. Epidemiologic Reviews 1981;3(1): 140-62.
These articles provide a good discussion on the relevance of epidemiology and decision-making in emergencies and disasters and outline challenges and strategies in the conduct of different research methods.

Salazar MA, Law R, Pesigan A, Winkler V. Health consequences of Typhoon Haiyan in the Eastern Visayas region using a syndromic surveillance database. PLoS Currents Disasters 6 February 2017; 9.
This highlights how SPEED was deployed in the Philippines in the aftermath of Typhoon Haiyan.

References

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www.who.int/surgery/challenges/esc_disasters_emergencies/en(accessed 30 December 2019).
Common health indicators used to quantify sudden-impact health impacts from natural hazards: Chan EYY. Public health humanitarian responses to natural disasters.2017.Routledge.
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Typhoon Haiyan: Salazar MA, Law R, Pesiga A, Winkler V. Health Consequences of Typhoon Haiyan in the Eastern Visayas Region Using a Syndromic Surveillance Database. PLoS Currents Disasters. 6 February 2017..

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