Rapid Risk Assessment of Acute Public Health Events



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Introduction to the manual

This manual has been developed to guide rapid risk assessment of acute public health risks from any type of hazard in response to requests from Member States of the World Health Organization (WHO). The manual is aimed primarily at national departments with health-protection responsibilities, National Focal Points (NFPs) for the International Heath Regulations (IHR) and WHO staff. It should also be useful to others who join multidisciplinary risk assessment teams, such as clinicians, field epidemiologists, veterinarians, chemists, food-safety specialists.

The manual will assist rapid and defensible decision-making about acute public health events that pose a risk to human health through application of a systematic process from event detection and risk assessment to communication with key stakeholders and the public.

The manual complements existing hazard-specific risk assessment guidance (see Appendices 1 and 2), including:

- WHO Human Health Risk Assessment Toolkit: Chemical Hazards¹
- Application of Risk Analysis to Food Standards Issues, a Joint FAO/WHO Expert Consultation, Geneva, Switzerland, 13–17 March 1995².

As the process is incorporated into routine practice during acute public health events we hope that users will suggest improvements for this manual as well as provide additional case studies that will improve it and assist training.

Purpose of the manual

Rapid risk management of acute public health events reduces or prevents disease in affected populations and reduces negative social and economic consequences. Additional benefits include:

- defensible decision-making
- implementation of appropriate and timely control measures
- more effective operational communication
- more effective risk communication
- improved preparedness.

Defensible decision-making

Risk assessment takes into account and documents all relevant information available at the time of the assessment. This supports and directs decision-making and provides a record of the process including:

- which risks and control measures were assessed
- the methods used to assess them
- why they were considered important
- their order of priority.

¹ http://www.who.int/ipcs/publications/methods/harmonization/toolkit.pdf

² http://www.who.int/foodsafety/publications/micro/march1995/en/index.html

If documented consistently, risk assessment provides a record of the rationale for changes over the course of the event including the:

- assessed level of risk
- recommended control measures
- key decisions and actions.

Evaluation of the risk assessment – based on systematic documentation – provides an important means of identifying where improvements can be made and provides an evidence base for future risk assessments and responses to events.

Implementation of appropriate and timely control measures

The systematic approach to collecting and analyzing information about the hazard, exposures and context in which the event is occurring helps to:

- identify evidence-based control measures
- rank the suitability and feasibility of control measures
- ensure that control measures are proportional to the risk posed to public health.

In addition, because the risk is assessed repeatedly during an event, risk assessment offers authorities an opportunity to adapt control measures as new information becomes available.

More effective operational communication

Using a common risk terminology can greatly improve the operational communication between different levels of an organization and with other sectors and institutions involved in the assessment and response to the event.

More effective risk communication

The aim of public risk communication is to enable the target population to make informed decisions about recommended personal and community-based prevention and mitigation measures. Effective risk communication relies on the timely and transparent sharing of all relevant information, and the building of trust and empathy. A systematic approach to the assessment of acute public health events supports effective risk communication through the rapid dissemination of information and the identification of key prevention and mitigation measures.

Improved preparedness

Although the manual focuses primarily on the use of risk assessment during acute public health events the approach is equally applicable to preparedness activities, especially to seasonal and recurrent outbreaks (e.g. annual cholera outbreaks in Africa and the dengue season in the Americas and Asia). To aid preparedness planning, risk assessment can be used to identify at-risk areas or populations, rank preparedness activities, and engage key policy and operational partners.

How the manual was developed

A working group first met in Geneva, November, 2010 consisting of staff from WHO Country Offices, Regional Offices and Headquarters who were:

- responsible for event-based surveillance
- responsible for public-health event risk assessment across multiple hazards or specifically food safety or chemical hazards risk assessment
- experienced in leading outbreak responses
- experienced in delivering risk assessment training courses.

In addition, an animal health expert was involved in developing the manual and WHO risk communication and International Health Regulations (IHR) specialists were consulted.

A list of people who participated in the working group and subsequent telephone conferences is provided in Appendix 6.

Terminology

In the context of this manual, an acute public health event is any outbreak or rapidly evolving situation that may have negative consequences for human health and requires immediate assessment and action. The term includes events that have not yet led to disease in humans but have the potential to cause disease through exposure to infected or contaminated food, water, animals, manufactured products or environments.

Terms used to describe risk differ between disciplines. In this manual, risk is the likelihood of the occurrence and the likely magnitude of the consequences of an adverse event during a specified period. A comparison of 'risk' terms used in important sectors and disciplines relevant to public health is provided in Appendix 1.

There are historical reasons why different disciplines use different terms when considering risk. As this manual focuses on acute public health events, where multidisciplinary and multisectoral inputs into the risk assessment may be needed, the terms used are a practical compromise that have been proven to work across disciplines and are defined in Appendix 2.

The all-hazards approach and the International Health Regulations

An all-hazards approach has been used for many years in emergency and disaster management to describe natural, technological, or man-made events that require action to protect life, property, environment, and public health or safety, and to minimize social disruption.

It is applied to public health events that require an immediate response and are potentially caused by more than one hazard — including biological, chemical and radionuclear hazards, whether naturally occurring or as a result of an accident or deliberate release — and natural disasters such as fires, floods, other extreme weather events, volcanic eruptions, earthquakes and tsunamis.

This approach has been driven by the International Health Regulations (IHR), which were revised in 2005 to reflect growth in international travel and trade, emergence or re-emergence of international disease risks, and threats posed by chemicals, toxins and radiation.

The IHR requires all States Parties to the Regulations to develop a set of core capacities in surveillance and response covering any "illness or medical condition, irrespective of origin or source that presents or could present significant harm to humans".

Following a risk assessment, the Annex 2 decision instrument of the IHR are used by Member States to decide whether an acute public heath event requires formal notification to WHO. The effective use of Annex 2 depends on each national authority and its IHR National Focal Point (NFP) carrying out risk assessments on public health events occurring within their territories.

The IHR core capacity requirements for surveillance and response require Member States to develop a national (and, where possible, a sub-national) risk assessment capacity that is recognized as an integral part of the prevention, surveillance and response system. The structure and location of this capacity, which may be a dedicated team or embedded into the existing prevention, surveillance and response system, will be country-specific.

Despite differences in how Member States might structure and locate their risk assessment capacity, WHO and all Member States should use a consistent, structured approach to the risk assessment of acute public health events. Recommended steps in such a structured risk assessment are outlined in the following sections.

Detection and confirmation of a public health event

All Member States have surveillance systems that detect outbreaks of infectious diseases. As a result of the emphasis in the IHR on strengthening this core capacity, many Member States have expanded these systems to include public health events caused by other hazards. Surveillance systems detect public health events through:

- Indicator-based surveillance: The routine collection of pre-defined information about diseases³ using case definitions (e.g. weekly surveillance of cases of acute flaccid paralysis). Predetermined outbreak thresholds are often set for alert and response.
- **Event-based surveillance:** The rapid collection of ad hoc information about acute public health events. Event-based surveillance uses a variety of official and unofficial information sources to detect clusters of cases with similar clinical signs and symptoms that may not match the presentation of readily identifiable diseases. Official sources include national authorities and other agencies such as the UN system. Unofficial sources include media reports, other unofficial public information (e.g. internet sites), reports from the public

Not all event reports and alerts generated through indicator and event-based surveillance systems describe real events, nor are all real events of public health importance. The number of 'false positives' (i.e. reported events that cannot be confirmed as real or when alert thresholds of indicator-based surveillance systems are exceeded but an outbreak does not result) depends on the objectives and design of the surveillance system and the organizational level at which the event is assessed.

Guidance should be developed to assist staff in the triage and assessment of newly detected events (see Box 1). Event triage uses the same principles for assessing the risk an event may pose to public health as the more formal risk assessment described in this manual.

Box 1: Example of guidance to surveillance staff for triaging incoming signals from surveillance activities

Question	Answer
Has the event been reported by an official source (e.g. local health-care centre or clinic, public health authorities, animal health workers)?	Yes 🗆 No 🗖
Has the event been reported by multiple independent sources (e.g.	

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