

Microbiology

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Number:	1
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This sheet is(acopy past) from the slides no need to open the slides ,please don't care about the details too much "memories the incubation period (important)" Sorry for any mistakes

Viral Hemorrhagic Fever

a group of illnesses caused by several distinct families of viruses that infect humans and non-human primates.it is a severe multi-system syndrome characterized by diffuse vascular damage. Bleeding often occurs and, depending on the virus, may or may not be life threatening .Some VHF's cause mild disease while others may cause severe disease and death.

Classification (enveloped RNA viruses)

The survival of these viruses is dependant on their natural reservoir which, in most cases, is an animal or an insect host.

Arenaviridae	Bunyaviridae	Filoviridae	Flaviviridae
Junin(south africa)	Crimean-congo HF	Ebola	Kaysanur forest D.
Machupo (south africa)	Hantaviruse	marburg	Omsk HF
Sabia	Rift valley virus		Yellow fever
Lassa (West Africa)			dengue
guanarito(south africa)			

Clinical Picture of VHF: (signs and symptoms vary by the type of VHF)

initial signs and symptoms(flu like) marked fever, fatigue, dizziness, muscle aches, loss of strength, and exhaustion.

- More severe clinical symptoms include bleeding disorders (petechia, echymoses) and conjunctivitis.
- Bleeding may also occur in internal organs and from orifices like the eye, nose or mouth.
- Despite widespread bleeding, blood loss is **rarely** the cause of the death.
- VHF agents could cause an outbreak of an undifferentiated febrile illness in 2 to 21 days.
- Other symptoms associated with VHFs could include rash, hemorrhagic diathesis, and shock.
- The mode of transmission and clinical course would vary depending on the specific pathogen.
- Diagnosis may be delayed due to clinicians' unfamiliarity with these diseases and lack of widely available diagnostic tests.

Initial symptoms (what the patient complain from)

Prodromal illness lasting < 1 week may include:

- High fever
- Headache
- Malaise
- Weakness
- Exhaustion
- Dizziness
- Nausea
- Joint pain
- Muscle aches

Clinical Signs :

- Flushing, conjunctival injection (“red eye”)
- Pharyngitis
- Rash
- Edema
- Mucous membrane bleeding
- Shock
- Hypotension

Laboratory Diagnosis

•Clinical microbiology laboratories are not usually equipped to make a rapid diagnosis of any of these viruses, and clinical specimens in an outbreak need to be **sent to specialized laboratories**.

These are level D laboratories that can conduct **serology, PCR, immunohistochemistry, viral isolation and electron microscopy of VHF**s.

Treatment of VHF:

receive supportive therapy, with special attention paid to maintaining fluid and electrolyte balance, circulatory volume, blood pressure and treating for any complicating infections

no antiviral drugs approved

Ribavirin, has been effective in treating some individuals with Arenaviridae and Bunyaviridae but has not shown success against Filoviridae or Flaviviridae infections.

Treatment with convalescent-phase plasma has been used with success in some patients with **Junin**, **Machupo**, and **Ebola**.

- Early aggressive intensive care
- Early use of inotropic agents (Dobutamine)
- Early ventilation
- Careful monitoring:
 - Oxygenation
 - Fluid balance
 - Blood pressure

Prevention of VHF

Strict isolation of a patient is also required (

isolate infected individuals to decrease person to person transmission)

Wearing protective clothing

avoiding contact with the host species.

Because many of the hosts that carry VHFs are rodents, prevention should involve rodent control methods.

(the control of rodent populations, discouraging their entry into homes and safe clean up of nesting areas and droppings)

prevention efforts should focus on community-wide insect and arthropod control.

people are encouraged to use insect repellent, proper clothing, bed nets, window screens, and other insect barriers to avoid being bitten.

close physical contact with infected people and their body fluids should be avoided

proper use, disinfection, and disposal of instruments and equipment used in treating or caring for patients with VHF, such as needles and thermometers

Place any disposable items, including linens, in a double plastic bag and saturate with 0.5% sodium hypochlorite

Place sharps in the sharps container saturated with the 0.5% solution, wipe the containers with the 0.5% solution and send them to be incinerated.

- The World Health Organization (WHO), and CDC have developed practical, hospital-based guidelines, entitled "Infection Control for Viral Hemorrhagic Fevers In the African Health Care Setting." (can help health-care facilities recognize cases and prevent further hospital-based disease transmission using locally available materials and few financial resources)

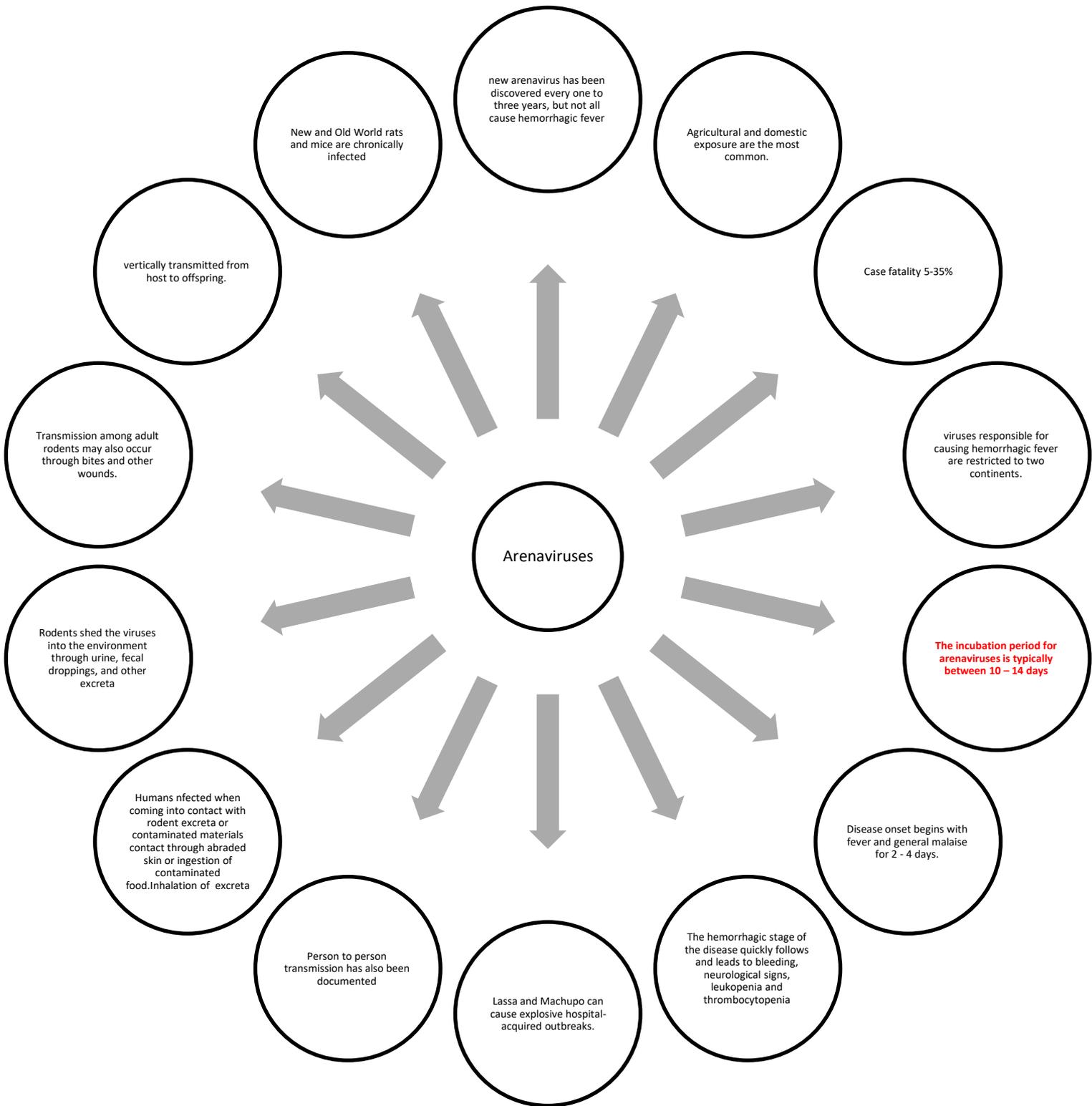
Vaccination

The only established and licensed vaccine is for yellow fever, a live attenuated vaccine (17 D strain). "

safe and effective and gives immunity lasting 10 or more years. "

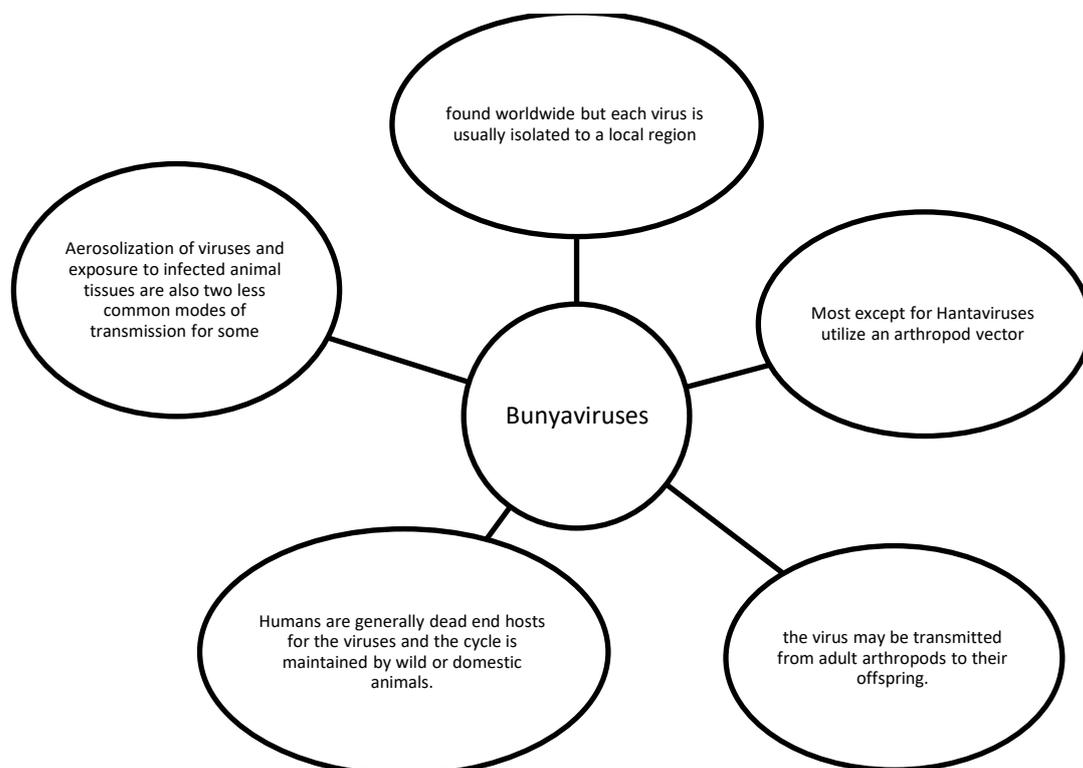
An experimental vaccine is under study for **Junin virus** which provides some cross protection to **Machupo virus**

Investigational vaccines are in the development phase for **Rift Valley Fever, Hantavirus** and **Dengue**



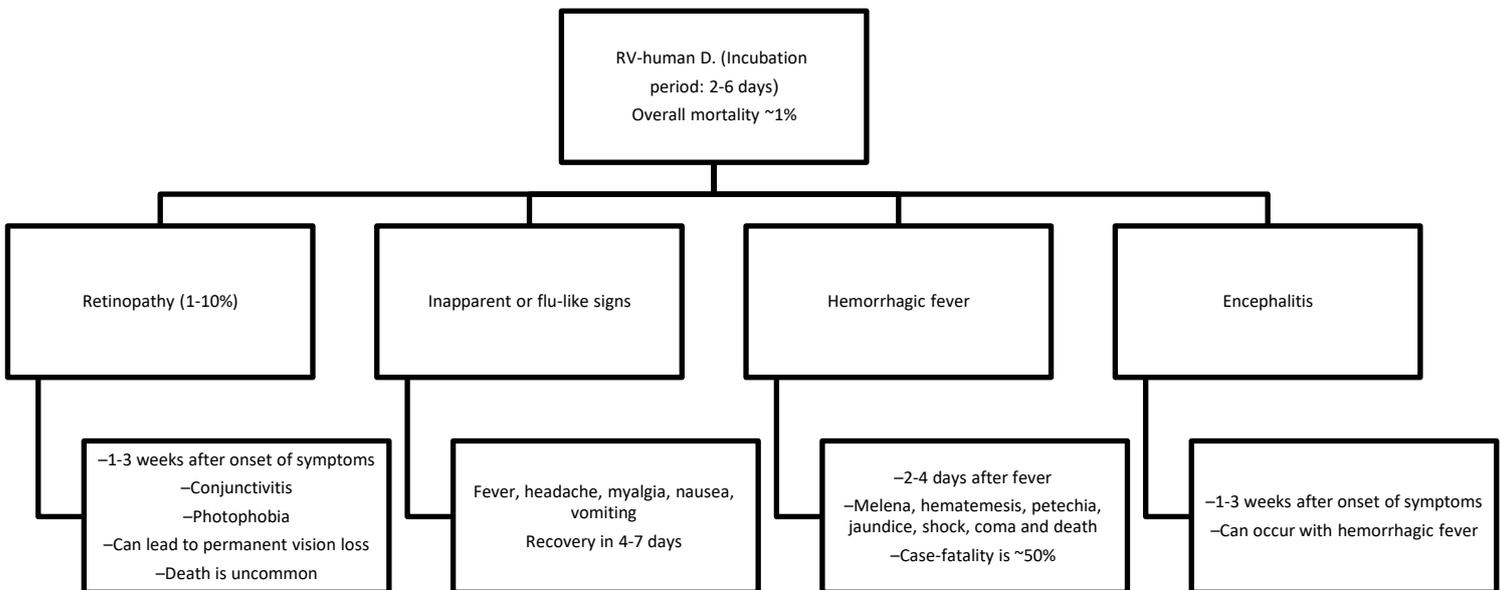
Lassa Fever

- highly virulent disease with a mortality of 36-67%
- signs and symptoms :Very high fever, mouth ulcers, severe muscle aches, skin rash with hemorrhage, pneumonia and heart and kidney damage.
- House rat is the principal reservoir.(zoonotic) ,Human-to-human transmission has been documented
- Most patients with Lassa fever will recover ,the Latin American hemorrhagic fevers typical progress to more severe symptoms.



Rift Valley

<p>the virus is transmitted by Aedes mosquitoes resulting in large epizootics in livestock, maintained by transovarial transmission between the mosquito and its offspring</p>	<p>causes severe disease in livestock animals. Abortion rates can reach 100%.</p>	<p>Mortality rates in animals less than 2 weeks of age can be greater than 90% with most animals succumbing to disease within 24 – 36 hours from the onset of fever.</p>	<p>Older animals also suffer from a less severe febrile illness with mortality rates ranging from 5 – 60%.</p>	<p>Most human infections will occur one to two weeks following the appearance of abortion or disease in livestock. they are incidentally infected when bitten by infected mosquitoes or when coming into contact with infected animal tissues. will experience flu-like symptoms and recover with no complications after an incubation period of 2-6 days.</p>	<p>In 0.5% of cases, hemorrhagic fever will develop following the initial febrile stage. Another 0.5% of cases will develop retinitis or encephalitis 1 to 4 weeks following infection.</p>
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The family now consists of five genera which contain 350 viruses that are significant human, animal, and plant pathogens.

The virus is transmitted from rodent to rodent through biting, scratching, and possible aerosolization of rodent urine.

Severity of illness is dependent on the virus and case fatality rate can vary between 1 and 50%

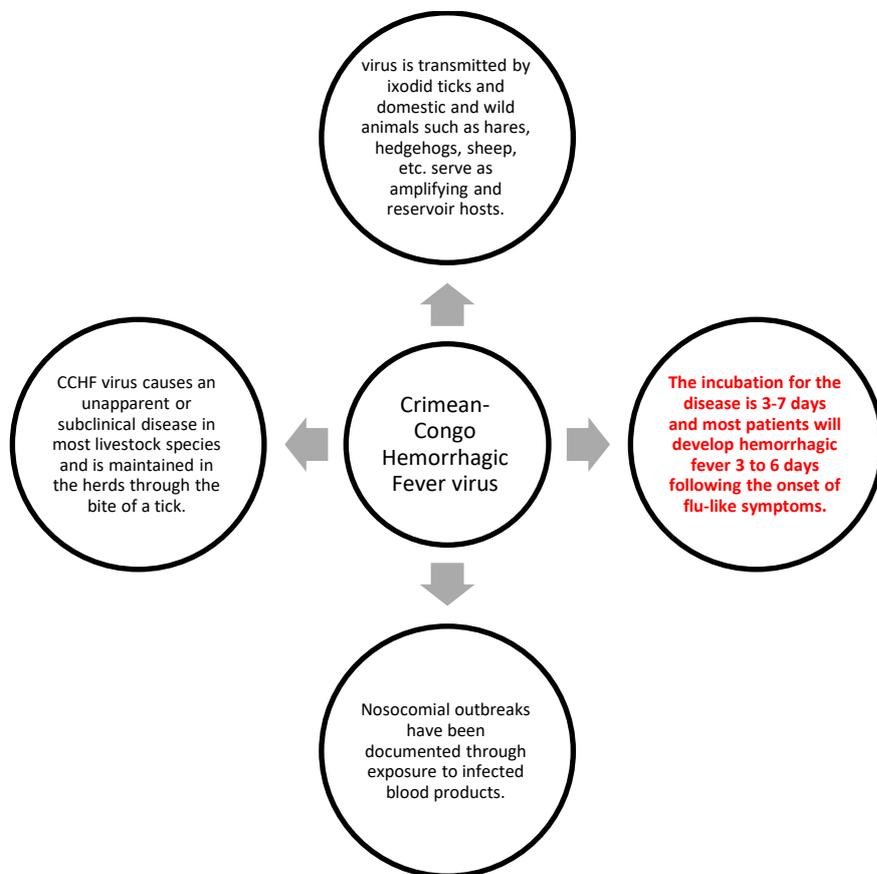
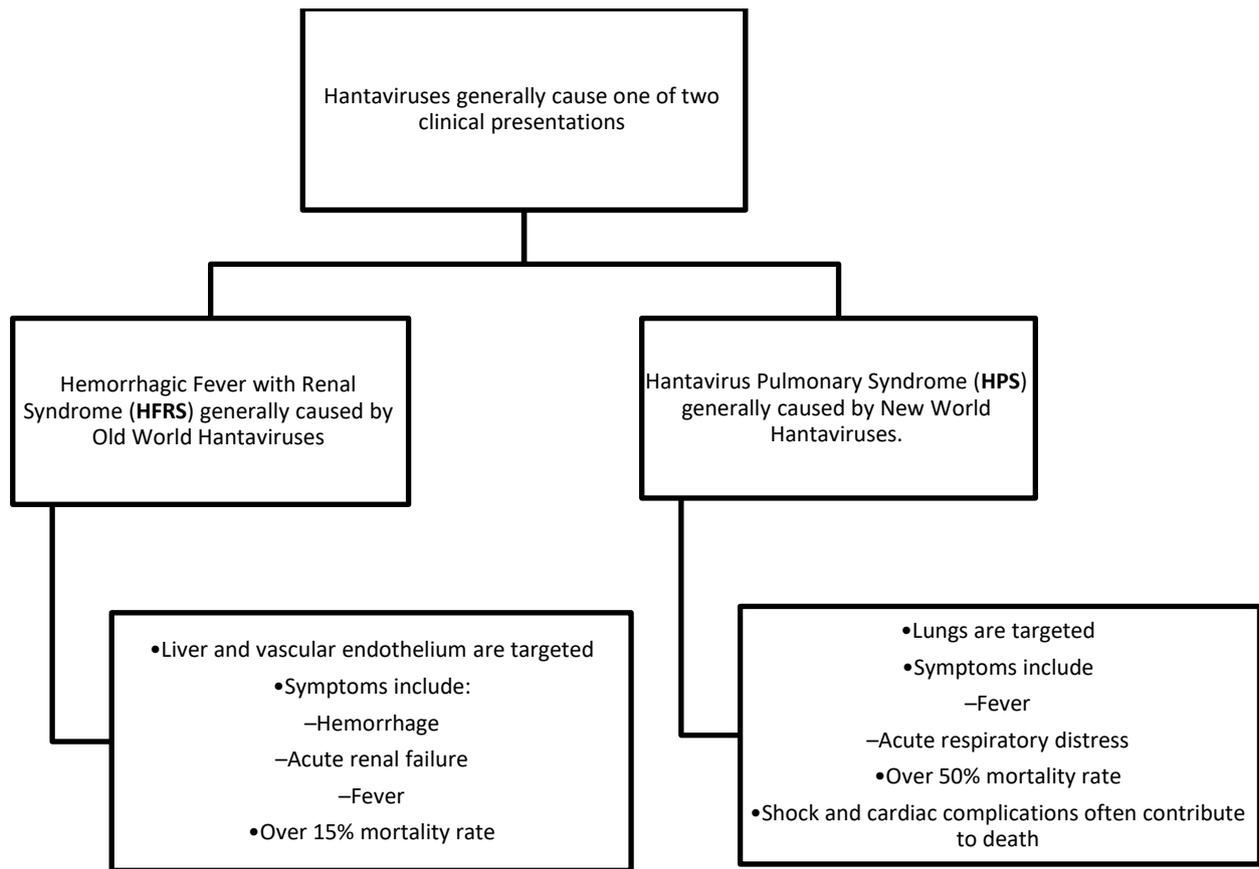
Incubation period is 7 to 21 days followed by a clinical phase of 3-5 days.

Hantaviruses are divided into two groups based on location: Old World Viruses are found in eastern Europe and eastern Asia while New World viruses are found in North and South America.

Rodents are persistently infected with Hantaviruses but show no clinical signs.

Hantaviruses cycle in rodent hosts and humans become infected by coming into contact with rodent urine.

Hantaviruses



Marburg and Ebola Viruses:

subtypes :

1-zaire

2-sudan

3-Reston

4-a fourth subtype of Ebola was isolated from an animal worker in Côte d'Ivoire who had performed a necropsy on an infected chimpanzee.

Don't care about details

*Four humans were asymptotically infected and recovered without any signs of hemorrhagic fever.

*The reservoir for filoviruses is still unknown.

*Bats have been implicated for Marburg virus, but no evidence of Ebola viruses have been found in over 3000 species of animals tested in the areas of human outbreaks.

*Intimate person-to-person contact is the main means of transmission of filoviruses in humans.

*Nosocomial transmission has been a major problem in outbreaks in Africa through the reuse of needles and syringes and exposure to infected tissues, fluids, and hospital materials.

*Aerosol transmission has been observed in primates but does not seem to be a major means in humans.

***Filoviruses cause the most severe hemorrhagic fever in humans.**

***The incubation period for both Marburg and Ebola is generally 4 to 10 days followed by abrupt onset of fever, chills, malaise, and myalgia.**

*Bleeding from mucosal membranes, venipuncture sites and the gastrointestinal tract occurs followed by DIC.

*The patient rapidly deteriorates and progresses to multisystem failure.

*Death or clinical improvement usually occurs around day 7 to 11.

*Ebola with the highest rates found in Ebola Zaire.

*Survivors of the hemorrhagic fever are often plagued with arthralgia, uveitis, psychosocial disturbances, and orchitis for weeks following the initial fever.

*The pattern of disease of humans in nature is relatively unknown except for major epidemics

*Filoviruses cause severe hemorrhagic fever in non-human primates.

*The signs and symptoms found are identical to humans.

*The only major difference is Ebola Reston has a high mortality in primates (~82%) while it does not seem to be pathogenic to humans.

