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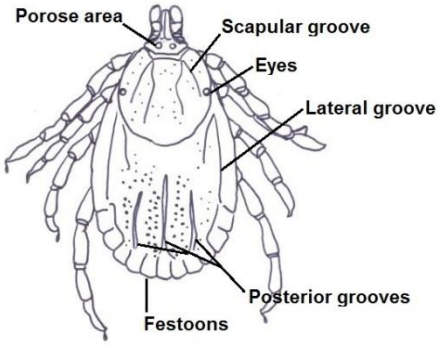
VHFs



Viral hemorrhagic fevers (VHFs) refer to a group of illnesses that are caused by several distinct families of viruses. In general, the term "viral hemorrhagic fever" is used to describe a severe multisystem syndrome (multisystem in that multiple organ systems in the body are affected).

- Alkhurma homorrhagic fever (AHF)
- Chapare hemorrhagic fever (CHHF)
- Crimean-Congo hemorrhagic fever (CCHF)- Tick borne
- Ebola virus disease –Bat
- Hemorrhagic fever with renal syndrome (HFRS)
- Hantavirus pulmonary syndrome (HPS)
- Hendra virus disease
- Kyasanur Forest disease (KFD)- *Tick borne*
- Lassa fever
- Lujo hemorrhagic fever (LUHF)
- Lymphocytic choriomeningitis (LCM)
- Marburg hemorrhagic fever

- Nipah virus encephalitis
- Omsk hemorrhagic fever (OHF)- *Tick borne*
- Rift Valley fever (RVF)- *Mosquito borne*
- Tick-borne encephalitis
- Dengue fever – *Mosquito borne*

Family of viruses	Vectors	Name of viral hemorrhagic fever
Bunyaviridae	Mosquito	Rift valley fever
	Tick	Crimean-congo hemorrhagic fever
	Rodent	Hantavirus fever
Flaviviridae	Mosquito	Dengue fever, yellow fever
	Tick	Omsk fever, kyasanur forest disease
Arenaviridae	Rodent	Lujo virus fever, lassa fever, argentine fever, bolivian fever, venezuelan fever
Filoviridae	Bat	Ebola hemorrhagic fever, marburg hemorrhagic fever

- Humans are not the natural reservoir for any of these viruses. Humans are infected when they come into contact with infected hosts. However, with some viruses, after the accidental transmission from the host, humans can transmit the virus to one another.
- Human cases or outbreaks of hemorrhagic fevers caused by these viruses occur sporadically and irregularly. The occurrence of outbreaks cannot be easily predicted.

- With a few exceptions, there is no cure or established drug treatment for VHFs.
- Viruses associated with most VHFs are zoonotic. Rodents and arthropods are the main reservoirs for viruses causing VHFs. However, the hosts of some viruses remain unknown Ebola and Marburg viruses are well-known examples.

Specific signs and symptoms vary by the type of VHF, but initial signs and symptoms often include marked fever, fatigue, dizziness, muscle aches. Patients with severe cases of VHF often show signs of bleeding under the skin, in internal organs, or from body orifices, shock.
With the exception of yellow fever and Argentine hemorrhagic fever, for which vaccines have been developed, no vaccines exist that can protect against these diseases. Therefore, prevention efforts must concentrate on controlling rodent populations and discouraging rodents from entering or living in homes or workplaces.
For hemorrhagic fever viruses spread by arthropod vectors, prevention efforts often focus on community-wide insect and arthropod control. In addition, people are encouraged to use insect repellant, proper clothing, bednets, window screens, and other insect barriers to avoid being bitten.

For those hemorrhagic fever viruses that can be transmitted from one person to another, avoiding close physical contact with infected people and their body fluids is the most important way of controlling the spread of disease. Disposal of instruments and

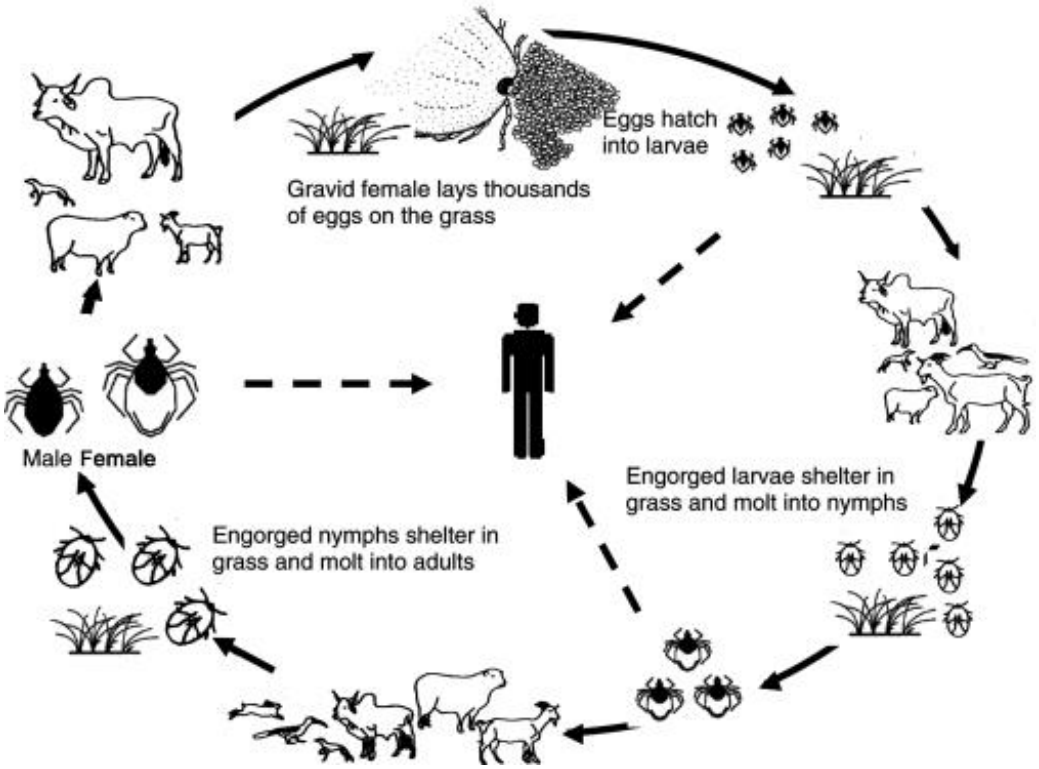
equipment used in treating or caring for patients with VHF, such as needles and thermometers.

- Crimean-Congo hemorrhagic fever

First discovered in 1944 in Crimea

(CCHF) is caused by infection with a tick-borne virus (Nairovirus) in the family Bunyaviridae.

Crimean-Congo hemorrhagic fever is found in Eastern Europe, particularly in the former Soviet Union, throughout the Mediterranean, in northwestern China, central Asia, southern Europe, Africa, the Middle East, and India.
Ixodid (hard) ticks, especially those of the genus,Hyalomma, are both a reservoir and a vector for the CCHF virus. Transmission to humans occurs through contact with infected ticks or animal blood. CCHF can be transmitted from one infected human to another by contact with infectious blood or body fluids.
Animals become infected by the bite of infected ticks and the virus remains in their bloodstream for about one week after infection, allowing the tick-animal-tick cycle to continue when another tick bites.



Incubation period: 1–3 day following a tick bite (5–6 days after exposure to infected blood or tissues).

The onset of CCHF is sudden (75% cases are symptomatic), with initial signs and symptoms including headache, high fever, back pain, joint pain, stomach pain, and vomiting, petechiae on the palate are common. 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. In documented outbreaks of CCHF, fatality rates in hospitalized patients have ranged from

9% to as high as 50%, and 30% of the cases result in death by the end of the second week of illness.

Risk of Exposure

slaughterhouse workers 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.

Diagnosis

Laboratory tests that are used to diagnose CCHF include antigen-capture enzyme-linked immunosorbent assay (ELISA), real time polymerase chain reaction (RT-PCR), virus isolation attempts, detection of antibody by ELISA (IgG and IgM), and cell culture.

Treatment

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

Prevention

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 preventing ticks. Wearing gloves and other protective clothing is recommended. Individuals should also avoid

contact with the blood and body fluids of humans who show symptoms of infection. It is important for healthcare workers to use proper infection control precautions to prevent occupational exposure.

WHO guide for prevention:

- Reducing the risk of tick-to-human transmission:
  - wear protective clothing (long sleeves, long trousers);
  - wear light coloured clothing to allow easy detection of ticks on the clothes;
  - use approved repellent on the skin and clothing;
  - regularly examine clothing and skin for ticks; if found.
  - seek to eliminate or control tick infestations on animals or in stables
  - avoid areas where ticks are present.

- 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.

- **Dengue**

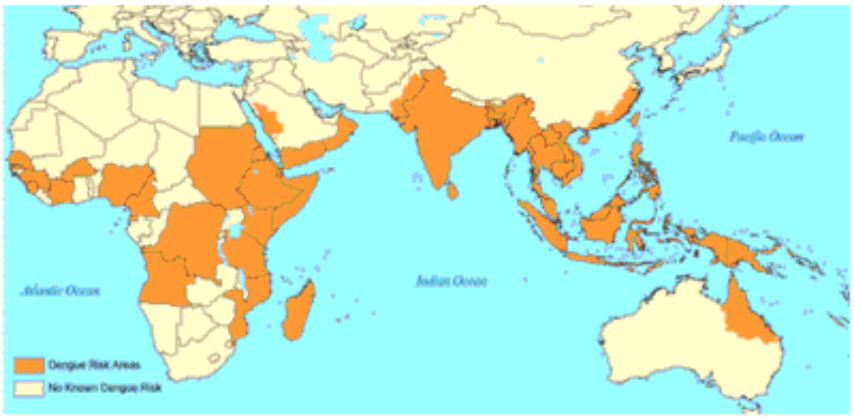
With more than one-third of the world's population living in areas at risk for infection, dengue virus is a leading cause of illness and death in the tropics and subtropics. As many as 400 million people are infected yearly. Dengue is caused by any one of four related viruses transmitted by mosquitoes. There are not yet any vaccines to prevent infection with dengue virus and the most effective protective measures are those that avoid mosquito bites. When infected, early recognition and prompt supportive treatment can substantially lower the risk of medical complications and death.

Clinical Picture
High fever, Severe headache, Joint pain, Muscle and/or bone pain, Rash
Mild bleeding manifestation (e.g., nose or gum bleed, petechiae, or easy bruising)

Low white cell count.

Prevention
There is no vaccine available against dengue, and there are no specific medications to treat a dengue infection. This makes prevention the most important step, and prevention means avoiding mosquito bites if you live in or travel to an endemic area.

The best way to reduce mosquitoes is to eliminate the places where the mosquito lays her eggs, like artificial containers that hold water in and around the home. Outdoors, clean water containers like pet and animal watering containers, flower planter dishes or cover water storage barrels.



- **Ebola virus disease**

Ebola, previously known as Ebola hemorrhagic fever, is a rare and deadly disease caused by infection with one of the Ebola virus strains. Ebola can cause disease in humans and nonhuman primates (monkeys, gorillas, and chimpanzees).

Ebola is caused by infection with a virus of the family Filoviridae, genus Ebolavirus. There are five identified Ebola virus species, four of which are known to cause disease in humans.

Ebola viruses are found in several African countries. Ebola was first discovered in 1976 near the Ebola River in what is now the Democratic Republic of the Congo. Since then, outbreaks have appeared sporadically in Africa.

The natural reservoir host of Ebola virus remains unknown. However, on the basis of evidence and the nature of similar viruses, researchers believe that the virus is animal-borne and that bats are the most likely reservoir.

People get Ebola through direct contact blood or body fluids (including urine, saliva, sweat, feces, vomit, breast milk, and semen) of a person who is sick with or has died from Ebola,

- objects (like needles and syringes) that have been contaminated with body fluids from a person who is sick with Ebola or the body of a person who has died from Ebola,
- infected bats, apes and monkey.
- Sexual contact with Ebola patient.

Symptoms of Ebola include

- Fever, severe headache, muscle pain, weakness, fatigue, diarrhea
- Vomiting, abdominal (stomach) pain, Unexplained hemorrhage (bleeding or bruising)

Symptoms may appear anywhere from 2 to 21 days after exposure to Ebola, but the average is 8 to 10 days.

Prevention

- Practice careful hygiene. For example, wash your hands with soap and water and avoid contact with blood and body fluids.
- Avoid contact with bats and nonhuman primates or blood, fluids, and raw meat prepared from these animals.

Treatment

No FDA-approved vaccine or medicine is available for Ebola.

- Providing intravenous fluids (IV) and balancing electrolytes (body salts).
- Maintaining oxygen status and blood pressure.
- Treating other infections if they occur.