



Biological Agents

Q: What is biological terrorism?

A: The Centers for Disease Control (CDC) defines biological terrorism as a planned release of viruses, germs or their toxins in order to harm or kill citizens. Likely modes of transmission for biological weapons are aerosolization, food, water or insects.

Q: What is a biological agent?

A: A biological agent is any germ or virus that may harm human health. High-priority agents include germs or viruses that are a risk to national security because they can be easily spread person-to-person; are very deadly; might cause public panic and social disorder; and require special action by public health.

What are the biological agents of greatest concern?

[Anthrax](#)

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Q: What is a chemical agent?

A: Chemical agents include nerve agents - liquids or gasses - that can poison people, animals and plants. These agents (VX, tabun, sarin, soman) damage the nervous system of victims and can cause injuries or death. How serious the injuries are depends on the type of agent, the amount, and the length of exposure. In the same family as chemical warfare agents are industrial chemicals called organophosphates. These include malathion or parathion and other insecticides. Nerve agents are the most toxic chemical warfare agents known to man.

Q: What is a radiological agent?

A: Radiation is energy released from light, heat, sound and charged particles that can cause direct or indirect damage to the body. People are exposed to some radiation every day - from natural sources, man-made (microwave ovens), and medical (x-rays). Large amounts of radiation can occur in events such as a nuclear power plant accident or a terrorist attack.

ANTHRAX ([Back to Index](#))

What is anthrax?

Anthrax is a disease caused by bacteria. Anthrax is most commonly seen in livestock and rarely in humans.

How do I know if I have anthrax?

Anthrax symptoms depend on how the person got the disease. These are the symptoms for the three types of anthrax disease:

- ❖ **Inhalation (breathing)** — Initial symptoms are much like a common cold and may mimic flu-like symptoms. However, several hours to several days later, they progress to severe breathing problems and shock.
- ❖ **Cutaneous (skin)** — Skin infection begins as a raised itchy bump that is like an insect bite, but within one to two days turns into a sore and then into a painless ulcer with a black (dead) center. Lymph glands in the nearby area may swell.
- ❖ **Intestinal (eating)** — Initial signs of nausea, loss of appetite, vomiting, and fever are followed by abdominal pain, vomiting of blood, and severe diarrhea.

Anthrax Fact Sheet

What Is Anthrax?

Anthrax is a serious disease caused by *Bacillus anthracis*, a bacterium (single-celled life form) that makes spores (cells that are dormant, or asleep, but may come to life with the right conditions). Many bacteria can cause disease.

There are three types of anthrax:

- **Skin (cutaneous)**
- **Lungs (inhalation)**
- **Digestive (gastrointestinal)**

How Do You Get It?

Anthrax is not known to spread from person to person.

Anthrax from animals: Humans get anthrax by handling products from animals that have anthrax or by breathing in anthrax spores from infected animal products (such as wool). Also, people can become get anthrax by eating undercooked meat from infected animals.

Anthrax as a weapon: Anthrax can be used as a weapon. This happened in the United States in 2001. Anthrax was spread on purpose through the postal system by sending letters with powder containing anthrax. This caused 22 cases of anthrax infection.

How Dangerous Is Anthrax?

The Centers for Disease Control and Prevention (CDC) classify agents with known bioterrorism potential into three priority areas (A, B and C). Anthrax is ranked as a Category 'A' agent. Category A agents are those that:

- Pose the greatest threat to public health
- May spread across a large area or need public awareness
- Need a great deal of planning to protect the public's health
- In most cases, early treatment with antibiotics can cure cutaneous anthrax. Even if not treated, 80 percent of people who become infected with cutaneous anthrax do not die. Gastrointestinal anthrax

is more serious; between one-fourth and more than half of cases lead to death. Inhalation anthrax is the most severe form. In 2001, about half of the cases of inhalation anthrax ended in death.

What Are the Symptoms?

The symptoms (warning signs) of anthrax vary based on the type of the disease:

- **Cutaneous:** The first symptom is a small sore that turns into a blister. The blister then turns into a skin ulcer with a black area in the center. The sore, blister, and ulcer do not hurt.
- **Gastrointestinal:** The first symptoms are nausea (sick to stomach), loss of appetite, bloody diarrhea, and fever, followed by bad stomach pain.
- **Inhalation:** The first symptoms of inhalation anthrax are like cold or flu symptoms and can include a sore throat, mild fever, and muscle aches. Later symptoms include cough, chest discomfort, shortness of breath, tiredness and muscle aches. (Caution: Do not assume that just because a person has cold or flu symptoms that they have inhalation anthrax.)

How Soon Do Infected People Get Sick?

Symptoms can appear within 7 days of contact with the bacterium for all three types of anthrax. For inhalation anthrax, symptoms can appear within a week or can take up to 42 days to appear.

How Is Anthrax Treated?

Antibiotics are used to treat all three types of anthrax. Early identification and treatment are important.

- **Prevention after exposure:** Treatment is different for a person who is exposed to anthrax but is not yet sick. Health-care providers will use antibiotics (such as ciprofloxacin, doxycycline, or penicillin) combined with the anthrax vaccine to prevent anthrax infection.
- **Treatment after symptoms occur:** Treatment is usually a 60-day course of antibiotics. Success depends on the type of anthrax and how soon treatment begins.

Can Anthrax Be Prevented?

Yes, with a vaccine. However, the vaccine is not yet available for the general public. Anyone who may be exposed to anthrax (including certain members of the U.S. armed forces, laboratory workers, and workers who may enter or re-enter areas exposed to anthrax) may get the vaccine. Also, in the event of an attack using anthrax as a weapon, people exposed would get the vaccine.

What Should I Do if I Think I *Have* Anthrax?

If you are showing symptoms of anthrax infection, call your health-care provider right away.

What Should I Do if I Think I Have Been *Exposed to Anthrax*?

Contact local law enforcement immediately if you think that you may have been exposed to anthrax. This includes being exposed to a strange package or envelope that contains powder.

1) Identifying Suspicious Packages and Envelopes

In 2001, letters with anthrax in powder form were sent through the mail in a few places in the U.S.. In some cases, anthrax exposures occurred, with several people getting infected. To prevent the exposures and the infections that follow, learn how to spot a strange package or envelope and take the steps to protect yourself and others.

Some features of strange packages and envelopes include the following:

Inappropriate or odd labels

- Excess postage
- Handwritten or poorly typed address
- Misspellings of common words
- Strange return address or no return address
- Wrong titles or title without a name
- Not addressed to a specific person
- Marked with comments, such as “Personal,” “Confidential,” or “Do not x-ray”
- Marked with any hostile language
- Postmarked from a city or state that does not match the return address

Appearance

- Powders felt through or seen on the package or envelope
- Oily stains, discoloration, or odor
- Lopsided or uneven envelope
- Lots of material such as masking tape, string, etc.

Other strange signs

- Excess weight
- Ticking sound
- Wires or aluminum foil sticking out

If a package or envelope appears suspicious, DO NOT OPEN IT.

2) Handling of Suspicious Packages or Envelopes:

- Do not shake or empty the contents of any odd package or envelope.
- Do not carry the package or envelope, show it to others, or allow others to inspect it.
- Put the package or envelope down on a stable surface; do not sniff, touch, taste, or look closely at it or at any contents which may have spilled.
- Alert others in the area about the package or envelope. Leave the area, close any doors, and prevent others from entering the area. If you can, shut off the ventilation system.
- WASH hands with soap and water to prevent spreading the material to face or skin. Seek further instructions for exposed or potentially exposed persons.
- If at work, notify a supervisor, a security officer, or a law enforcement official. If at home, contact the local law enforcement agency.
- If possible, create a list of persons who were in the room or area when this letter or package was seen and a list of persons who also may have handled this package or letter.
- Give this list to both the local public health authorities and law enforcement officials.

Need more information?

CDC - [Anthrax webpage](#)

BOTULISM ([Back to Index](#))

What is botulism?

Botulism is a muscle-paralyzing disease caused by a toxin made by bacteria.

Botulism Fact Sheet

What Is Botulism?

Botulism is a rare but serious illness that can paralyze the victim. It is caused by a nerve toxin (poison) made by the bacterium *Clostridium Botulinum*.

How Do You Get It?

- There are three main kinds of the illness, all of which can be fatal and are emergencies:
- Foodborne botulism occurs after eating food that contains the toxin. This form of botulism may be the most dangerous of the three because many people can be poisoned at once by eating food that contains the toxin.
- Wound botulism occurs when a wound infected with *Clostridium Botulinum* makes the toxin.
- Infant botulism occurs when a baby eats the bacteria's spores (cells that are dormant, or asleep, but may come to life with the right conditions). The spores then grow in the body and release toxin.

In the U.S., about 110 cases of botulism are reported each year. Of these, about 25% are foodborne, 72% are infant botulism, and the rest are wound botulism. Outbreaks of foodborne botulism among two or more persons occur most years and, most of the time, are from eating contaminated home-canned foods. The number of cases of foodborne and infant botulism has changed little in recent years, but wound botulism has increased because of the use of black-tar heroin, especially in California.

How Dangerous Is Botulism?

Botulism can cause someone to stop breathing and then die. However, in the past 50 years the proportion of patients with botulism who dies has fallen from about 50% to 8%. A patient with severe botulism may require a breathing machine as well as intensive medical and nursing care for several months. Patients who survive an episode of botulism poisoning may have fatigue and shortness of breath for years and long-term therapy may be needed to help them recover.

What Are the Symptoms?

The toxin causes muscle paralysis. Specifically, the classic symptoms of botulism include double vision, blurred vision, drooping eyelids, slurred speech, difficulty swallowing, dry mouth, and muscle weakness. Infants with botulism appear tired and slow, feed poorly, are constipated, and have a weak cry and poor muscle tone. If these symptoms are not treated, they may worsen to cause paralysis of the arms, legs, trunk, and muscles for breathing.

How Soon Do Infected People Get Sick?

In foodborne botulism, symptoms begin around 18 to 36 hours after eating food containing the toxin, but they can occur as early as 6 hours or as late as 10 days.

How Is Botulism Treated?

Not being able to breathe and the paralysis that occur with severe botulism may require a patient to be on a breathing machine (ventilator) for weeks and receive intensive medical and nursing care. After several weeks, the paralysis slowly improves. If diagnosed early,

foodborne and wound botulism can be treated with an antitoxin which blocks the actions of toxin in the blood. This can prevent patients from worsening, but recovery still takes many weeks. Physicians may try to remove contaminated food still in the gut by causing the patient to vomit or by using enemas. Wounds should be treated, usually surgically, to remove the source of the toxin-producing bacteria. Good supportive care in a hospital is the mainstay of therapy for all forms of botulism. Antitoxin is not often given for treatment of infant botulism.

Can Botulism Be Prevented?

People can prevent botulism. The foodborne form is often from home-canned foods with low acid content, such as asparagus, green beans, beets, and corn. However, outbreaks of the disease from more unusual sources such as chopped garlic in oil, chili peppers, tomatoes, poorly handled baked potatoes wrapped in aluminum foil, and home-canned or fermented fish. People who do home canning should follow strict hygienic procedures to reduce chances of food contamination. Oils with garlic or herbs in them should be refrigerated. Potatoes which have been baked while wrapped in aluminum foil should be kept hot until served or refrigerated. Because the botulism toxin is destroyed by high heat, people who eat home-canned foods should consider boiling the food for 10 minutes before eating it to ensure safety. Instructions on safe home canning can be obtained from county extension services or from the US Department of Agriculture. Because honey can contain spores of *Clostridium botulinum* and this has been a source of disease for infants, children less than 12 months old should not be fed honey. Honey is safe for persons 1 year of age and older. Wound botulism can be prevented by promptly seeking medical care for infected wounds and by not using injectable street drugs

What Should I Do if I Think I *Have* Botulism?

If you are showing symptoms of botulism, call your health-care provider right away.

Need more information?

CDC's [Botulism webpage](#)

BRUCELLOSIS ([Back to Index](#))

What is brucellosis?

Brucellosis is an infectious disease caused by a bacterium called Brucella. Humans become infected by coming in contact with animals or animal products that are contaminated with the bacteria.

Brucellosis Fact Sheet

What is brucellosis?

Brucellosis is an infectious disease caused by a bacterium called Brucella. Humans become infected by coming in contact with animals or animal products that are contaminated with the bacteria.

Where does it come from?

The brucellosis bacteria are usually passed among animals. The bacteria can harm sheep, cattle, bison, elk, dogs, coyotes, deer and pigs. Brucellosis is common in countries where animal disease control programs are not effective. Brucellosis is not very common in the U.S.; but it can be a possible agent of bioterrorism.

How is brucellosis spread to humans?

The bacteria that cause brucellosis are found in unpasteurized milk and dairy products from sick cows, sheep and goats. Humans can get infected in one of three ways: eating or drinking something that has Brucella, breathing in the bacteria, or having the bacteria enter the body through skin wounds. The most common way to be infected is by eating or drinking milk or dairy products that have brucellosis bacteria. The bacteria do not pass from person to person.

What are the signs and symptoms of brucellosis in humans?

The signs and symptoms are similar to the flu and may include fever, sweats, headaches, back pains, chills, weight loss and physical weakness. Severe infections of organs such as the liver, spleen, the central nervous systems or the lining of the heart may occur. Brucellosis can also cause long-lasting or chronic symptoms that include recurrent fevers, joint pain and fatigue.

How is brucellosis treated?

A combination of antibiotics for 6 weeks is recommended to treat and prevent infection returning. Depending on the timing of treatment and severity of illness, it may take a few weeks to several months to get better.

Is there a vaccine to protect humans from brucellosis?

No. There is no vaccine available for humans, only for farm animals.

Can we prevent the spread of brucellosis?

Yes. Do not drink unpasteurized milk or eat cheese or milk or dairy products while traveling. If you are not sure that the dairy product is pasteurized, do not eat it. People working with animals should protect their open wounds or cuts with bandages and use gloves. Wash your hands with soap after touching any animals or raw meat products.

Need more information?

Visit these websites for more information about Brucellosis.

[Centers for Disease Control \(CDC\)](#)

[CDC Travelers' Health](#)

[World Health Organization \(WHO\)](#)

[WHO Travelers' Health](#)

GLANDERS ([Back to Index](#))

What is glanders?

Glanders is an infectious disease caused by a bacterium called *Burkholderia mallei*. Glanders usually affects horses, donkeys and mules. Other animals such as goats, dogs and cats can be infected also. Rarely, humans become infected through contact with infected animals or persons who have glanders.

Glanders Fact Sheet

What is glanders?

Glanders is an infectious disease caused by a bacterium called *Burkholderia mallei*. Glanders usually affects horses, donkeys and mules. Other animals such as goats, dogs and cats can be infected also. Rarely, humans become infected through contact with infected animals or persons who have glanders.

How common is glanders?

The U.S. has not seen any cases of glanders since the 1940s. However, it is considered as a potential biological agent for bioterrorism. Glanders is still commonly found among domestic animals in Africa, Asia, the Middle East and Central and South America.

How does glanders spread to humans?

Humans become infected with glanders through direct contact with animals that have glanders. The bacteria can enter the body through skin and through the mucous membranes of the eyes, nose and mouth. Glanders can pass from person to person through an infected person's body fluids such as sexual intercourse with an infected person.

What are the signs and symptoms of glanders in humans?

General signs and symptoms are fever, muscle aches, chest pain, muscle tightness and headache. Other symptoms depend on the way glanders was acquired:

Local infections: If there is a cut or scratch in the skin, ulceration will develop within 1 to 5 days at the site where the bacteria has entered the body. Swollen lymph nodes are common. Infections in the mucous membranes in the eyes, nose and respiratory tract may increase amounts of mucous.

Lung infections: Infection of the lungs can lead to pneumonia, pulmonary abscesses and the build up of fluid inside the chest cavity around the lung. Signs and symptoms include chest pain, cough and shortness of breath.

Bloodstream infections: Infections are usually fatal within 7 to 10 days. Signs and symptoms are very high fever, fast heart rate and skin rash.

Chronic infections: The chronic form of glanders has many abscesses within the muscles of the arms and legs or in the spleen or liver.

How is glanders treated?

Human cases of glanders are rare so there is little information about treatment. However, specific antibiotics may be used to treat glanders.

Is there a vaccine to protect humans from glanders?

No. There is no vaccine available for humans.

Can we prevent the spread of glanders?

Yes. In countries where glanders is found in animals, prevention of the disease can be stopped through identification and elimination of the infection in animal population. In the health care setting, transmission can be stopped by using common blood and body fluid precautions.

Need more information?

Visit these websites for more information about Glanders.

[Centers for Disease Control \(CDC\)](#)

[CDC Travelers' Health](#)

[WHO Travelers' Health](#)

PNEUMONIC PLAGUE ([Back to Index](#))

What is pneumonic plague?

Plague is a disease of animals and humans caused by bacteria. Bacteria that cause plague are found in rodents and their fleas in many areas around the world.

Pneumonic Plague Fact Sheet

What Is Pneumonic Plague?

Plague is a disease caused by *Yersinia pestis* (*Y. pestis*), a bacterium found in rodents and their fleas in many parts of the world.

How Do You Get It?

Pneumonic plague occurs when *Yersinia pestis* infects the lungs. A person could get the disease by breathing in the disease particles; this could happen in an aerosol release during a bioterrorism attack. Pneumonic plague is also passed on by breathing in the disease from the respiratory droplets (saliva or phlegm) of a person or animal with the disease. Respiratory droplets are spread mostly by coughing or sneezing. Getting infected in this way usually requires direct and close (within 6 feet) contact with the ill person or animal. The disease may also occur if a person with bubonic or septicemic plague is not treated and the bacteria spread to the lungs. *Y. pestis* is easily destroyed by sunlight and drying. Even so, when released into air, the bacterium will survive for up to one hour, depending on conditions.

The pneumonic plague is different from the bubonic plague in the way it is passed on and in symptoms. Both diseases are caused by the same bacterium. Pneumonic plague can be passed from person to person; bubonic plague cannot. Bubonic plague is passed on through the bite of an infected flea or exposure to infected material through a break in the skin. Symptoms include swollen, tender lymph glands called buboes. If bubonic plague is not treated, the bacteria can spread through the bloodstream and infect the lungs, causing pneumonic plague.

How Dangerous Is Pneumonic Plague?

Without early treatment, pneumonic plague usually leads to breathing failure, shock, and rapid death. The World Health Organization reports 1,000 to 3,000 cases of plague worldwide every year. About 5 to 15 cases occur each year in the western U.S.. These cases are usually scattered and occur in rural to semi-rural areas. Most cases are of the bubonic form of the disease. Naturally occurring pneumonic plague is uncommon, although small outbreaks do occur. With standard public health response measures, it is easy to control both types of plague.

What Are the Symptoms?

Patients usually have fever, weakness, and quickly developing pneumonia with shortness of breath, chest pain, cough, and sometimes bloody or watery sputum. Nausea, vomiting, and abdominal pain may also occur.

How Soon Do Infected People Get Sick?

Someone exposed to *Y. pestis* through the air—either from an aerosol release or from close and direct exposure to someone with plague pneumonia—would become ill within 1 to 6 days.

How Is Pneumonic Plague Treated?

To prevent a high risk of death, antibiotics should be given within 24 hours of the first symptoms. Several types of antibiotics are effective for curing the disease and for preventing it. Available oral medications are a tetracycline (such as doxycycline) or a fluoroquinolone (such as ciprofloxacin). For injection or intravenous use, streptomycin or gentamicin antibiotics are used. Early in the response to a bioterrorism attack, these drugs would be tested to determine which is most effective against the particular weapon that was used.

National and state public health officials have large supplies of drugs needed in the event of a bioterrorism attack. These supplies can be sent anywhere in the U.S. within 12 hours.

Can Pneumonic Plague Be Prevented?

Currently, there is no plague vaccine in the U.S. Research is in progress, but we are not likely to have vaccines for several years or more. People having direct and close contact with someone with pneumonic plague should wear tightly fitting, disposable surgical masks. Patients with the disease should be isolated and medically supervised for at least the first 48 hours of antibiotic treatment. People who have been exposed to a contagious person can be protected from the plague by getting prompt antibiotic treatment. People who have had close contact with an infected person can greatly reduce the chance of getting sick if they begin treatment within 7 days of their exposure. Treatment consists of taking antibiotics for at least 7 days.

What Should I Do if I Think I Have Been *Exposed* to Pneumonic Plague?

Get immediate medical attention: To prevent illness, a person who has been exposed to pneumonic plague must receive antibiotic treatment without delay. If an exposed person becomes ill, antibiotics must be administered within 24 hours of their first symptoms to reduce the risk of death. Tell the authorities: Immediately notify local or state health departments so they can begin to investigate and control the problem right away. If bioterrorism is suspected, the health departments will notify the CDC, FBI, and other authorities.

Need More Information?

Visit this website for more information about Pneumonic Plague.

[CDC Pneumonic Plague Information Page](#)

SMALL POX ([Back to Index](#))

What should I know about smallpox?

Smallpox is an acute, contagious, and sometimes fatal disease caused by the variola virus (an orthopoxvirus), and marked by fever and a distinctive progressive skin rash. In 1980, the disease was declared eradicated following worldwide vaccination programs. However, in the aftermath of the events of September and October, 2001, the U.S. government is taking precautions to be ready to deal with a bioterrorist attack using smallpox as a weapon. As a result of these efforts: 1) There is a detailed nationwide smallpox preparedness program to protect Americans against smallpox as a biological weapon. This program includes the creation of preparedness teams that are ready to respond to a smallpox attack on the United States. Members of these teams – health care and public health workers - are being vaccinated so that they might safely protect others in the event of a smallpox outbreak. 2) There is enough smallpox vaccine to vaccinate everyone who would need it in the event of an emergency.

How serious is the smallpox threat?

The deliberate release of smallpox as an epidemic disease is now regarded as a possibility, and the United States is taking precautions to deal with this possibility.

How dangerous is the smallpox threat?

Smallpox is classified as a Category A agent by the Centers for Disease Control and Prevention. Category A agents are believed to pose the greatest potential threat for adverse public health impact and have a moderate to high potential for large-scale dissemination. The public is generally more aware of category A agents, and broad-based public health preparedness efforts are necessary. Other Category A agents are anthrax, plague, botulism, tularemia, and viral hemorrhagic fevers.

If I am concerned about a smallpox attack, can I go to my doctor and get the smallpox vaccine?

At the moment, the smallpox vaccine is not available for members of the general public. In the event of a smallpox outbreak, however, there is enough smallpox vaccine to vaccinate everyone every person in the United States.(modified December 29, 2004)

What are the symptoms of smallpox?

The symptoms of smallpox begin with high fever, head and body aches, and sometimes vomiting. A rash follows that spreads and progresses to raised bumps and pus-filled blisters that crust, scab, and fall off after about three weeks, leaving a pitted scar.

If someone comes in contact with smallpox, how long does it take to show symptoms?

After exposure, it takes between 7 and 17 days for symptoms of smallpox to appear (average incubation time is 12 to 14 days). During this time, the infected person feels fine and is not contagious.

Is smallpox fatal?

The majority of patients with smallpox recover, but death may occur in up to 30% of cases. Many smallpox survivors have permanent scars over large areas of their body, especially their face. Some are left blind.

How is smallpox spread?

Smallpox normally spreads from contact with infected persons. Generally, direct and fairly prolonged face-to-face contact is required to spread smallpox from one person to another. Smallpox also can be spread through direct contact with infected bodily fluids or contaminated objects such as bedding or clothing. Indirect spread is less common. Rarely, smallpox has been spread by virus carried in the air in enclosed settings such as buildings, buses, and trains. Smallpox is not known to be transmitted by insects or animals.

If smallpox is released in aerosol form, how long does the virus survive?

The smallpox virus is fragile. In laboratory experiments, 90% of aerosolized smallpox virus dies within 24 hours; in the presence of ultraviolet (UV) light, this percentage would be even greater. If an aerosol release of smallpox occurs, 90% of virus matter will be inactivated or dissipated in about 24 hours.

How many people would have to get smallpox before it is considered an outbreak?

One confirmed case of smallpox is considered a public health emergency.

Is smallpox contagious before the smallpox symptoms show?

A person with smallpox is sometimes contagious with onset of fever (prodrome phase), but the person becomes most contagious with the onset of rash. The infected person is contagious until the last smallpox scab falls off.

Is there any treatment for smallpox?

Smallpox can be prevented through use of the smallpox vaccine. There is no proven treatment for smallpox, but research to evaluate new antiviral agents is ongoing. Early results from laboratory studies suggest that the drug cidofovir may fight against the smallpox virus; currently, studies with animals are being done to better understand the drug's ability to treat smallpox disease (the use of cidofovir to treat smallpox or smallpox reactions should be evaluated and monitored by experts at NIH and CDC). Patients with smallpox can benefit from supportive therapy (e.g., intravenous fluids, medicine to control fever or pain) and antibiotics for any secondary bacterial infections that may occur.

Need More Information?

Visit this website for more information about Small Pox:

[CDC Small Pox Information](#)

TULAREMIA ([Back to Index](#))

What is tularemia?

Tularemia, a disease that can affect both animals and humans, is caused by bacteria. Although many wild animals get tularemia (hares, rabbits, squirrels, muskrats, beavers, deer), domestic animals (sheep and cats) sometimes get it.

Tularemia Fact Sheet

What Is Tularemia?

Tularemia is an infectious disease caused by a hardy bacterium, *Francisella tularensis*, found in animals (especially rodents, rabbits, and hares).

How Do You Get It?

It is a widespread disease of animals. About 200 cases of tularemia in humans are reported each year in the U.S., mostly in people living in the south-central and western states. Nearly all cases occur in rural areas and are linked with the bites of infective ticks and biting flies; with the handling of infected rodents, rabbits, or hares; or by drinking contaminated water. Sometimes cases result from inhaling infectious aerosols and from laboratory accidents.

People have not been known to transmit the infection to others, so infected people do not need to be isolated.

How Dangerous Is Tularemia?

The disease can be fatal (40% for people with the lung and systemic type of disease) if it is not treated with the right antibiotics. The disease is highly infectious: a small number of bacteria (10- 50 organisms) can cause disease. *F. tularensis* can remain alive for weeks in water and soil. If *F. tularensis* were used as a bioweapon, the bacteria would likely be made airborne to breathe in. People who inhale an infectious aerosol would most likely have severe breathing problems, including life-threatening pneumonia and systemic infection, if they were not treated. The bacteria that cause tularemia occur widely in nature and could be isolated and grown in a large number in a lab, although making an aerosol weapon that works would be a big challenge.

What Are the Symptoms?

Based on the way a person gets the disease, its bacteria may cause skin ulcers, swollen and painful lymph glands, inflamed eyes, sore throat, oral ulcers, or pneumonia. If the bacteria were inhaled, symptoms would include the abrupt onset of fever, chills, headache, muscle aches, joint pain, dry cough, and weakness that worsens. Persons with pneumonia can develop chest pain, difficulty breathing, bloody sputum, and trouble breathing or even breathing failure.

How Soon Do Infected People Get Sick?

The incubation period for tularemia is around 3 to 5 days, with a range of 1 to 14 days.

How Is Tularemia Treated?

People who have been exposed to *F. tularensis* should be treated as soon as possible.

After potential exposure or diagnosis, people should be treated early on with an antibiotic from the tetracycline (such as doxycycline) or fluoroquinolone (such as ciprofloxacin) class, which are taken orally, or the antibiotics streptomycin or gentamicin, which are given via muscles or veins.

Can Tularemia Be Prevented?

In the past, a vaccine for tularemia has been used to protect lab workers, but it is under review now by the Food and Drug Administration.

Tularemia is not known to spread from person to person, so people who have tularemia do not need to be isolated.

What Should I Do if I Think I Have Been *Exposed* to Tularemia?

Seek prompt medical attention. If a person has been exposed to the disease, a physician may recommend treatment with tetracycline antibiotics for 14 days after exposure.

Local and state health departments should be notified right away so investigation and control can begin. If the exposure is thought to be due to bioterrorism, local and state health departments will notify CDC, the FBI, and other appropriate authorities.

Need More Information?

Visit this website for more information about Tularemia:

[CDC Tularemia Information](#)

VIRAL HEMORRHAGIC FEVER (VHF) ([Back to Index](#))

What is viral hemorrhagic fever?

The term viral hemorrhagic fever (VHF) refers to a group of illnesses that are caused by several families of viruses. While some types of hemorrhagic fever viruses can cause mild sickness, many of these viruses cause severe, deadly disease.

Viral Hemorrhagic Fever Fact Sheet

What Is Viral Hemorrhagic Fever?

Viral hemorrhagic fevers (VHFs) refer to a group of illnesses that are caused by several distinct families of viruses (arenaviruses, filoviruses, bunyaviruses, and flaviviruses). In general, the term "viral hemorrhagic fever" is used to describe a severe syndrome that affects many organ systems in the body. The circulatory system is damaged, and the body has trouble regulating itself.

How Do You Get It?

The viruses are geographically restricted to the areas where their host species (usually rodents, ticks, and mosquitoes) live. Humans are infected when they come into contact with infected hosts (for example, when a human touches the urine, fecal matter, saliva, or other body excretions from infected rodents; when a mosquito or tick bites a human; or when a human crushes a tick). Also, humans can become infected when they care for or slaughter animals infected with the virus. With some of the viruses (e.g., Ebola, Marburg, Lassa, and

Crimean-Congo hemorrhagic fever viruses), people can pass them to other people through contact with objects touched by infected body fluids (e.g., through contaminated syringes). In rare cases, other viral and bacterial infections can cause VHF; scrub typhus is a good example. Human cases or outbreaks of VHF caused by these viruses are not easy to predict.

How Dangerous Is Viral Hemorrhagic Fever?

While some types of VHF can cause relatively mild illness, many of these viruses can cause severe disease that leads to death.

What Are the Symptoms?

Specific signs and symptoms vary by the type of VHF, but initial signs and symptoms often include marked fever, fatigue, dizziness, muscle aches, loss of strength, and exhaustion. Patients with severe cases of VHF often show signs of bleeding under the skin, in internal organs, or from body orifices such as the mouth, eyes, or ears. Although they may bleed from many sites around the body, patients rarely die because of blood loss. Severely ill patients may also show shock, nervous system malfunction, coma, delirium, and seizures. Some types of VHF are associated with kidney failure.

How Is Viral Hemorrhagic Fever Treated?

Patients receive supportive therapy, but usually, there is no other treatment or established cure for VHFs. Ribavirin, an anti-viral drug, has been effective in treating some people with Lassa fever (or HFRS). Treatment with convalescent-phase plasma has been used with success in some patients with Argentine hemorrhagic fever.

Can Viral Hemorrhagic Fever Be Prevented?

Except for 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 avoiding contact with host species. If prevention methods fail and a case of VHF does occur, people should avoid close physical contact with those who are infected and their body fluids, if the virus can be passed on from person to person. Because many of the hosts that carry VHFs are rodents, disease prevention efforts include:

- Controlling rodent populations;
- Discouraging rodents from entering or living in homes or workplaces;
- Encouraging safe cleanup of rodent nests and droppings.

For VHFs spread by insects and spiders, prevention efforts often focus on community-wide control of them and use of insect repellent, proper clothing, bednets, window screens, and other insect barriers to avoid being bitten.

Need more Information?

Visit this website for more information about Viral Hemorrhagic Fever.

[CDC Hemorrhagic Fever Information](#)

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