

FREQUENTLY ASKED QUESTIONS: CRIMEAN-CONGO HAEMORRHAGIC FEVER

- **What is a viral haemorrhagic fever?**

A viral haemorrhagic fever is a disease which is caused by a virus and has a tendency to disturb blood clotting, so that patients may develop uncontrolled bleeding (haemorrhage). Many common infections and diseases can resemble viral haemorrhagic fever, but the term is reserved for a particular group of viral diseases associated with a high death rate. In Africa, these include Crimean-Congo haemorrhagic fever, Lassa fever, Marburg disease and Ebola fever. Apart from the fact that they cause similar disease, the viruses are not closely related to each other and are transmitted to humans in a variety of ways.

- **What is Crimean-Congo haemorrhagic fever?**

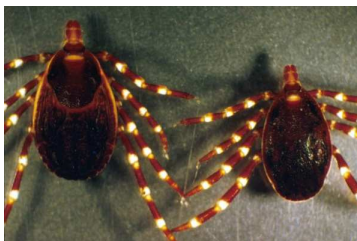
Crimean-Congo haemorrhagic fever is a tick-borne (i.e. transmitted by a ticks) viral disease of humans which occurs in Africa, Asia, the Middle East and Europe.

- **Why does it have the name 'Crimean-Congo haemorrhagic fever'?**

A disease given the name Crimean haemorrhagic fever was first recognised in Crimea in 1944-1945, although the virus which causes the disease was only identified in 1967. In 1956 a virus given the name Congo was isolated from a child with fever in the former Belgian Congo (now the Democratic Republic of Congo). In 1969 it was discovered that the two viruses were the same. Consequently, both the virus and the disease are called 'Crimean-Congo haemorrhagic fever'. The name is often abbreviated to 'CCHF' and in South Africa the disease is commonly called 'Congo fever'.

- **Where does the CCHF virus come from?**

The virus is transmitted mainly by *Hyalomma* ticks, which have distinctive brown and white bands on their legs; these are known in South Africa as bont-legged ticks (Afrikaans: bontpootbosluise). The virus can remain in the ticks for long periods, and even pass through the eggs to infect the next generation of ticks.



***Hyalomma* or "bontpoot" ticks often implicated in the transmission of CCHF virus**
(Picture may only be reproduced with permission)

There are three species of *Hyalomma* in South Africa, and although they are widely distributed, the ticks tend to be most numerous in the drier north-western parts of the country – the Karoo, western Free State, Northern Cape and North West Province.

Immature *Hyalomma* ticks (larvae and nymphs) feed on ground birds (such as guinea fowl) as well as small mammals up to the size of hares. Adult *Hyalommas* feed on livestock (such as cattle, sheep and goats) as well as wild animals (such as antelope) and also ostriches.

Animals or ostriches bitten by infected ticks do not develop disease, but virus can circulate in their blood for up to a week, after which they become immune to further infection. Non-infected ticks become infected if they feed on animals during the short period when virus is circulating.

- **How do humans become infected?**

Humans can become infected in the following ways:

- Being bitten by infected ticks
- Squashing infected ticks (if fluid from the ticks enters into cuts/grazes on the skin, or splashes onto mucous membranes – including the eye, nose and mouth)
- If blood/tissue from infected animals (during the short period that the animals have virus in circulation) comes into contact with cuts/grazes on the skin, or splashes onto mucous membranes – including the eye, nose and mouth.
- If blood/tissue from infected humans comes into contact with cuts/grazes on the skin or splashes onto mucous membranes – including the eye, nose and mouth.
- Needle-stick/sharps injuries in healthcare workers from infected patients.

People are not always aware of being bitten by ticks, and in patients with CCHF ticks have been found attached in concealed sites – such as on the scalp and between the toes.

- **Who is at risk of becoming infected?**

Occupational groups such as herders, farmers, abattoir workers, veterinarians/animal health workers, hunters and persons informally slaughtering domestic/wild animals are at higher risk of infection. These persons often have exposure to ticks on the animals and in the animal environment, and also often have exposure to animal blood/tissues (for example during castration of calves, vaccination, notching/tagging of ears, slaughtering etc).

Within abattoirs, those who come into contact with fresh blood are at greatest risk. Once carcasses have been bled out and hung to mature there is a sudden increase in acidity of the meat and the virus cannot be detected in the carcass. Ostriches appear to be the only birds in which there is similar circulation of virus in blood as occurs in mammals. Half-fed ticks which detach from the hides of recently slaughtered animals/ostriches may attach indiscriminately to hosts available in their environment, and thus infect abattoir workers. Although the proportion of mature animals/ostriches that will have virus in circulation may be extremely low, many thousands of animals are slaughtered each day at abattoirs.

Meat processed and matured according to standard abattoir practice does NOT constitute a danger to consumers.

Healthcare workers attending to humans with CCHF are also at risk of infection from needle-stick and splash exposures, and there have been several instances of secondary spread of infection from patients to healthcare workers in South Africa. This can occur through contact of broken skin/mucous membranes with blood or blood-tinged body fluids and wastes of a CCHF patient, or via needle-stick/sharps injuries.

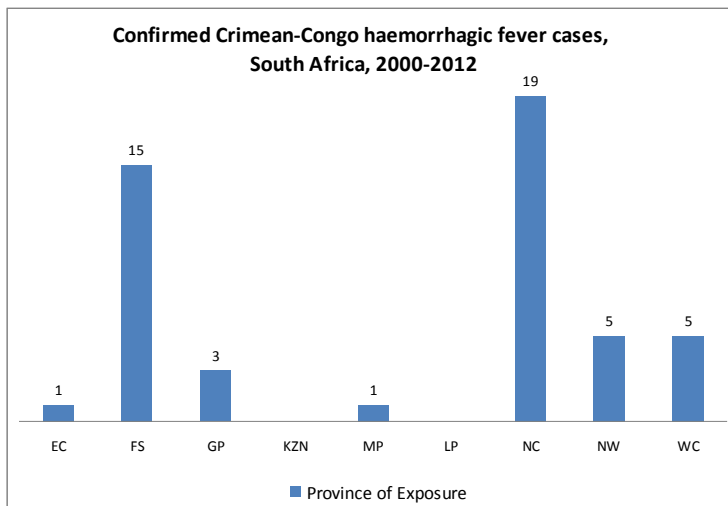
Persons living in the countryside, and town dwellers who visit the countryside for occupational or recreational purposes (including hunting and hiking), are also at risk from tick bites.

In some cases, no direct evidence can be obtained to indicate that a patient with CCHF had contact with animal blood or with ticks, and the only evidence to suggest possible exposure to infection is the fact that the patient lived in or visited an environment where such contact was possible.

Although spread of infection to family members has never been recorded in South Africa, it is possible. The only time that infection has been seen in groups of people is when they have been exposed together to a common source of infection, as in slaughtering of animals.

- **How common is the disease?**

Human CCHF cases have been reported annually from South Africa since 1981, when it was first recognized in the country; between 0 and 20 cases of CCHF are diagnosed each year. Through nearly thirty years of passive surveillance, a total of 187 cases has been laboratory-confirmed. Although cases have been reported from all of the nine provinces, more than half of the cases originate from the semi-arid areas of Northern Cape Province (31.5% of cases) and Free State Province (23% of cases).



- **How often is it fatal?**

According to various studies, the death rate from CCHF is reported to be 3-30%. However, the death rate can be much higher if patients do not receive prompt and proper medical attention.

- **What are the signs and symptoms of CCHF?**

The disease has a short incubation period followed by a very sudden onset of illness. People become sick within 1-9 days after exposure to the virus, and abruptly develop non-specific symptoms including high fever (which usually persists for 4-5 days), headache, malaise (weakness) and myalgia (muscle pain) – particularly in the lower back and thighs. They often have conjunctivitis (sore, red eyes), flushing of the face

and neck, and may also experience nausea, abdominal pain, and even diarrhoea early in the disease.

After 3-5 days of illness, the 'haemorrhagic period' develops. Patients often develop a rash (called a petechial rash) followed by various bleeding tendencies, depending on the severity of illness. They may bruise easily, often have nose bleeds, and may pass blood in the stool and urine. Stools seldom contain fresh blood – they usually have a dark and tar-like appearance. Small or large red spots of bleeding into the skin appear, and there may be large confluent areas of bleeding into the skin around injection sites and in skin folds (such as the groin or armpit). Patients may vomit blood and bleed from the gums, and women may develop heavy vaginal bleeding. Blood continues to ooze from needle puncture sites. There can also be internal bleeding, including the brain (intracerebral) or the lung. Patients go into a coma as liver, kidney and lung functions fail, and death occurs \pm 5-14 days after onset of illness.



Petechial rash on the legs of CCHF case (Picture may only be reproduced with permission).



Dispersed ecchymoses (bleeding under the skin) on the limbs and back of a CCHF case (Picture may only be reproduced with permission).

Patients who recover usually show sudden improvement from day 10 of illness onwards. Virus remains detectable in human blood for up to 2 weeks after the onset of illness, but once the results of blood tests indicate that the patient's body functions have recovered and they feel well and are no longer bleeding, they can be discharged from hospital. Although there has been no indication that virus continues to be excreted in body fluids, patients should refrain from intimate contact with other people for 6 weeks after recovery from the disease as a precaution against spread of infection. Convalescent patients should not undertake heavy activities during this period. After recovery, patients are immune to further infection.

- **What is the treatment of CCHF?**

Treatment consists essentially of supportive therapy (controlling bleeding etc). The antiviral drug ribavirin may be of benefit in patients with CCHF and is available in South Africa.

- **What action should be taken if a person is suspected of having CCHF?**

The disease may be suspected when a person suddenly becomes ill with headache, fever and chills, muscle pains etc less than 9 days after being exposed to a tick (being bitten by a tick or squashing a tick) or direct contact with blood/tissues of livestock, wild animals or human CCHF patients.

A doctor should be consulted immediately if CCHF is suspected. Healthcare workers must ensure that they apply strict infection prevention and control measures. On no account should patients suspected to be suffering from any haemorrhagic fever be referred to a hospital without first discussing with the relevant clinicians.

CCHF is a category A notifiable disease in South Africa, and the healthcare worker who makes the diagnosis must notify the Department of Health within 24 hours by telephone/fax and also complete a GW17/5 form.

- **What precautions should be applied to persons who have potentially been exposed to infection?**

Local and provincial health officials are responsible for investigating the circumstances surrounding confirmed cases of CCHF, and instituting such control measures as may be necessary. Persons in the community at large, including family members, who have been in contact with confirmed CCHF patients, or who have been exposed to the same potential source of infection, are classified as being at zero, low, moderate or high risk according to defined criteria, and placed under appropriate observation as discussed below. Healthcare workers who have been exposed to patients are separately placed under observation of the infection prevention and control practitioners of the institution concerned.

Contacts considered to be at high risk would, for instance, include persons who have had accidental injury with a needle contaminated with the blood of a confirmed CCHF patient. Such persons would be placed under active observation which consists of reporting twice a day to a designated health official to be monitored for signs and symptoms of the disease and to have their temperature recorded for a period of 2 weeks after last contact with the patient (calculated to exceed the incubation period of CCHF by a wide margin of safety). Low risk contact of confirmed CCHF patients, who have not had closer than one metre face-to-face contact with the patient for instance, may be placed under passive observation, which could consist of reporting to the responsible health official daily by telephone rather than in person.

Note that persons under observation are not in quarantine and may continue with their normal activities, including attending to patients. They are only considered infectious once they become ill themselves. As soon as they develop signs and symptoms considered to be characteristic of CCHF disease, or a fever of $\geq 38.5^{\circ}\text{C}$, they are admitted to hospital as suspected cases.

Places such as abattoirs constitute a special case. Since exposure potentially occurs on a continuing basis (although the risk is actually low), there is seldom an indication for placing selected individuals under special observation. Instead, clinics attached to abattoirs should maintain a high degree of awareness of CCHF and other diseases that can be acquired from livestock at all times, and ensure that there is appropriate investigation of ill members of staff.

Family members and co-workers of patients who become infected on farms may be placed under observation depending on their degree of potential exposure to infection, but since the ticks and virus are so widely distributed there is no logic in placing farms under quarantine.

- **What measures can be taken to prevent exposure to infection?**

There is no human vaccine at present.

Persons potentially exposed to tick bites can use certain pyrethroid acaricides (insecticides used against ticks) to treat clothing such as socks and trousers. Formulations which are generally available from shops that sell equipment for camping and outdoor activities, include aerosol sprays and sachets of concentrated acaricide used to prepare solutions into which clothing is dipped.

Abattoir workers, veterinary/animal health workers, farm workers and hunters etc should use appropriate impervious protective clothing and gloves when engaged in activities which carry a risk of exposure to animal blood.

Guidelines and Resources

- [U.S. Centers for Disease Control and Prevention: CCHF](#)
- [U.K. Health Protection Agency: CCHF](#)
- [World Health Organization: CCHF](#)

For more information:

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