Introduction to Crimean-Congo haemorrhagic fever

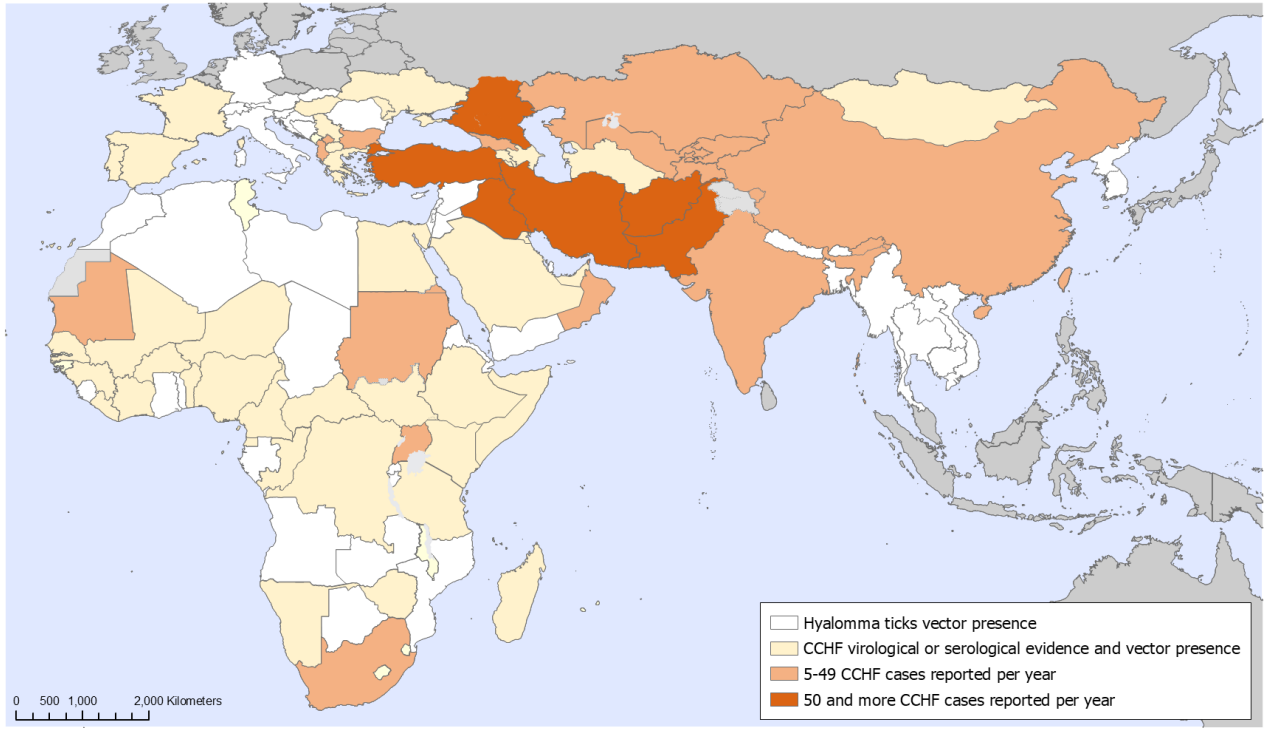
EPI-WIN Webinar – 2 April 2025

Anaïs Legand

World Health Organization

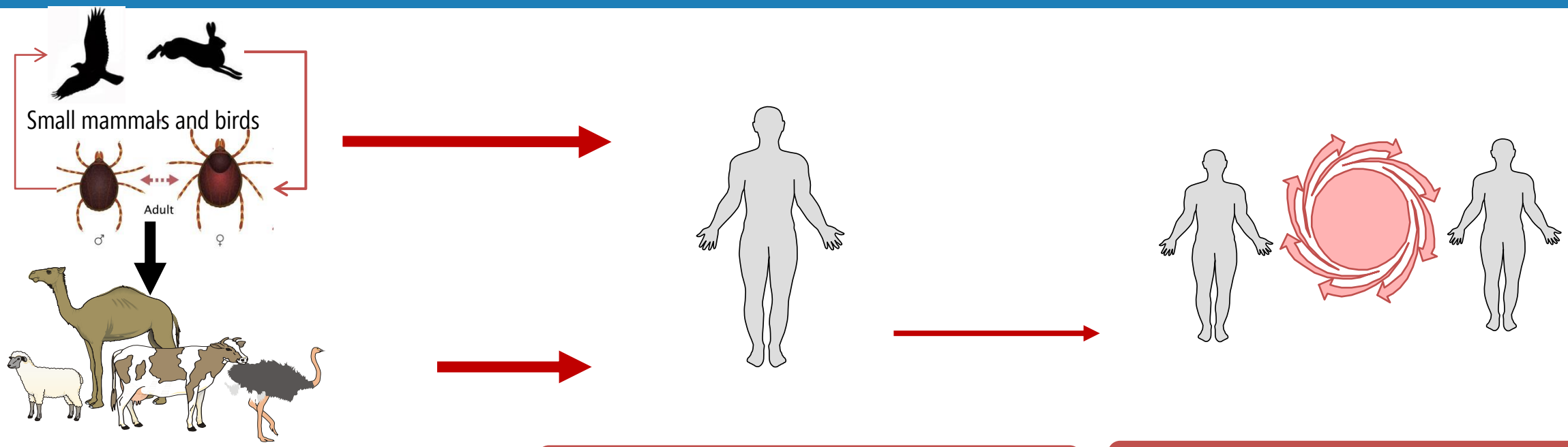
The burden of Crimean-Congo haemorrhagic fever

- CCHF is a **tickborne** viral illness that occurs in **Africa, the Balkans, the Middle East and Asia**, in countries south of the 50° parallel north.
- Most infections (~80%) will result in **subclinical disease**.
- Global burden is estimated **at 10,000 to 15,000 CCHF infections** with 1,000-2,000 deaths per year.
- Vector is widely distributed putting **3 billion people** at risk



Geographic distribution of Crimean-Congo haemorrhagic fever, updated 2024

Crimean-Congo haemorrhagic fever transmission



Main reservoir *Hyalomma* ticks

- CCHF virus maintains itself in a cycle involving ticks and vertebrate.
- The size of ***Hyalomma* tick** population is fluctuating, exponential increase during spring increasing the risk of tick bite.
- **Most animals don't show symptoms**.

Primary human infections

80 to 90 % of humans are infected through:

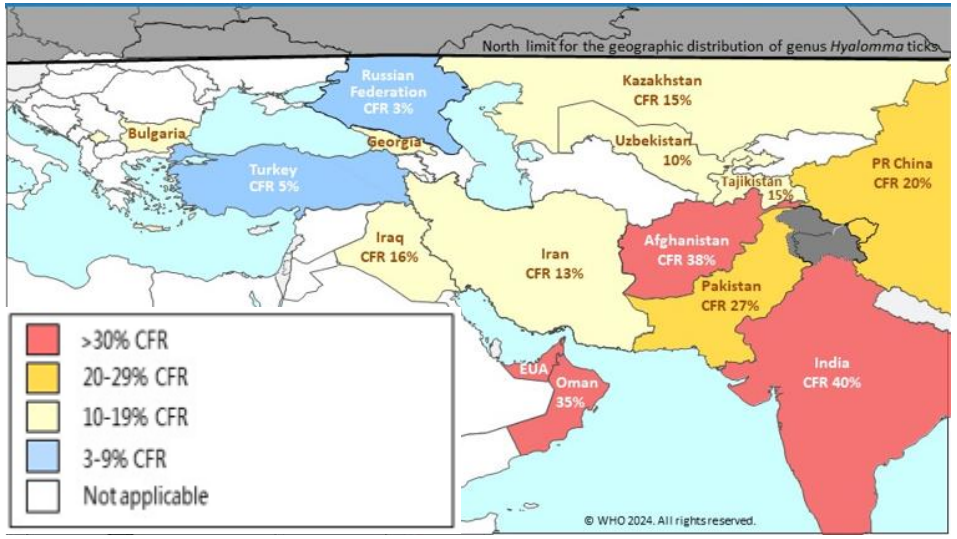
- **tick bite** or **direct contact with blood** of infected ticks;
- **direct contact with blood/tissues** of infected wild animals and livestock.

Secondary human infections

- Secondary human-to-human transmission occurs through **direct contact with the blood, secretions, organs or other body fluids** of infected persons.
- Transmission risk **when providing direct patient care.**

CCHF disease characteristics

- The incubation period ranges from **2-14 days**.
- Case fatality ratio can reach **15%-30%** among patients hospitalized with severe presentation and may depend on virus genotype and other factors such as timely access to care.
- **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.

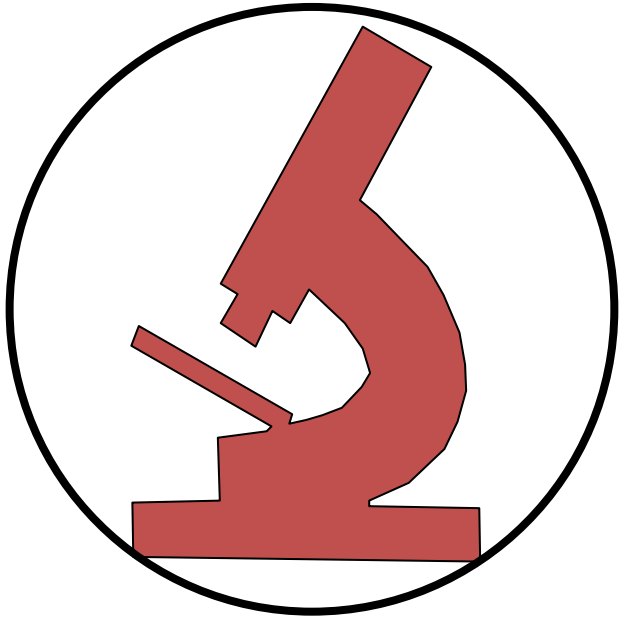


Average reported CFR among confirmed CCHF cases by country

NICD South Africa/R. Swanepoel

Crimean-Congo haemorrhagic fever - diagnosis

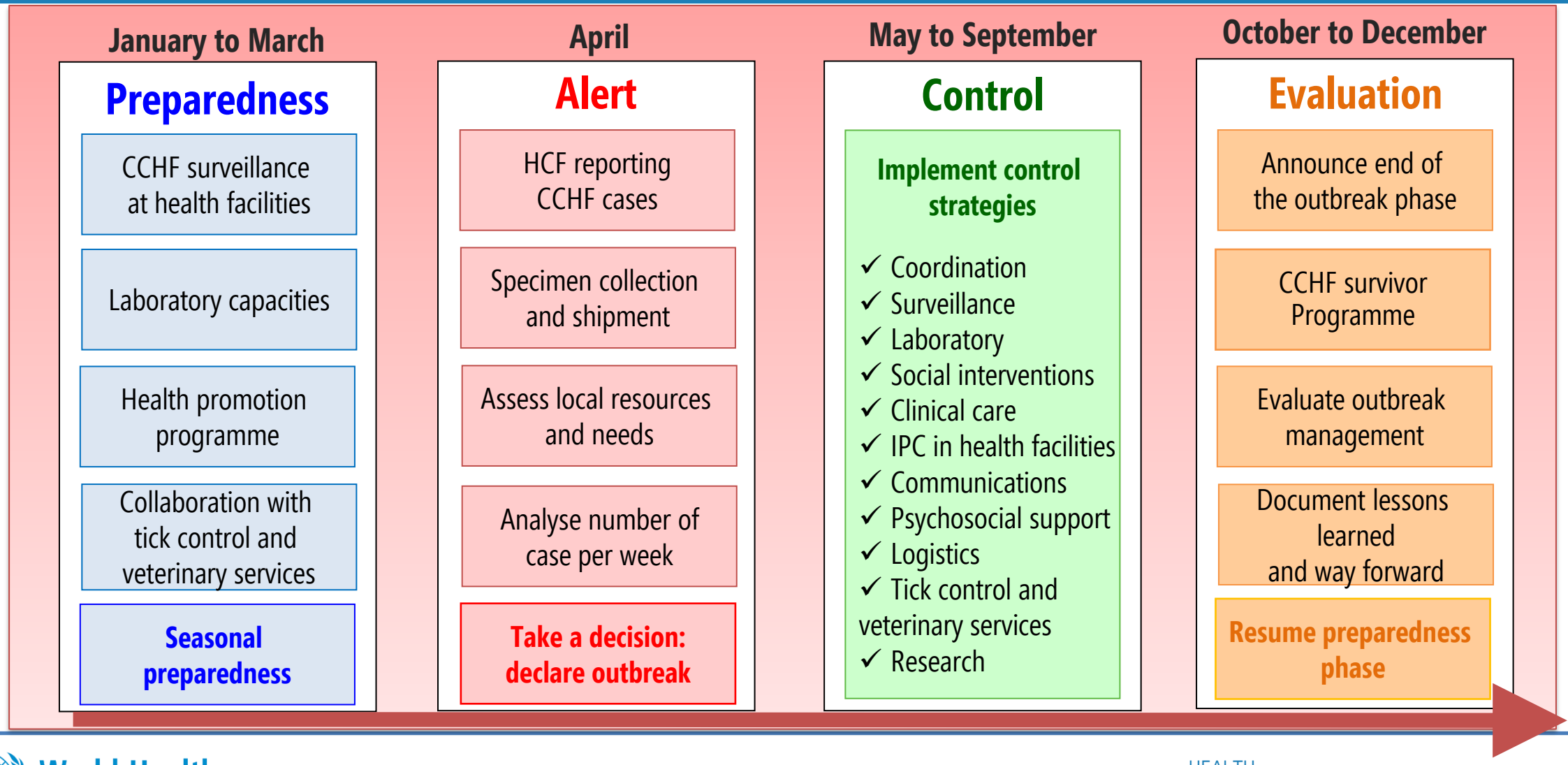
- **Early symptoms are non-specific**, and clinical diagnosis may be difficult. Differential diagnosis includes other VHF, malaria, typhoid fever, shigellosis, and other viral and bacterial diseases.
- **Patient history is essential** and should include exposure to ticks and/or to wild animals and livestock and/or area/village endemic for CCHF and/or contact with CCHF cases.
- **Definitive diagnosis requires laboratory testing** including reverse transcriptase polymerase chain reaction **(RT-PCR)** assay IgG and IgM antibodies enzyme-linked immunosorbent assay **(ELISA).**
- Handling and processing non-inactivated specimen requires **suitably equipped laboratories under maximum biological containment conditions** with **staff adequately trained.**



Crimean-Congo haemorrhagic fever – clinical care

- **Early, aggressive, intensive care support**: monitor fluid and electrolyte balance and renal function, blood pressure, oxygenation, 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.
- No approved therapeutics or vaccines.

PACE framework in CCHF endemic settings



World Health Organization

HEALTH EMERGENCIES programme

Community engagement and awareness

- **Engage with communities** to promote desired health practices and behaviours, including reduction of tick exposure and safe meat preparation.
- **Provide accurate and timely health advice** and information on the disease.
- **Target groups at risk** : exposure to ticks (farmers); exposure to livestock (veterinarian, butchers ...); healthcare workers in endemic settings.

About Ticks

Ticks live in 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.

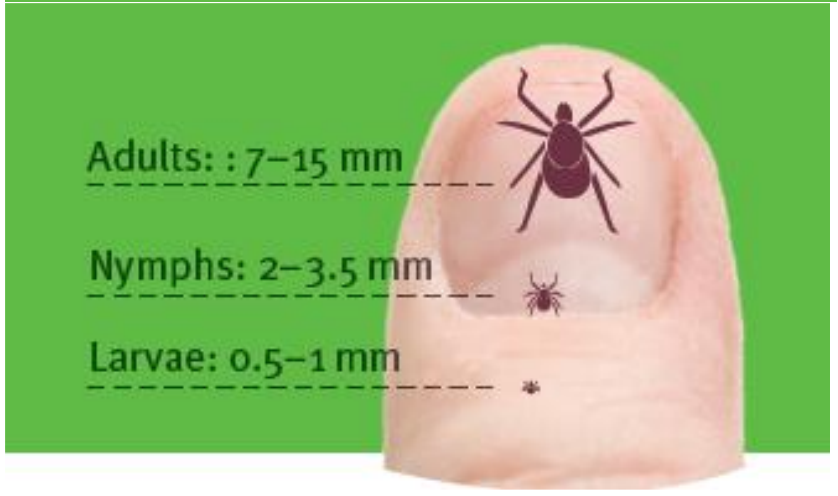
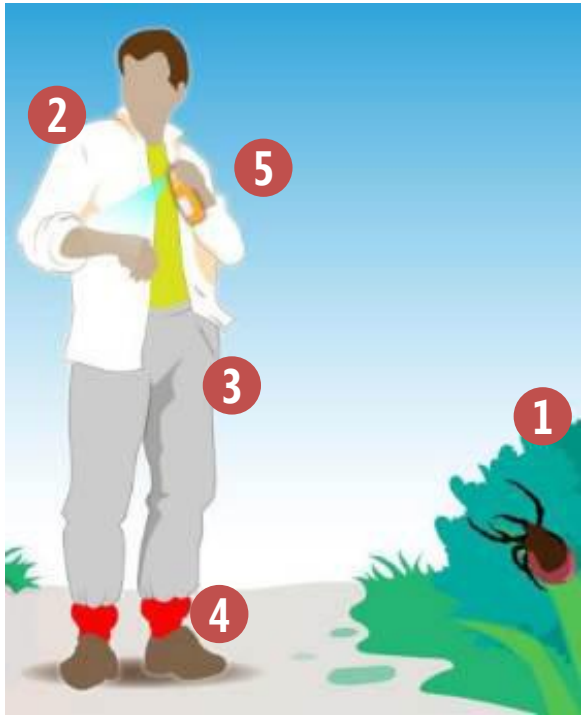


Illustration is only indicative. Sizes can vary from 0.5 to 15 mm, depending on tick species.

Reducing risk of tick-to-human transmission

- **Protect yourself from tick bites**
  1. Avoid tick-infested areas.
  2. Wear light coloured 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.



CCHF prevention in animal settings

- **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 animals** before they enter slaughterhouse 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 masks, gloves and gowns **when slaughtering and butchering animals** in slaughterhouse or at home to prevent skin contact with infected animal tissue or blood.

Mitigating the risk of human-to-human transmission

- **Early detection and referral for improved chance of survival**
  - Refer patient for care as early as possible (increase level of suspicion at lower health facility level) in a CCHF treatment facility.
  - Avoid contact with infected CCHF patient : use gloves and mask and practice hand-hygiene when caring for suspected CCHF patient.
- **Controlling infections in healthcare settings**
  - Implement Standard Precautions with all patients – regardless of their diagnosis – in all work practices at all times including safe injection practices.
  - 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.

CCHF perspectives

- Important to understand **CCHF ecology and geography** to **adapt/refine local prevention and control strategy** focusing on **prevention, early detection and access to optimized supportive care**.
- Need for **an integrated One Health strategy** and more collaboration at the human-animal interface from prevention to outbreak response with a strong tick control component.
- **R&D products and innovations** : diagnostics, therapeutics and animal vaccines.

Key contact

Thank you for your time!

Questions / suggestions?

Anaïs Legand
Viral Haemorrhagic Fevers team
Health Emergencies Programme
WHO
leganda@who.int

World Health Organization

HEALTH EMERGENCIES programme