



Epidemic of unknown origin

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Key facts

To better understand public health terms included in this Disease Tool (e.g. What is a case definition? or What is an infectious agent?), consult our page on [Key concepts on epidemiology](#).

Importance

Occasionally, an outbreak or cluster of disease with an unclear cause may be present in a population. These outbreaks may be due to a new or modified pathogen, a natural toxin, an initially undetected release of a chemical, or over-exposure to ionizing radiation from an unknown source. Careful history taking and review of epidemiology may identify one or more possible causes for further specialized investigation.

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Case definition

A **case definition** is a set of uniform criteria used to define a disease for public health surveillance. It enables public health officials to classify and count cases consistently.

*Standard case definitions allow national health authorities to interpret data in an international context. During an outbreak case definitions may need to be adapted to the local context and the Red Cross Red Crescent should use those agreed/established by national health authorities. NB: Consider that during community-based surveillance, **volunteers** should use broad (simplified) case definitions (referred to as community case definitions) to recognize most or all possible cases, provide relevant risk communication and appropriate actions and encourage them to seek care. Other actors such as **healthcare workers or investigators** studying the cause of a disease, on the other hand, can use more specific case definitions that may require laboratory confirmation. The case definition should be developed once the outbreak is detected.*

In some cases for surveillance purposes a non-specific definition such as "a cluster of people who suddenly become sick or die with the same signs of illness" may be used.

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Alert / epidemic threshold

An **alert threshold** is the pre-defined number of alerts that suggest the beginning of a possible disease outbreak and therefore warrant immediate notification.

Epidemic thresholds are the minimum number of cases indicating the beginning of a particular disease's outbreak.

Cluster of cases with similar clinical manifestations, but with unknown origin or cause.

Risk factors

It depends on the life cycle of the pathogen, the mode of transmission and how it affects the environmental and social conditions in the outbreak area. Commonly known risk factors include changing biodiversity or climatological patterns, deforestation, urbanization/development of previously non-developed areas, and proximity to industrial areas among other factors.

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Attack rate (AR)

The **attack rate** is the risk of getting a disease during a specific time period (such as during an outbreak).

Attack rates will vary from one outbreak to another. In case of an outbreak, consult the latest information provided by health authorities.

N/A.

Groups at increased risk of severe illness (most vulnerable)

Unknown, but initial cases may indicate the most vulnerable.

Particular attention should be given to young children, the elderly and people with chronic diseases or immunosuppressed persons and malnourished populations as they often have a weakened immune system. Pregnant women should be followed closely as it will not be initially clear if the disease can be transmitted to the foetus or newborn.

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Infectious agent

Infectious agents are bacteria, viruses, fungi, prions and parasites. A disease caused by an infectious agent or its toxic products is defined as an infectious disease.

Unknown.

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Reservoir / host

A **reservoir of infection** is a living organism or material in or on which an infectious agent lives and/or usually multiplies. Reservoirs include humans, animals and the environment.

A **susceptible host** is a person at risk of being infected. The level of susceptibility depends on age, sex, ethnicity and genetic factors, specific immunity also depends on other factors that affect an individual's ability to resist infection or to limit its ability to cause infection.

A **zoonotic disease** or **zoonosis** is an infectious disease that has jumped from a non-human animal to humans.

Unknown.

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How disease is spread (modes of transmission)

Categorisation of **modes of transmission** varies from one agency to another. In addition, some infectious agents can be transmitted by more than one mode. A list of modes of transmission can be found in the key concepts to serve as guidance to better understand the diseases included in this website.

Unknown at the beginning of an epidemic. Efforts should be made to identify modes of transmission, particularly a possibility for human-to-human transmission.

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Incubation period

This time from when infection occurs to the onset of symptoms is called the **incubation period**. It is a range of days and it can be different for each disease.

Unknown.

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Period of infectiousness

Period of infectiousness is the time interval during which an infected person can transmit the infection to other susceptible persons.

Unknown.

Clinical signs and symptoms

Initial outbreak investigation and descriptive epidemiology should provide this information.

Other diseases with similar clinical signs and symptoms

Unknown.

Diagnosis

Unknown.

Vaccine or treatment

Please refer to the appropriate local or international guidelines for clinical management. All clinical management including the administration of any treatment or vaccine should be conducted by health professionals.

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Immunity

There are two types of immunity:

- **Active immunity** results when exposure to an agent triggers the immune system to produce antibodies to that disease.
- **Passive immunity** is provided when a person is given antibodies to a disease rather than producing them through his or her own immune system.

Unknown.

Which interventions are most effective for prevention and control?

The following is a list of activities considered for Red Cross Red Crescent volunteers to take part in. It is not an exhaustive list of all prevention and control activities for the specific disease.

- Prevention and control interventions will be identified once the disease is better understood and evidence-based scientific data emerges. It is important to monitor information on the cause and origin of the disease;

its symptoms and transmission patterns; available treatments; and the effectiveness and impact of interventions by health authorities and other organizations. Red Cross Red Crescent volunteers can play a key role in sharing evidence-based facts with their communities through social mobilization and community engagement activities.

- Watch out for an “infodemic” (i.e. an overabundance of information, some of which may not be reliable, emerging during an epidemic). During epidemics people look for information to adapt their behaviours to protect themselves and their families against infection; but when there is a large amount of (potentially contradictory) information, people may find it difficult to identify trustworthy sources. Red Cross Red Crescent volunteers should ensure that they set up systems to listen to concerns and information needs in their communities in order to tailor public health messaging appropriately.

Epidemic characteristics and RCRC indicators and targets

The first table below includes data that should be gathered from health authorities and relevant non-governmental actors to understand the progress and characteristics of the epidemic in the specific country and area of intervention. The second table includes a list of suggested indicators that can be used for monitoring and evaluating Red Cross Red Crescent activities; wording of indicators may be adapted to specific contexts. Target values for a specific indicator can vary widely from one context to another and therefore managers should define them based on the specific population, area of intervention and programmatic capacity. Exceptionally, some indicators in this website may include target values when these are globally agreed as a standard; e.g. 80 per cent of individuals who slept under an insecticide-treated net (ITN) the previous night—the normative World Health Organization benchmark for universal coverage with ITNs.

Epidemic characteristics and progression - select those that are applicable
Suspected cases/deaths per week (disaggregate by age, sex)
Confirmed cases/deaths per week (disaggregate by age, sex)
Case fatality rate
Attack rate
Indicators for Red Cross Red Crescent activities
Number of volunteers trained on a specific topic (e.g. Epidemic Control for Volunteers (ECV); Community-based surveillance (CBS); WASH training; CBHFA training, etc.) Numerator: Number of volunteers trained Source of information: Training attendance sheets

Indicators for Red Cross Red Crescent activities

Suspect cases detected by volunteers who were encouraged to seek healthcare and who arrived at a health facility

Numerator: Suspect cases detected by volunteers in a determined period preceding this survey (e.g. two weeks) for whom advice or treatment was sought from a health facility

Denominator: Total number of suspect cases in the same period preceding the survey

Source of information: Survey

Percentage of people recognizing at least one transmission route and at least one measure for preventing it

Numerator: Total number of people who recognized at least one transmission route and at least one measure for preventing it during the survey

Denominator: Total number of people surveyed

Source of information: Survey

See also:

- For Community Engagement and Accountability (CEA) indicators for activities accompanying ECV actions, please refer to: IFRC *CEA toolkit (Tool 7.1: Template CEA logframe, activities and indicators)*. Available at: <https://www.ifrc.org/document/cea-toolkit>
- For advice on how to deal with large amounts of unreliable information emerging during an epidemic consult: WHO (2022) *Infodemic*. Available at: https://www.who.int/health-topics/infodemic#tab=tab_1;
- To find tips on how to stop the spread of misinformation based on the experience of the COVID-19 pandemic consult: WHO (2022) *Let's flatten the infodemic curve*. Available at: <https://www.who.int/news-room/spotlight/let-s-flatten-the-infodemic-curve>
- For information on how to integrate preparedness for epidemics of unknown origin into community-based surveillance activities or event-based surveillance activities please see: IFRC, Norwegian Red Cross, Croix-Rouge de Belgique (2022) *Red Cross Red Crescent Community based surveillance*. Available at: www.cbsrc.org

Impact on other sectors

- Dependent on the infectious agent and factors and context of the underlying population and environment.
- Sectors to be closely followed are WASH, food security, nutrition, shelter and settlements (including household items), psychosocial support and mental health, protection, gender and inclusion, education and livelihoods.
- **Gender and sex:** Biological differences between males and females may be important to consider when planning prevention and control activities. Additionally, gender norms and behaviours such as the male-female division of labour or differentiated access to health services and other resources will also have a differential impact of the disease on women and men.
- **Education:** Schools and other facilities dedicated to children and youth can offer an important space for them to engage, mobilize and raise awareness around health education issues. With support, trust and appropriate capacity-building, young people can be effective advocates for the adoption of preventive measures during an epidemic and are those best placed to mobilize their peers.