

# 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



- Describe signs, symptoms, and transmission of Crimean-Congo Haemorrhagic Fever (CCHF)
- List 4 preventive and control measures
- Describe areas where CCHF is a public health concern.



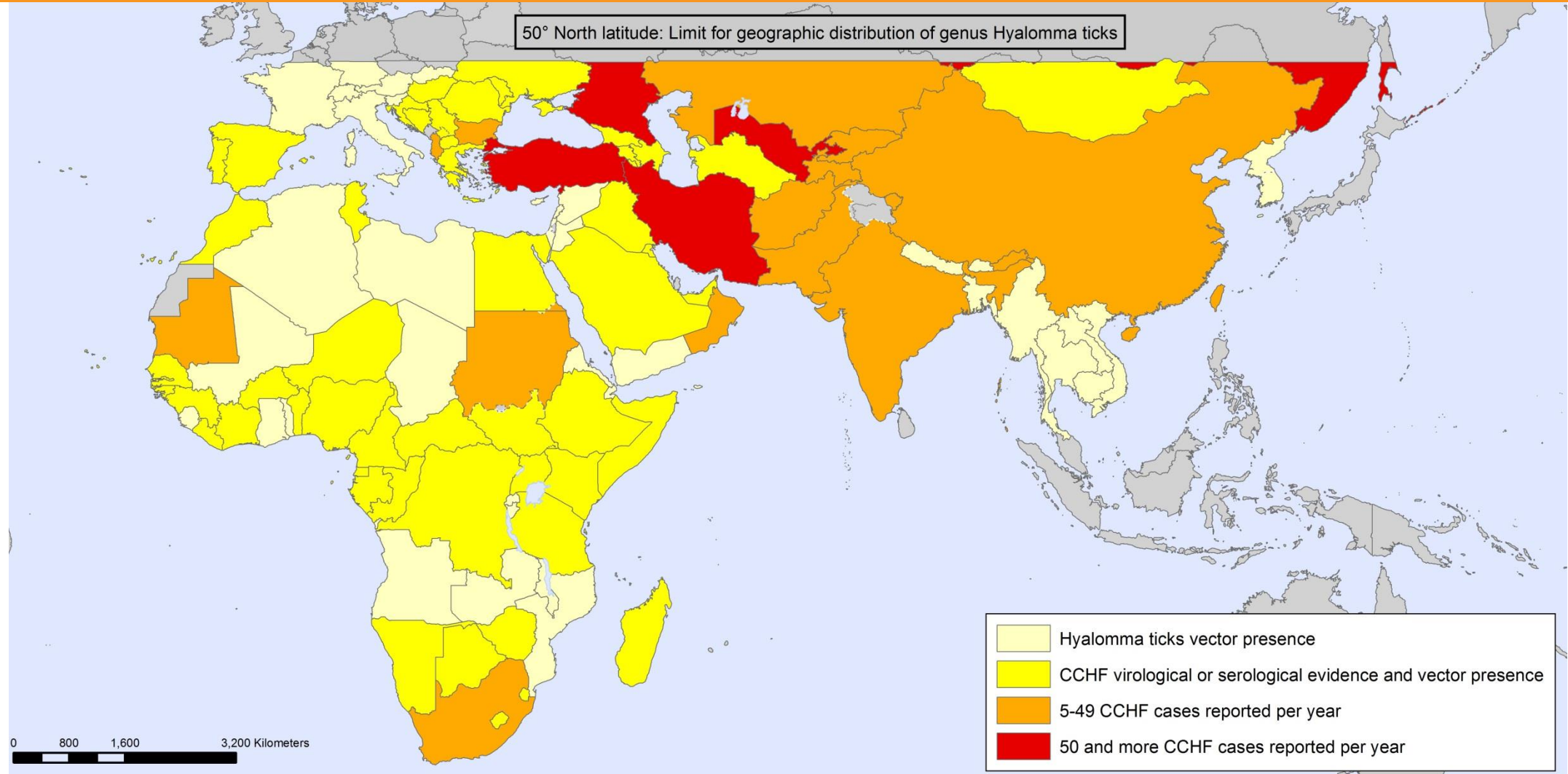
Wikimedia commons/ Friend of Darwinek

- CCHF is viral illness that occurs in Africa, the Balkans, the Middle East and Asia, in countries south of the 50° parallel north.
- The principal reservoir and vector of CCHF are ticks of the genus *Hyalomma*, although other tick genera can be infected with CCHF virus.
- The CCHF virus is transmitted to humans mainly by tick bites or through contact with infected animal blood or tissues during and immediately after slaughter.
- 88% of people infected will have subclinical symptoms. One in eight people will develop a severe disease.

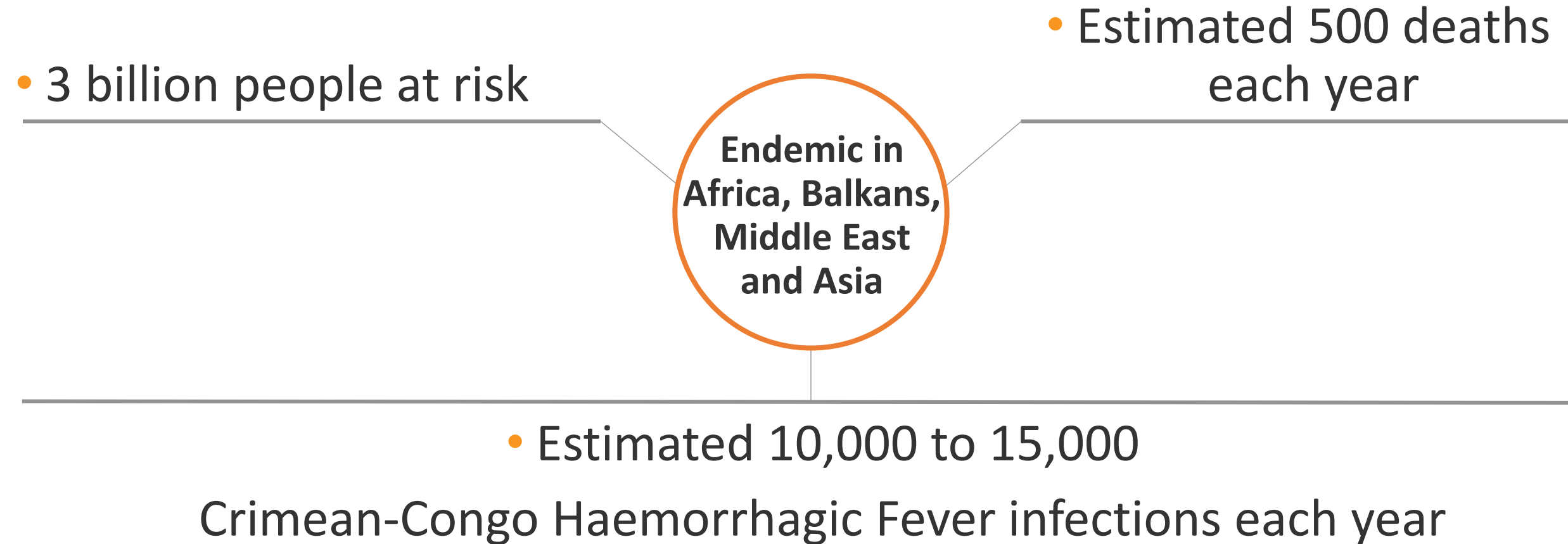


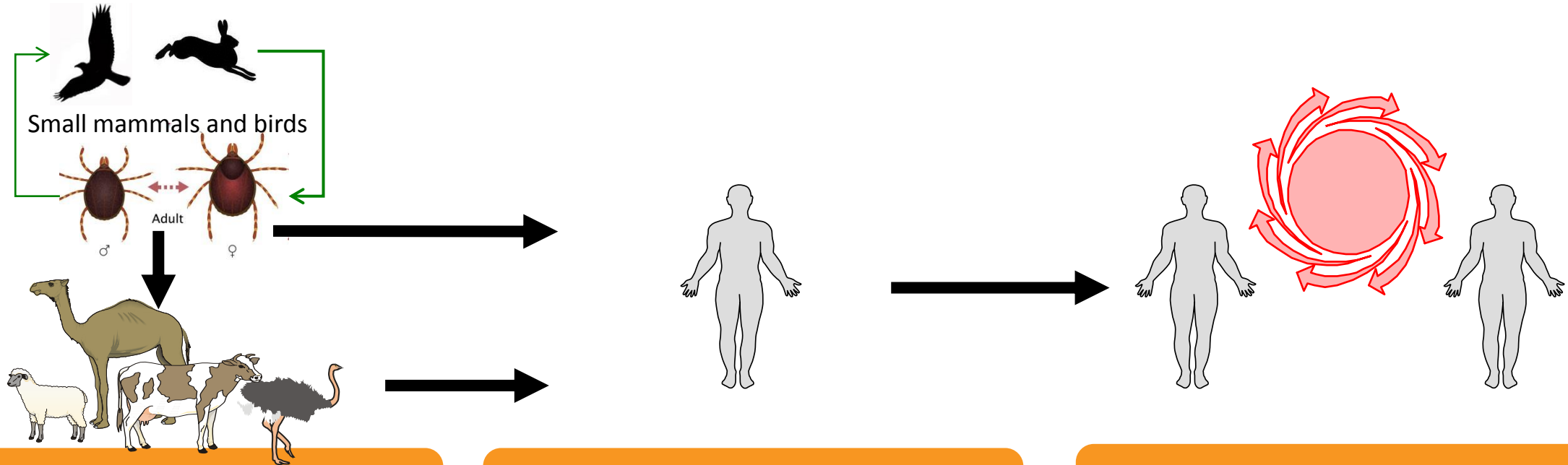
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# Geographic distribution of CCHF



Map available at: [http://www.who.int/csr/disease/crimean\\_congoHF/Global\\_CCHFRisk\\_2017.jpg?ua=1](http://www.who.int/csr/disease/crimean_congoHF/Global_CCHFRisk_2017.jpg?ua=1)





## Reservoir *Hyalomma* ticks

- In nature, CCHF virus maintains itself in a cycle involving ticks and vertebrate.
- Most animals don't show symptoms.

## Primary human infections

- 80 to 90 % of humans are infected through:
- tick bite or direct contact with blood of infected ticks;
  - direct contact with blood/tissues of infected wild animals and livestock.

## Secondary human infections

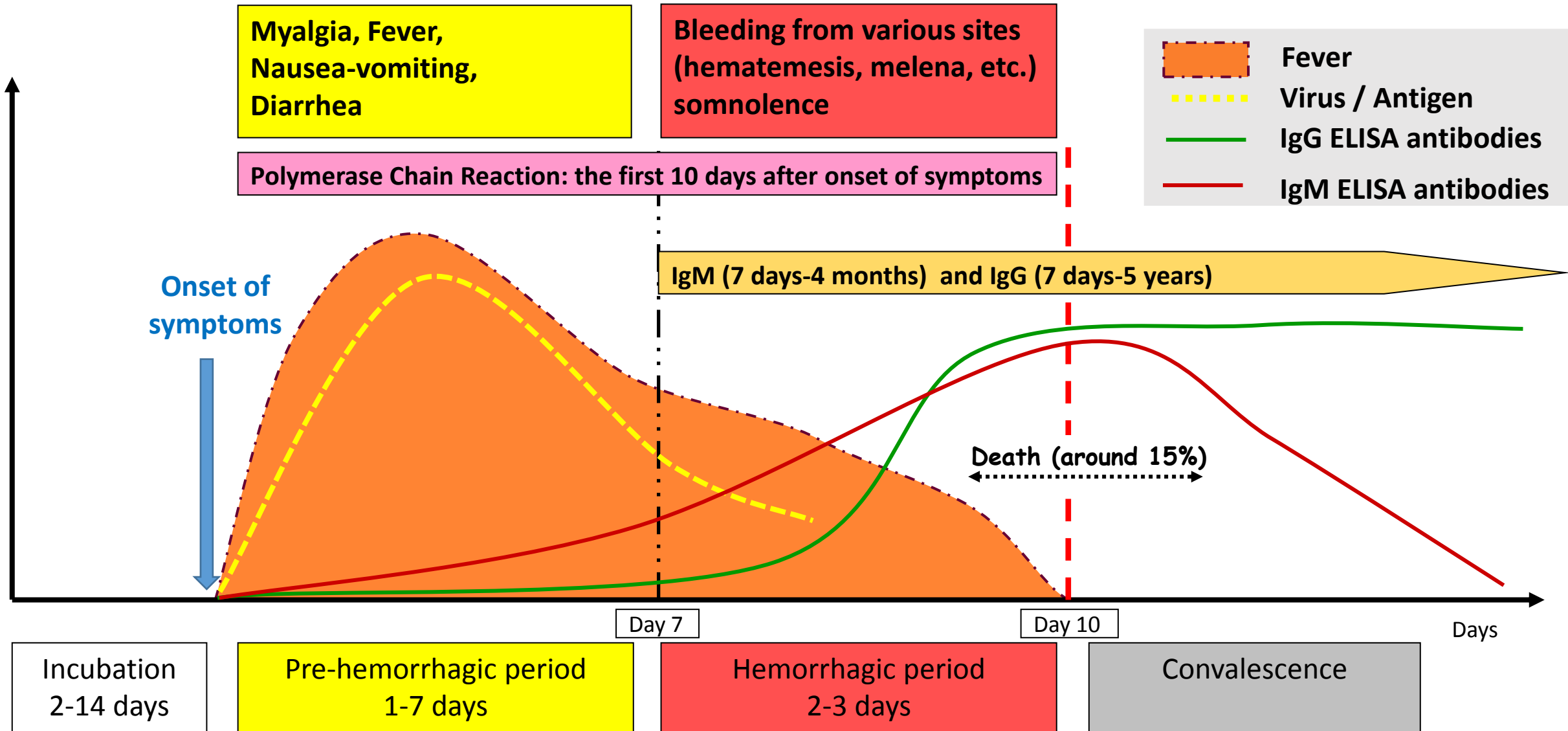
- Secondary human-to-human transmission occurs through direct contact with the blood, secretions, organs or other body fluids of infected persons.
- High transmission risk when providing direct patient care or handling dead bodies (funerals).

- The incubation period ranges from 2-14 days.
- 70% of CCHF cases have a history of tick bite.
- It is estimated that 88% of infections are subclinical.
- Case fatality ratio can reach 15% among patients hospitalized with severe presentation.
- Most common symptoms include:
  - Abrupt onset fever, chills, shudders, myalgia, headaches, sicknesses and vomits, abdominal pain, arthralgia;
  - After a few days: bleeding from mucous membranes, hematomas, ecchymosis, melena, hematuria, nose bleeding, vaginal bleeding, bradycardia, thrombocytopenia, leukopenia.



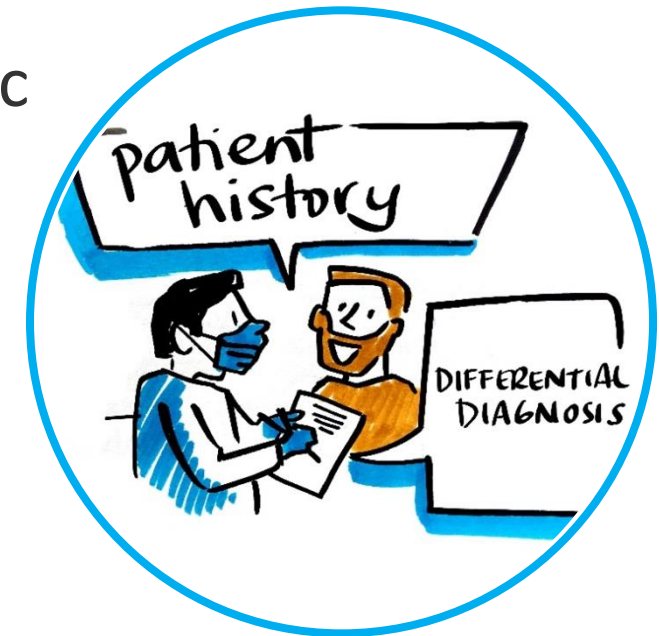
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# Evolution of CCHF symptoms



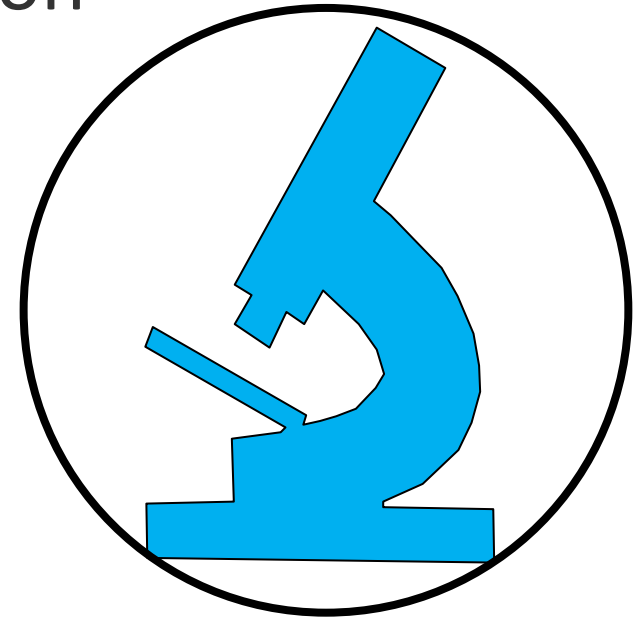


- Symptoms are non-specific; clinical diagnosis may be difficult.
- Differential diagnosis includes other viral haemorrhagic fevers, malaria, typhoid fever, shigellosis, and other viral and bacterial diseases.
- Patient history is essential and should include:
  - exposure to ticks;
  - or exposure to wild animals and livestock;
  - and/or area/village endemic for CCHF;
  - and/or contact with CCHF cases.



## Definitive diagnosis requires testing:

- reverse transcriptase polymerase chain reaction (RT-PCR) assay;
- IgG and IgM antibodies enzyme-linked immunosorbent assay (ELISA);
- antigen detection tests;
- virus isolation by cell culture.



Handling and processing specimen requires **suitably equipped laboratories under maximum biological containment conditions** and staff collecting samples should be **trained**



- Early aggressive intensive care support: monitor fluid, electrolyte balance, renal function, blood pressure, and oxygenation, and careful rehydration
- Support of coagulation system with blood component therapy.
- Supportive drug therapy including : painkillers, antiemetic for vomiting, anxiolytic for agitation, +/-antibiotics and/or antimalarial drugs.
- Antiviral drug ribavirin can be given early in course of the disease.

**Cases investigation**

**Care for sick people**

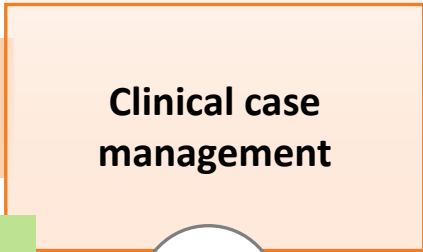
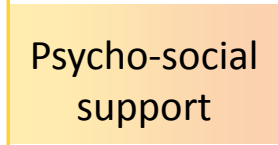
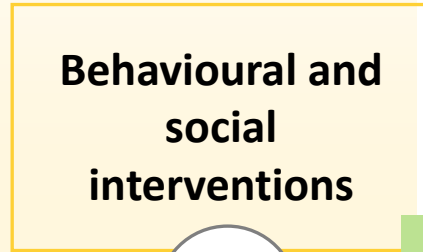


**National  
leadership**

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

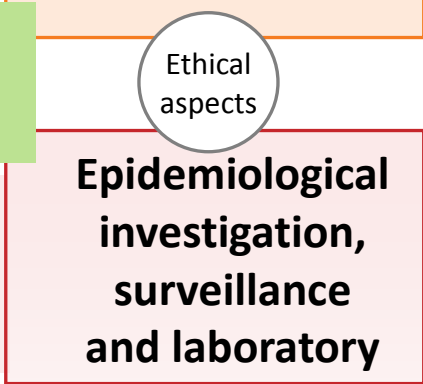
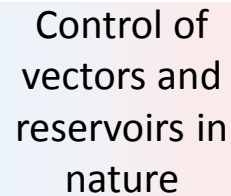
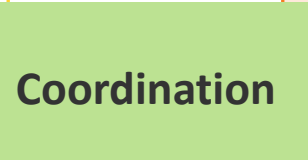
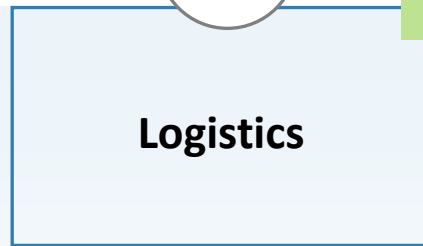
# General strategy to control CCHF outbreaks

- Conduct social and cultural assessments
- Engage with key influencers: women and /or youth associations, traditional healers, local authorities, religious & opinion leaders
- Formal and informal communication
- Address community concerns



- Triage in/out
- Barrier nursing
- Infection control
- Organize funerals
- Clinical trials
- Ethics committee

- Security, police
- Lodging, food
- Social and epidemiological mobile teams
- Finances, salaries
- Transport vehicles



- Active case-finding
- Follow-up of contacts
- Specimens
- Laboratory testing
- Database analysis
- Search for the source



- 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.

## About Ticks

Ticks live in the ground vegetation and move mainly by climbing up plants and walking on the ground. They latch on to a passing animal or human host by using hooks on their legs.

Adults: : 7–15 mm

Nymphs: 2–3.5 mm

Larvae: 0.5–1 mm



Image courtesy of the European Centre for Disease Prevention and Control (ECDC)

*Illustration is only indicative. Sizes can vary from 0.5 to 15 mm, depending on tick species.*

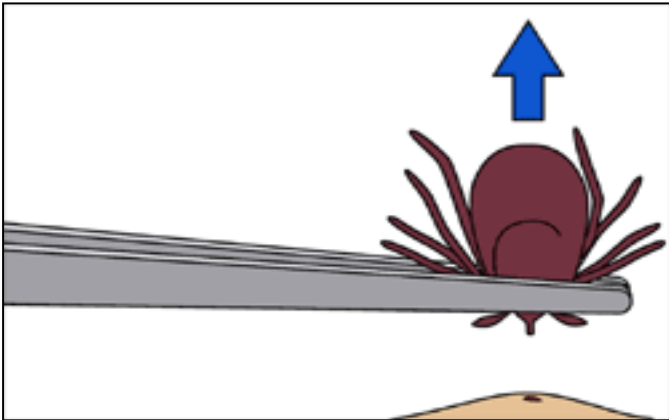
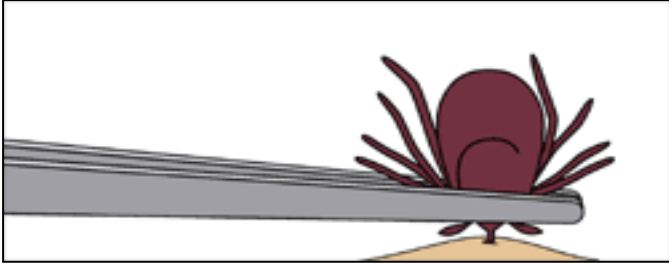
- **Protect yourself from tick bites**

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




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.



- 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.

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

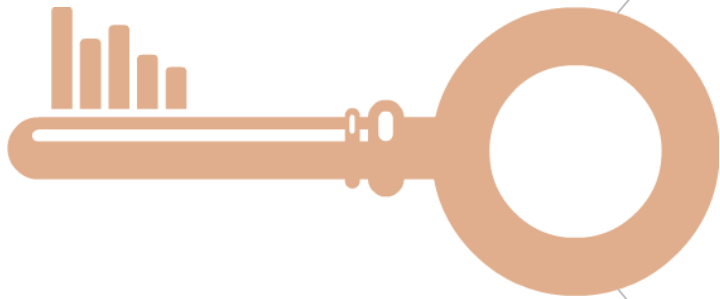


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4. Ribavirin, an antiviral drug, can be an effective treatment if given early

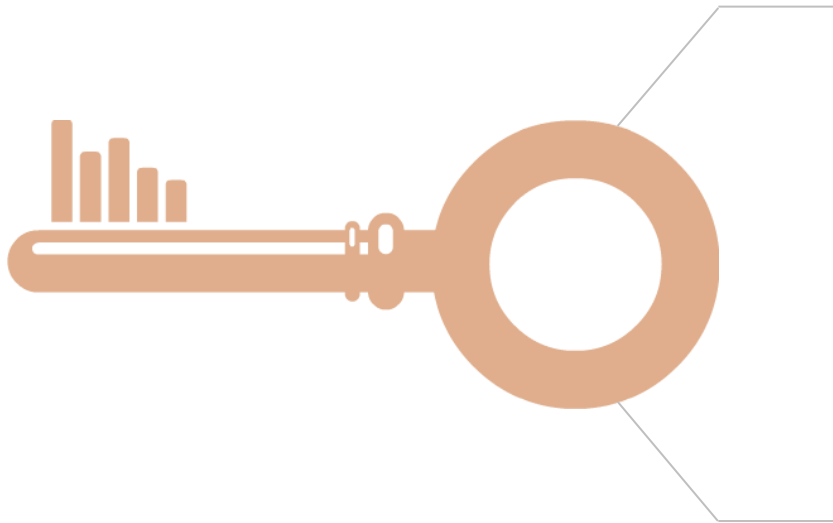
- Implement Standard Precautions with all patients – regardless of their diagnosis – in all work practices at all times including safe injection practices. <http://www.who.int/csr/resources/publications/standardprecautions/en/index.html>
- Health care workers treating patient with CCHF should apply extra 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](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.

- **Reduce ticks in the environment**: use acaricide (tick killer) in farms and livestock production facilities to decrease tick infestations on animals or in stables/barns. Tick control with acaricides is only a realistic option for well-managed livestock production facilities.
- **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.

# 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 عربي

[www.who.int/emergencies/diseases/cremean-congo-haemorrhagic-fever/en/](http://www.who.int/emergencies/diseases/cremean-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

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Infectious Hazard Management  
Health Emergency Programme  
WHO Geneva

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