



# Crimean-Congo Hemorrhagic Fever

## Fact Sheet

### What is Crimean-Congo hemorrhagic fever?

Crimean-Congo hemorrhagic fever (CCHF) is caused by infection with a tick-borne virus (*Nairovirus*) in the family *Bunyaviridae*. The disease was first characterized in the Crimea in 1944 and given the name Crimean hemorrhagic fever. It was then later recognized in 1969 as the cause of illness in the Congo, thus resulting in the current name of the disease.

### Where is the disease found?

Crimean-Congo hemorrhagic fever is found in Eastern Europe, particularly in the former Soviet Union. It is also distributed throughout the Mediterranean, in northwestern China, central Asia, southern Europe, Africa, the Middle East, and the Indian subcontinent.

### How is CCHF spread and how do humans become infected?

Ixodid (hard) ticks, especially those of the genus, *Hyalomma*, are both a reservoir and a vector for the CCHF virus. Numerous wild and domestic animals, such as cattle, goats, sheep and hares, serve as amplifying hosts for the virus. Transmission to humans occurs through contact with infected animal blood or ticks. CCHF can be transmitted from one infected human to another by contact with infectious blood or body fluids. Documented spread of CCHF has also occurred in hospitals due to improper sterilization of medical equipment, reuse of injection needles, and contamination of medical supplies.



*Hyalomma* tick image.

### What are the symptoms of Crimean-Congo hemorrhagic fever?

The onset of CCHF is sudden, with initial signs and symptoms including headache, high fever, back pain, joint pain, stomach pain, and vomiting. Red eyes, a flushed face, a red throat, and petechiae (red spots) on the palate are common. Symptoms may also include jaundice, and in severe cases, changes in mood and sensory perception. As the illness progresses, large areas of severe bruising, severe nosebleeds, and uncontrolled bleeding at injection sites can be seen, beginning on about the fourth day of illness and lasting for about two weeks.

### How is Crimean-Congo hemorrhagic fever diagnosed?

Laboratory diagnosis of CCHF can be made by finding a positive serological test result, evidence of viral antigen in tissue by immunohistochemical staining and microscopic examination, or identification of viral RNA sequence in blood or tissue, in a patient with a clinical history compatible with CCHF.

### **Are there complications after recovery?**

The long-term effects of CCHF infection have not been studied well enough in survivors to determine whether or not specific complications exist. However, recovery is slow.

### **Is the disease ever fatal?**

In documented outbreaks of CCHF, fatality rates in hospitalized patients have ranged from 9% to as high as 50%.

### **How is Crimean-Congo hemorrhagic fever treated?**

Treatment for CCHF is primarily supportive. Care should include careful attention to fluid balance and correction of electrolyte abnormalities, oxygenation and hemodynamic support, and appropriate treatment of secondary infections. The virus is sensitive in vitro to the antiviral drug ribavirin. It has been used in the treatment of CCHF patients reportedly with some benefit.

### **Who is at risk for the disease?**

Animal herders, livestock workers, and slaughter houses in endemic areas are at risk of CCHF. Healthcare workers in endemic areas are at risk of infection through unprotected contact with infectious blood and body fluids. Individuals and international travelers with contact to livestock in endemic regions may also be exposed.

### **How is the disease prevented?**

Agricultural workers and others working with animals should use insect repellent on exposed skin and clothing. Insect repellants containing DEET (N, N-diethyl-m-toluamide) are the most effective in warding off ticks. Wearing gloves and other protective clothing is recommended. Individuals should also avoid contact with the blood and body fluids of livestock or humans who show symptoms of infection. It is important for healthcare workers to use proper infection control precautions to prevent occupational exposure.

An inactivated, mouse-brain derived vaccine against CCHF has been developed and is used on a small scale in Eastern Europe. However, there is no safe and effective vaccine widely available for human use.

### **What needs to be done to address the threat of Crimean-Congo hemorrhagic fever?**

Prevalence needs to be measured in animals and in at-risk humans in endemic areas; and a useful animal model needs to be developed. Further research is needed to determine the efficacy of specific treatment with ribavirin and other antiviral drugs, and develop a safe and effective vaccine for human use.

### **Suggested Reading:**

Khan A, et al. Viral Hemorrhagic Fevers. Seminars in Pediatric Infectious Diseases. Philadelphia: WB Saunders Co., 1997;8 (suppl 1):64-73.

Peters CJ. Viral Hemorrhagic Fevers. Viral Pathogenesis. New York: Lippincott-Raven Publishers, 1997:779-794.

Khan AS, et al. Viral Hemorrhagic Fevers and Hantavirus Pulmonary Syndrome. In HF Conn, RH Clohecy, RB Conn, eds. Current Diagnosis 9. Philadelphia: WB Saunders Co., 1997:193-194.