# Crimean-Congo haemorrhagic fever (CCHF)

**Last update: 2026-04-20**

# 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 in epidemiology.*

## Importance

Crimean-Congo haemorrhagic fever (CCHF) is a widespread zoonotic disease caused by a Nairovirus (tick-borne virus) of the Bunyaviridae family and primarily transmitted to humans through bites from infected Hyalomma ticks. It can also spread through direct contact with blood or tissues from infected animals. Human-to-human transmission can also occur via contact with infected blood, making healthcare workers particularly vulnerable during outbreaks.

The CCHF virus causes severe viral haemorrhagic fever outbreaks, with a case fatality rate of 10–40%. It is characterised with a rapid disease progression and possible severe bleedings and organ failures.

CCHF is endemic in Africa, the Balkans, the Middle East and Asian countries south of the 50th parallel north – the geographical limit of the principal tick vector.

## 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.

*The following are standard case definitions to allow national health authorities to interpret data in an international context. However, during an outbreak case definitions may 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.*

As with other zoonotic and vector-borne diseases, control of CCHF among humans is highly dependent on the integration of the human health, veterinary surveillance and vector control systems. The following include case definitions for human surveillance and exclude case definitions for veterinary surveillance. For more information on veterinary surveillance or clinical presentations, please visit WOAH's page on CCHF.

**Clinical Criteria:**

- Abrupt onset of fever (>38°C)
- Severe headache
- Muscle pain (myalgia)
- Dizziness
- Chills
- Neck pain and stiffness
- Back pain
- Sore eyes and sensitivity to light (photophobia)
- Nausea, vomiting, diarrhoea, or abdominal pain
- Sore throat
- Weakness or fatigue
- Depression and lassitude
- Rapid progression to hemorrhagic symptoms, including bleeding from gums, nose (epistaxis), or other mucous membranes
- Bruising or a rash due to bleeding under the skin (petechiae or ecchymoses)
- Detectable enlargement of the liver
- Tachycardia
- Swelling of the lymph nodes
- Nose bleeding
- Blood in vomit, stool, or urine
- Heavy menstrual bleeding or other unexplained bleeding

**Epidemiological Criteria:**

- History of tick bites (particularly from Hyalomma ticks) or crushed a tick with bare hands within the past 15 days
- Recent travel to or residence in an endemic area for CCHF within the past 15 days
- Contact with blood, bodily fluids, or tissues of livestock (such as cattle, sheep, goats) in an endemic area within the past 15 days
- Close contact with a confirmed or probable case of CCHF within the past 15 days
- Healthcare workers who have been exposed to blood or bodily fluids of a CCHF patient without adequate protective measures within the past 15 days

**Suspected Case** - an individual who meets both the clinical and epidemiological criteria.

**Probable Case** - a suspected case with a strong epidemiological link such as:

- History of direct contact with a confirmed CCHF case.
- Exposure to contaminated materials (e.g., needles, equipment) from a confirmed CCHF case.
- History of caring for a patient with CCHF.

**Confirmed Case** - a suspected or probable case with one or more of the following laboratory confirmations:

**Laboratory Criteria:**

- Detection of CCHF virus-specific nucleic acid by reverse transcription-polymerase chain reaction (RT-PCR).
- Isolation of CCHF virus from a clinical specimen.
- Detection of CCHF-specific IgM or a fourfold rise in IgG antibody titers in paired serum samples (acute and convalescent phases).
- Detection of CCHF virus antigens in a clinical specimen.

**Discarded case** - a suspected or probable case with a negative laboratory result (showing no specific antibodies, RNA or specific detectable antigens)

Crimean-Congo Hemorrhagic Fever Outbreak Toolbox (August 2024)

## 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.

Single confirmed case in non-endemic regions and abrupt rise in tick populations or incidence in endemic regions.

## Risk factors

- People who spend time in tick-infested areas, such as farmers, herders, hunters, and outdoor workers, are at higher risk of exposure.
- People who provide care to CCHF patients are at risk of infection due to direct contact with infected blood or bodily fluids.

- Livestock farmers and people who work in slaughterhouses, and veterinarians are at increased risk due to potential exposure to ticks and infected animal blood or tissues.
- Laboratory personnel who handle samples from suspected or confirmed CCHF cases may be at risk if biosafety precautions are not strictly followed.
- Caregivers, family members and other people who have direct contact with the blood, secretions, or other bodily fluids of an infected person, especially during the acute phase of illness.
- Travellers to and residents of endemic communities
- Immunocompromised persons

## 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.***

Differences in the attack rates depend on several factors, including exposure risks to infected ticks and humans, geographic location, population immunity, and the effectiveness of public health interventions.

## Groups at increased risk of severe illness (most vulnerable)

- Healthcare workers, if they are exposed to high levels of the virus while caring for CCHF patients
- Children
- Elderly individuals
- Persons with chronic illnesses such as diabetes, hypertension, cardiovascular diseases, or other age-related health issues
- Individuals with weakened immune systems, whether due to HIV/AIDS, cancer, organ transplantation, or immunosuppressive therapy.
- Pregnant women

## 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.

Crimean-Congo haemorrhagic fever (CCHF) virus is a Nairovirus (tick-borne virus) of the Bunyaviridae family and primarily transmitted to humans through bites from infected Hyalomma ticks.

## 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.

> Zoonotic disease: Domestic and wild animals such as cattle, sheep, goats, hares, hedgehogs, and various species of wild ungulates (e.g., deer) are significant reservoir hosts. Birds, including ostriches, have been found to carry the CCHF virus, especially in regions like South Africa. Ticks, particularly those of the Hyalomma genus, are both primary vectors and reservoirs of the CCHF virus.

## 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.

- Bites from infected ticks, particularly ticks of the Hyalomma genus.
- Contact with infected animal blood or tissues during activities like slaughtering, butchering, or handling livestock.
- Human-to-Human transmission via contact with the blood, bodily fluids, or tissues of an infected person.
- Nosocomial transmission via contact with contaminated medical equipment or inadequate use of personal protective equipment (PPE).
- Laboratory exposure in case of laboratory workers who handle specimens from infected individuals or animals, if appropriate biosafety precautions are not observed.

## 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.

> If the virus is transmitted through a tick bite, the incubation period ranges from 1 to 3 days. However, it can be as long as 9 days in some cases.
>
> If a person is infected through contact with the blood or tissues of an infected animal or human, the incubation period ranges from 5 to 6 days, but it can extend up to 13 days.

# Period of infectiousness

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

This period ranges from the acute phase of infection (within the first two weeks after symptoms onset) till recovery. In some cases, CCHF virus can persist in bodily fluids such as urine and semen even after recovery.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7078823/

# Clinical signs and symptoms

Initial (Pre-hemorrhagic) Phase - lasts for about 3-7 days and characterised by non-specific symptoms including:

- Sudden onset of high-grade fever
- Severe headache
- Muscle pain (myalgia)
- Dizziness and neck pain, often accompanied by stiffness.
- Sore eyes and aversion to light
- Nausea, vomiting, and diarrhoea
- Abdominal pain
- Sore throat: A common symptom during the early phase.
- Flushed face and red eyes
- Mood changes: Anxiety, depression, and confusion can occur.

Hemorrhagic Phase - lasts for 2-3 days and characterised by the severe hemorrhagic clinical signs including:

- Petechiae: Small red or purple spots on the skin due to minor bleeding.
- Bruising (ecchymosis): Larger areas of bruising on the skin.
- Bleeding from body openings including nosebleeds (epistaxis), gum bleeding, hematuria (blood in urine), and bleeding from the gastrointestinal tract.
- Hematomas: Swelling caused by clotted blood within the tissues.
- Hemoptysis: Coughing up blood in severe cases.
- Vaginal bleeding: In women, abnormal bleeding may occur.

Organ dysfunction -

- Liver dysfunction leading to jaundice (yellowing of the skin and eyes), and failure
- Kidney failure

- Lungs failure
- Shock due to low blood pressure

Neurological Symptoms

- Agitation and confusion
- Somnolence or coma
- Memory loss and sensory changes

## Other diseases with similar clinical signs and symptoms

Diseases with similar clinical signs and symptoms include Dengue Fever, Ebola virus disease (EVD), Marburg virus disease, Lassa fever, Rift Valley fever (RVF), Yellow Fever, malaria (severe form), Leptospirosis, Typhoid Fever, and severe COVID-19.

## Diagnosis

Diagnosing Crimean-Congo Hemorrhagic Fever (CCHF) can be challenging due to its non-specific early symptoms, similar to many other febrile illnesses.

**Clinical Assessment**

- Patient History: information on recent travels to endemic areas, tick bites, occupation (e.g., healthcare workers, farmers, slaughterhouse workers), and contact with livestock or other animals and exposure to individuals with similar symptoms can be clues.
- Symptoms: Abrupt onset of high fever, severe headache, muscle pain, dizziness, and hemorrhagic symptoms such as petechiae, ecchymosis, and bleeding from various sites.
- Physical Examination: Signs of haemorrhage, jaundice, and neurological symptoms.

**Laboratory Diagnosis**

- Enzyme-linked immunosorbent assay (ELISA);
- Antigen detection;
- Serum neutralisation;
- Reverse transcriptase polymerase chain reaction (RT-PCR) assay; and
- Virus isolation by cell culture.

## Vaccine or treatment

Please refer to the appropriate local or international guidelines for clinical management. All clinical

management including the administration of a treatment or vaccine should be conducted by a health professional.

- General supportive care with treatment of symptoms is the main approach to managing CCHF in people.
- Antivirals are being used to treat cases of CCHF infection effectively
- There are no vaccine available for use in either humans or animals.

## 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.

There is a possibility of long-term immunity after infection. Further studies are ongoing.

https://doi.org/10.3390%2Fdiagnostics13162708

# 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.*

- Communicate risks about the disease or epidemic, not only to share information on prevention and mitigation measures, but also to encourage informed decision-making, positive behaviour change and maintenance of trust in the Red Cross Red Crescent response. This includes the identification of rumours and misinformation around disease—frequent during health emergencies—to manage them appropriately. Volunteers should use the most context-appropriate communication techniques (ranging from social media to face-to-face interactions).

- Community education and engagement activities to encourage the adoption of protective behaviours including:
  - Reducing the risk of tick-to-human transmission:
    - wear protective clothing (long sleeves, long trousers)
    - wear light coloured clothing to allow easy detection of ticks on the clothes
    - use approved acaricides (chemicals intended to kill ticks) on clothing
    - use approved repellent on the skin and clothing
    - regularly examine clothing and skin for ticks; if found, remove them safely

- seek to eliminate or control tick infestations on animals or in stables and barns; and
- avoid areas where ticks are abundant and seasons when they are most active.

- Reducing the risk of animal-to-human transmission:
  - wear gloves and other protective clothing while handling animals or their tissues in endemic areas, notably during slaughtering, butchering and culling procedures in slaughterhouses or at home
  - quarantine animals before they enter slaughterhouses or routinely treat animals with pesticides two weeks prior to slaughter.
- Reducing the risk of human-to-human transmission in the community:
  - avoid close physical contact with CCHF-infected people;
  - wear gloves and protective equipment when taking care of ill people;
  - wash hands regularly after caring for or visiting ill people.

- Health-care workers caring for patients with suspected or confirmed CCHF, or handling specimens from them, should implement standard infection control precautions. These include basic hand hygiene, use of personal protective equipment, safe injection practices and safe burial practices. As a precautionary measure, health-care workers caring for patients immediately outside the CCHF outbreak area should also implement standard infection control precautions. Samples taken from people with suspected CCHF should be handled by trained staff working in suitably equipped laboratories. Recommendations for infection control while providing care to patients with suspected or confirmed Crimean-Congo haemorrhagic fever should follow those developed by WHO for Ebola and Marburg hemorrhagic fever.

- Social mobilization to support animal vaccination in endemic areas, where possible. This includes extensive Information, Education and Communication (IEC) activities on the benefits of the vaccines, vaccination schedules and where/when to get the vaccines for livestock.

# 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 |
|---|
| Suspected cases per week (disaggregate by age, sex) |
| Confirmed cases per week (disaggregate by age, sex) |
| Case fatality 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.)<br>***Numerator*:** Number of volunteers trained<br>Source of information: Training attendance sheets |
| Suspect cases detected by volunteers who were encouraged to seek healthcare and who arrived at a health facility<br>***Numerator:*** CCHF 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<br>***Denominator:*** Total number of people who are CCHF suspect cases in the same period preceding the survey<br>Source of information: Survey |
| Percentage of people recognizing at least one transmission route and at least one measure for preventing it<br>***Numerator*:** Total number of people who recognized at least one transmission route and at least one measure for preventing it during the survey<br>***Denominator*:** Total number of people surveyed<br>Source of information: Survey |
| Percentage of people who know the cause, symptoms, treatment or preventive measures<br>***Numerator*:** Number of people who cite the cause, symptoms, treatment or preventive measures<br>***Denominator*:** Number of people surveyed |

**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 community-based surveillance guidance please see:

IFRC, Norwegian Red Cross, Croix-Rouge de Belgique (2022), *Community Based Surveillance Resources*. Available at: www.cbsrc.org/resources.

# Impact on other sectors

| Sector | Link to the disease |
|---|---|
| **WASH** | Optimal WASH practices including proper hand hygiene, sanitation, clearing of vegetation, and other personal protection practices are effective in CCHF prevention and control. |
| **Food security** | CCHF cannot be transmitted via food contamination |
| **Nutrition** | Malnutrition increases the risk for severe CCHF. |
| **Shelter and settlements (including household items)** | Housing located close to areas where ticks are abundant. |
| **Psychosocial support and Mental health** | CCHF is a stigmatised disease and can have several negative impacts on psychological, social and emotional aspects of a person's life, apart from its health effects only. Several CCHF patients have been reported with post-traumatic stress disorder after recovery.<br>https://pubmed.ncbi.nlm.nih.gov/22996211/ |
| **Sex and Gender** | Gender and social roles influence exposure to CCHF and access to timely care. In many settings, men are at higher risk due to work in animal herding, slaughter, or veterinary services, while women may be exposed through cleaning animal shelters, handling meat, or caring for livestock at home. Yet women are often excluded from health trainings or community surveillance efforts, reducing early detection and response.<br>CCHF infection during pregnancy is associated with poor outcomes, including miscarriage or stillbirth. While the disease can affect all sexes, gender norms, caregiving roles, and access to information and services significantly shape vulnerability, care-seeking behavior, and survival. |

| Sector | Link to the disease |
|---|---|
| **Education** | Importantly, schools and other facilities dedicated to children and youth can offer an important space for them to engage, mobilise 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 mobilise their peers. |
| **Livelihoods** | Outbreaks of CCHF can lead to significant public health challenges, including the need for strict infection control measures, increased demand for healthcare resources, and economic impact due to livestock loss and reduced agricultural productivity. Fear and stigma associated with the disease can also lead to social disruption. |

## Resources:


- WHO. (2022). *Crimean-Congo haemorrhagic fever.* Available at: https://www.who.int/news-room/fact-sheets/detail/crimean-congo-haemorrhagic-fever
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- WHO. (2024). *Crimean-Congo Hemorrhagic Fever Outbreak Toolbox*. Available at: https://www.who.int/emergencies/outbreak-toolkit/disease-outbreak-toolboxes/crimean-congo-hemorrhagic-fever-outbreak-toolbox
- Crimean-Congo Haemorrhagic Fever (CCHF): Manual of Diagnostic Tests and Vaccines for Terrestrial Animals – WOAH
- ECDC. (2024). *Crimean-Congo haemorrhagic fever*. Available at: https://www.ecdc.europa.eu/en/crimean-congo-haemorrhagic-fever
- Ozdarendeli A. (2023). *Crimean-Congo Hemorrhagic Fever Virus: Progress in Vaccine Development*. Diagnostics (Basel, Switzerland), 13(16), 2708. https://doi.org/10.3390/diagnostics13162708