FACT SHEET

Mammal Bites: Management and Prevention

This WorkCare Fact Sheet describes work-related mammal bite risks, symptoms, treatment and prevention.

People in many types of occupations are at risk of exposure to bacterial infections and zoonotic diseases spread by mammal bites.

Sources of work-related mammal bites include people, dogs, cats, bats, rodents, monkeys and livestock. Mammal bites can cause bacterial infections and serious illness if they are not appropriately treated.

Exposure Risks

Bites most commonly occur on the hands, face or extremities. When a mammal bite penetrates the skin, a person can become infected by bacteria and exposed to viruses such as rabies, hepatitis C or human immunodeficiency virus (HIV). Veterinarians, animal handlers, laboratory technicians, workers in outdoor and delivery occupations, and U.S. travelers visiting other countries are among those at risk of occupational exposure.

Signs and Symptoms

Common signs of infection from animal bites include redness, pain, swelling and inflammation. Less common, and potentially serious, symptoms include:

- Pus or fluid oozing from the wound
- Tenderness in areas near the bite
- Loss of sensation around the bite
- Limited use of the affected area
- Red streaks near the bite
- Swollen lymph nodes
- Fever, chills or night sweats
- Fatigue
- Breathing difficulties
- Muscle weakness or tremors

Human Bites

First responders, law enforcement personnel, teachers, childcare and medical providers are among people with elevated human bite exposure risk. The human mouth contains many types of bacteria, and about 20 percent of human bites cause an infection. Signs of infection from a human bite include swelling, bleeding, intense pain and red marks.

Human bites can also transmit bloodborne pathogens that cause diseases such as hepatitis and HIV, the virus that can lead to acquired immune deficiency syndrome (AIDS). However, HIV transmission is unlikely because saliva inhibits the virus.

Canines

Canines such as domestic dogs, foxes and wolves can transmit several types of diseases. In the U.S., dogs are annually responsible for 85 to 90 percent of animal bites. Postal carriers and delivery service workers are particularly at risk. Canines can carry rabies, noroviruses, pasteurella, salmonella and brucella.

Felines

Domestic cats, bobcats and other felines carry bacteria in their mouths and are capable of spreading disease through bite wounds. Cat teeth can cause deep puncture wounds that are hard to clean. A small but deep wound can heal over and trap bacteria. Infected wounds typically are red, swollen and painful.

In the U.S., an estimated 40 percent of cats carry cat scratch disease (CSD) for a limited time at some point in their lives. CSD can be spread by bites or scratches. Cats with CSD often do not exhibit any symptoms. However, people develop symptoms within three to 14 days of being infected. Symptoms may include a swollen and red raised lesion, pus, pain and a feeling of warmth around the bite. Without treatment, lymph nodes close to the bite can become swollen or painful.

Bats

Bats roost in dark places such as under bridges, in tree cavities, among dense foliage, in attics and on cave ceilings. Bats are common carriers of rabies as well as infectious agents including parasites, bacteria, viruses and fungi. Tiny bat teeth can scratch or prick the skin. A bite can be difficult to detect.

If a bat can be safely captured, it can be tested for rabies and other diseases. It is inadvisable to attempt to capture a bat without wearing protective gear.

Rodents (Squirrels, Gerbils, Mice and Rats)

Rodent bites cause infections in humans in about 10 percent of cases. Rodents are known to be carriers of at least 35 different diseases. The most commonly occurring disease is rat bite fever (RBF), which is caused by two bacteria: streptobacillary RBF in North America and spirillary RBF in Asia. Streptobacillary RBF signs and symptoms include:

- Fever
- Vomiting
- Headache
- Muscle and joint pain
- Flat, red rash
- Small bumps on skin

Symptoms typically occur within three to 10 days of exposure.

Other viral diseases transmitted by rodent bites include:

- Hantivirus pulmonary syndrome – Deer mouse, white-footed mouse, cotton rat and rice rat in North and South America
- Hemorrhagic fever with renal syndrome – Striped field mouse, Norway rat, bank vole or yellow-necked field mouse, which are located throughout Asia, Russia, Scandinavia, western Europe and the Balkans
- Lassa fever – Multi-mammate rat in west Africa
- Lynphocytic chorio-meningitis (LCM) – House mouse

Plague is a bacteria transmitted by fleas that infect rodents, including rock squirrels, prairie dogs, wood rats, fox squirrels, and other ground squirrels and chipmunks.

Monkeys

Monkey bites are an occupational hazard for employees who use them for research or are visiting countries where they are commonly found in public places. The macaque monkey carries multiple types of B virus that can affect the human brain and spinal cord. Immediate medical care after a monkey bite is recommended.

Livestock (Cattle, Goats, Sheep and Horses)

Farmers, ranchers, agricultural workers, meat processors, veterinarians, breeders and rodeo hands are among those at risk of exposure to livestock bites. Infected fleas and mosquitos bite livestock, who in turn can infect humans when they bite them. Diseases that can be transmitted by livestock include rabies, anthrax and Rift Valley fever virus (RVFV).

Anthrax is found in Central and South America, Africa, Asia, Europe and the Caribbean. Although the most common way to become infected with anthrax is through food, soil or water, humans can contract the virus via a bite or cut on the skin. Symptoms include fever, small blisters, swelling around the bite or cut, and an ulcer on the skin. Symptoms can take up to two months to appear.

RVFV is transmitted from livestock to humans through contact with blood, body fluids and tissues of an infected animal. Several mosquito species can spread RVFV to livestock. Symptoms of RVFV are usually mild. They may include fever, weakness, back pain and dizziness. Less common symptoms may include ocular disease, inflammation of the brain and hemorrhagic fever.

First Aid and Medical Treatment

Under 29 CFR Part 1904 – Recording and Reporting Occupational Injuries and Illnesses, the Occupational Safety and Health Administration considers a bite to be a recordable injury when an employee who is bitten while on duty receives medical treatment beyond first aid. First aid is defined in 1904.7(b)(5)(ii).

The following first aid measures for mammal bites are recommended immediately after exposure:

- Apply pressure to stop bleeding
- Thoroughly wash the bite area with soap and warm water
- Apply over-the-counter antibiotic ointment
- Cover the wound with a clean, dry bandage
- As necessary and feasible, keep the wound area elevated

With care, an animal bite should start to look and feel better within 48 hours. A medical professional should be consulted when a wound appears to be getting infected or other symptoms develop.

For a domestic dog or cat bite, medical attention should be sought:

- When a wound is deep or it becomes red and painful
- If the bite requires stitches or bone damage is suspected
- The person who is bitten has a weak immune system
- It is not possible to determine whether the animal has been vaccinated
- It has been more than five years since the bite victim received a tetanus shot

Tetanus, a bacterial disease affecting the nervous system, can develop from exposure to bacteria.

Treatment beyond first aid may include antibiotic medications. In some cases, an X-ray may be taken to determine whether an infection has spread to the bone. Blood tests may be used to detect sepsis and infection of the bone.

Pasteurellosis

Pasteurellosis is a less commonly occurring zoonotic disease that can be acquired after being bitten by a domestic dog or cat. Pasteurellosis can cause wound infections and abscesses. In serious cases, it may result in septic arthritis, osteomyelitis, meningitis, ocular infection or respiratory infection, particularly if the person who is bitten has an underlying pulmonary disease.

Bite Prevention

Employers are advised to develop and use an exposure control plan to help prevent mammal bites.

The following are some recommended precautions for employers and employees:

- Make noise before entering an area where there might be an animal
- Wear protective clothing such as a long-sleeve shirt, long pants or gloves
- Use appropriate handling techniques when working with animals
- Call authorities if an animal behaves aggressively and you suspect it has rabies
- Do not try to handle or feed wild animals
- Ensure that tetanus vaccinations are up to date

When approaching an unfamiliar dog, bite risk is reduced by staying calm and quiet, avoiding direct eye contact, and saying “no” or “go home” in a firm, deep voice. Other recommendations:

- Do not run away from a dog
- Protect your back from an attack from behind
- Find something to put between you and the dog
- Remember the paw is the dog’s most vulnerable part
- Face the dog from the side, not the front

Finally, practice situational awareness. Be alert when working in areas inhabited by domestic animals as well as rodents, bats, bobcats and other wild mammals.

Rabies

The Centers for Disease Control and Prevention (CDC) reports that rabies is one of the most common viruses that can transmitted through a bite wound, open or lacerated skin, or via contact with a mucus membrane such as the mouth or eyes. Rodents, rabbits, canines, bats and raccoons are common carriers.

Rabies affects the central nervous system and can be fatal if not diagnosed in a timely manner. When there is a suspected exposure, a series of shots is administered to help prevent infection. According to the CDC, up to 30,000 people a year receive post-exposure injections for rabies. Human cases of rabies are rare.