

Introduction to Crimean-Congo Haemorrhagic Fever

Managing infectious hazards

What do I do if I think I have Crimean-Congo Haemorrhagic Fever?



1. Avoid contact with other people
2. Seek health advice immediately
3. Drink plenty of fluids
4. Ribavirin, an antiviral drug, can be an effective treatment if given early



Protect yourself
from tick bites



Key components for CCHF control

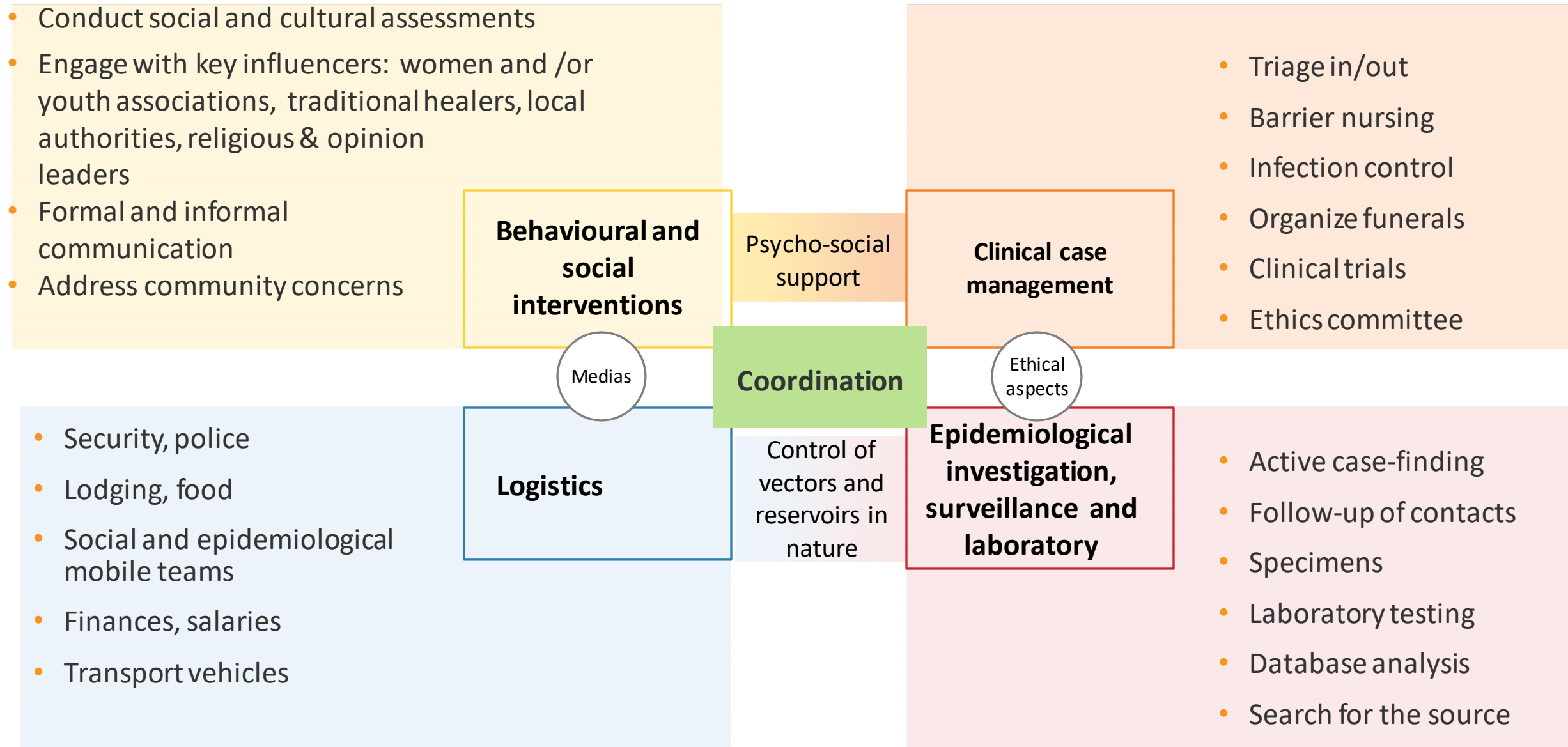
Cases investigation

Care for sick people

**National
leadership**

**Preventive measures in communities and
health care settings**

General strategy to control CCHF outbreaks



1. Controlling CCHF in animals and ticks
2. Reducing the risk of infection in people
3. Controlling infection in health-care settings

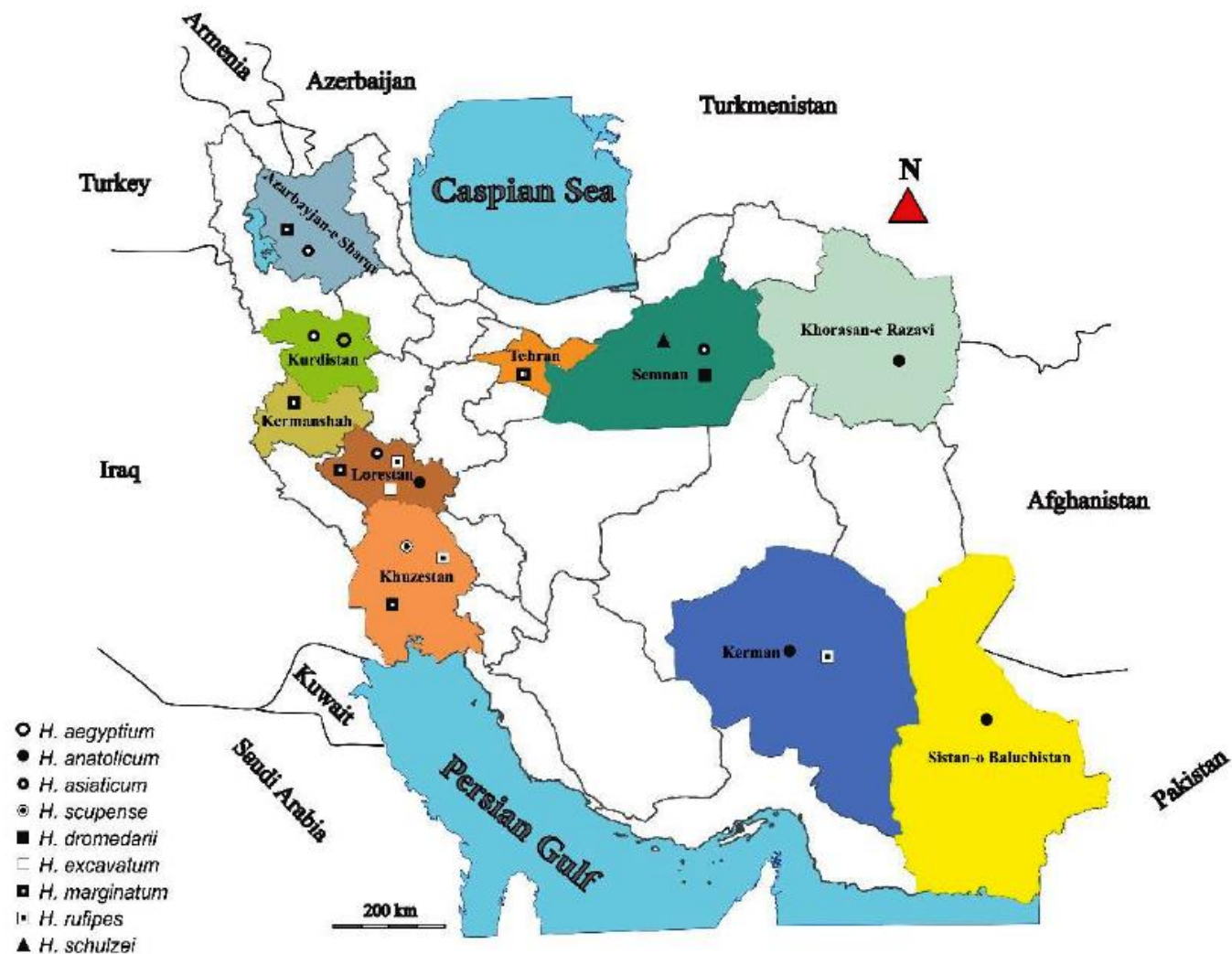
1. Controlling CCHF in animals and ticks

- Ticks of the genus **Hyalomma** are the principal vector of Crimean-Congo haemorrhagic fever.
- It is difficult to prevent or control CCHF infection in animals and ticks as the **tick-animal-tick cycle** usually **goes unnoticed** and **the infection in domestic animals is usually not apparent**.
- Furthermore, the tick vectors are numerous and widespread, so tick control with **acaricides** (chemicals intended to kill ticks) is only a realistic option for well-managed livestock production facilities.
- There are no vaccines available for use in animals.



The Iranian *Hyalomma* (Acari: Ixodidae)

Hosseini Chegeni, A., Hosseini, R., Telmadarraiy, Z., & Abdigoudarzi, M. (2019). The Iranian *Hyalomma* (Acari: Ixodidae) with molecular evidences to understand taxonomic status of species complexes. *Persian Journal of Acarology*, 8(4).
<https://doi.org/10.22073/pja.v8i4.49892>



Collection sites of *Hyalomma* tick species in the provinces of Iran.

- **Quarantine for animals** before they enter slaughterhouses or routinely treat ruminants with acaricides **4 weeks prior to slaughter**. This activity will decrease the risk of the animal being viraemic during slaughter
- Wear mask, gloves and gowns **when slaughtering and butchering animals** in slaughterhouses or at home to prevent skin contact with infected animal tissue or blood.

2. Reducing the risk of infection in people

- Although an **inactivated, mouse brain-derived vaccine** against CCHF has been developed and used on a small scale in eastern Europe, there is currently **no safe and effective vaccine** widely available for human use.
- In the absence of a vaccine, the only way to reduce infection in people is by:
 - **raising awareness** of the risk factors and
 - educating people about **the measures** they can take to **reduce exposure to the virus**.

Approaches for human vaccines against CCHFV

Vaccine type	CCHFV antigen	Immunity		Protection in preclinical model	Clinical evidence		Refs.
		Antibody	T cell		Safety ¹	Manufacturing practicalities	
Inactivated virus (mouse brain)	Whole virus	✓	✓	?	?	X	[60,64]
Inactivated virus (cell culture)	Whole virus	✓	NT	✓ ²	?	X	[97]
Modified Vaccinia Ankara (MVA)	M segment	✓	✓	✓ ³	✓	✓	[98]
	S segment	✓	✓	X	✓	✓	[99]
DNA vaccine	M segment	✓	NT	NT	✓	✓	[100]
	Gc, Gn and NP	✓	✓	✓ ⁴	✓	✓	[91]
Transgenic plant	Glycoprotein	✓	NT	NT	?	✓	[79]
Protein	Gn glycoprotein	✓	NT	X	?	✓	[92]
	Gc glycoprotein	✓	NT	X	?	✓	
Adenovirus	M segment	✓	✓	X	✓	✓	[101]
Virus-like particles	Gc, Gn and NP	✓	✓	✓ ⁵	✓	✓	[91]

Key: NT, not tested; ✓, positive results; X, negative results; ?, unknown.

¹ Based on the same technology used for other pathogens.

² 80% efficacy reported.

³ 100% efficacy reported.

⁴ 100% efficacy reported.

⁵ 40% efficacy reported.

- Engage with communities to promote desired health practices and behaviours, including **reduction of ticks exposure** and **safe meat preparation**.
- Provide **accurate** and **timely health advice** and **information** on the disease.

2. Reducing the risk of infection in people

Reducing the risk of tick-to-human transmission:

- wear protective clothing (long sleeves, long trousers);
- wear light colored 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.

- **Protect yourself from tick bites**

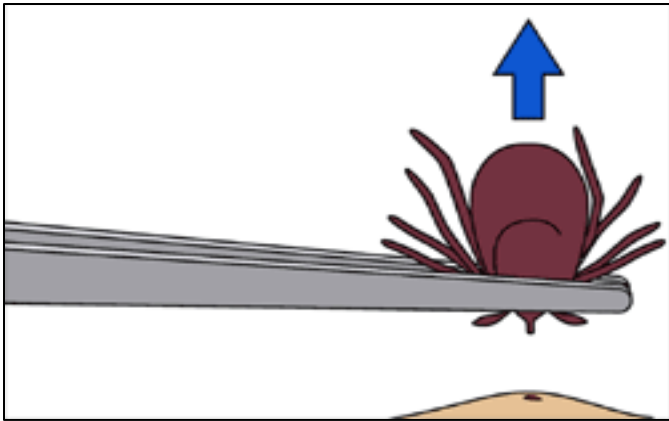
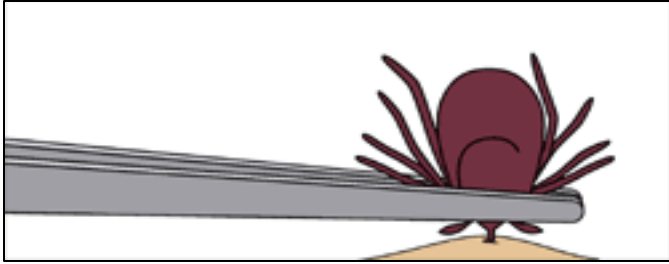
1. Avoid tick-infested areas.
2. Wear light colored clothing for easy finding of ticks on clothes.
3. Wear protective clothing (long sleeves, long pants).
4. Tuck your pant legs into your socks so that ticks cannot crawl up inside of your pant legs.
5. Use chemical repellent with DEET (on skin) and acaricides (tick killer) on boots and clothing.

- **Perform daily tick checks** : regularly examine clothes and skin in search of ticks and remove them.



Image courtesy of zecken.de

CCHF prevention: Safely remove ticks



Images courtesy of the US Centers for Disease Control and Prevention (CDC)

- Use fine-tipped tweezers or a thread
- Grab the tick as close as possible to the skin.
- DO NOT twist or jerk the tick.
- Gently pull straight up until all parts of the ticks are removed.
- Wash hands with soap and water.
- Apply antiseptic on tick bite or clean with soap and water.
- **NEVER crush a tick with your fingers.**

2. Reducing the risk of infection in people

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.

3. Controlling infection in health-care settings

- 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 hemorrhagic fever should follow those developed by **WHO** for **Ebola and Marburg hemorrhagic fever**.

- Avoid contact with infected CCHF patients and deceased.
- Wash hands regularly with soap and water.
- Encourage early treatment in CCHF Treatment Center.
- Use gloves and mask and practice hand-hygiene when caring for suspected CCHF patient at home. Seek health advice.

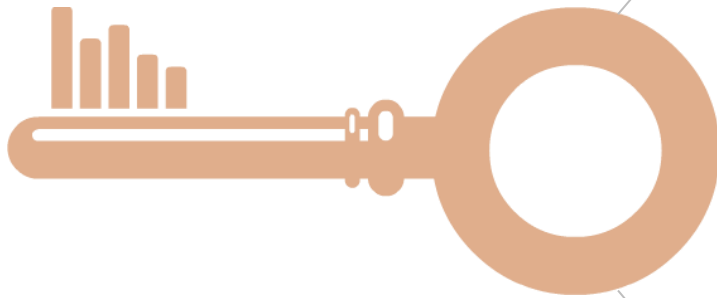
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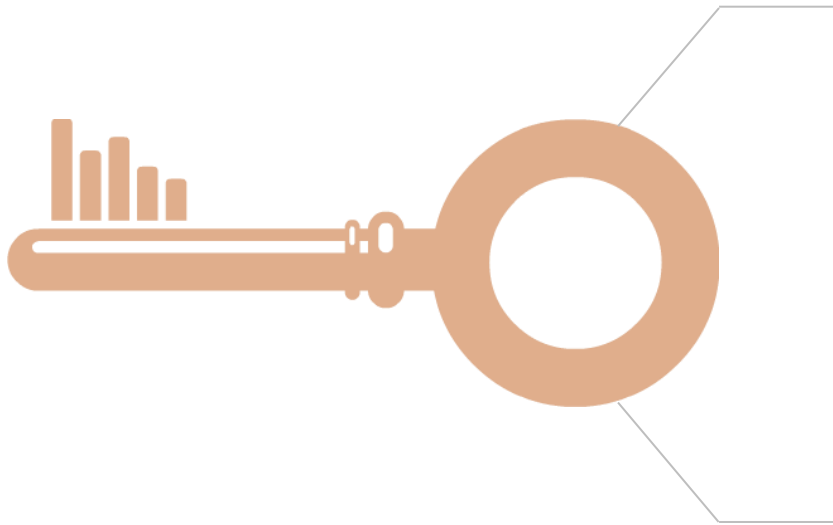
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- Implement Standard Precautions with all patients – regardless of their diagnosis – in all work practices at all times including safe injection practices. <http://www.who.int/csr/resources/publications/standardprecautions/en/index.html>
- Health care workers treating patient with CCHF should apply **extra infection control measures** to prevent contact with the patient's blood and body fluids and contaminated surfaces or materials such as clothing and bedding.
http://www.who.int/csr/resources/publications/ebola/filovirus_infection_control/en/?ua=1
- **Laboratory workers** are also at risk. Samples taken from suspected human CCHF cases for diagnosis should be handled by **trained staff** and processed in suitably equipped laboratories.

Key Challenges for CCHF



- **Difficult to control environmental factors.**
- **Difficult to diagnose patients based on clinical presentation.**
- **Case investigation to confirm mode of transmission/exposure.**



- **Close to patient diagnostic tests are in late stage of assessment.**
- **Candidate drugs are in early stages of testing.**
- **Vaccines are in development.**
- **Affected countries are at the heart of R&D product development.**

中文 **English** Français Русский Español العربية

www.who.int/emergencies/diseases/crimean-congo-haemorrhagic-fever/en/

- Technical information
- Fact Sheet
- Disease outbreak news
- CCHF map
- Related links

Emergencies

Crimean-Congo haemorrhagic fever (CCHF)



NICD South Africa/R. Swanepoel
Ticks of the genus *Hyalomma* are the principal vector of Crimean-Congo haemorrhagic fever. Female (right), male (left).

Crimean-Congo haemorrhagic fever is a viral haemorrhagic fever transmitted by ticks. It can be responsible for severe outbreaks in humans but it is not pathogenic for ruminants, their amplifying host.

The disease was first described in the Crimea in 1944 and given the name Crimean haemorrhagic fever. In 1969 it was recognized that the pathogen causing Crimean haemorrhagic fever was the same as that responsible for an illness identified in 1956 in the Congo, and linkage of the two place names resulted in the current name for the disease and the virus.

Causes

Symptoms

Diagnosis

Treatment

Prevention and control



Crimean-Congo haemorrhagic fever (CCHF) spreads to humans either by tick-bites, or through contact with viraemic animal tissues during and immediately post-slaughter. CCHF outbreaks constitute a threat to public health services because of its epidemic potential, its high case fatality ratio (10-40%), its potential for nosocomial outbreaks and the difficulties in treatment and prevention. CCHF is endemic in all of Africa, the Balkans, the Middle East and in Asia south of the 50° parallel north, the geographic limit of the genus *Hyalomma*, the principal tick vector.

Technical information

Disease outbreak news

CCHF and Dengue - Pakistan
25 October 2010

CCHF - Turkey
8 August 2006

Archive list of DONs on CCHF

Publications and information resources

↓ Introduction to Crimean-Congo Haemorrhagic Fever
pdf, 1.97Mb
April 2018

All publications and information resources on CCHF

Weekly Epidemiological Record

↓ Crimean-Congo haemorrhagic fever (CCHF) and dengue fever, Pakistan
pdf, 1.06Mb
29 October 2010 issue

Archives of WER

Guideline development group: Clinical management of patients with Crimean-Congo Haemorrhagic Fever

The proposed membership of a guideline development group (GDG) on clinical management of individual patients with Crimean-Congo Haemorrhagic Fever is available below. The GDG will convene in

Related links



Pandemic and epidemic diseases (PED)



WHO Emerging and Dangerous Pathogens Laboratory Network



Haemorrhagic fevers



Risk communication



Knowledge transfer and training for outbreaks



International Health Regulations (IHR)



- Dr Pierre Formenty

Infectious Hazard Management
Health Emergency Programme
WHO Geneva

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