

Animal and Human Bites of the Hand

Bites are extremely common and can cause significant pain and other problems, especially when associated with an infection. Early recognition of warning signs and appropriate treatment are key in minimizing potential problems from the bite.

When an animal bites, bacteria from its mouth can contaminate the wound. These bacteria may grow within the wound and cause an infection. The consequences of infection range from mild discomfort to life-threatening complications.

Many factors may contribute to the infection, including the type and location of the wound, pre-existing health conditions in the bitten person that impair immunity, such as diabetes, HIV, etc., the extent of delay before treatment, the presence of a foreign body in the wound, and the animal causing the bite.

Animal Bites

There are as many as three million animal bites in the United States each year. Dogs are responsible for most animal bites in this country (up to 90%), with cat bites accounting for about 5% of such injuries. Other biting animals include rodents (at least 2%), rabbits, ferrets, farm animals, monkeys, and reptiles.

Animal bites to the hand most frequently occur on the fingers of the dominant hand of children between the ages of 5 and 14. Women are bitten more frequently by cats, and men by dogs. Infections occur more frequently in cat bites because cats have extremely sharp, pointed teeth that can cause deep puncture wounds. The skin usually flaps over the bite, thereby sealing off the puncture wound, precluding open drainage and allowing an infection to develop (see **Figure 1**).

The major concern of all bite wounds is subsequent infection. In the United States, about 1% of dog bites and 6% of cat bites require hospitalization. With swift and proper care, the prognosis is usually very good for recovery from these injuries.

Rabies is an extremely rare but fatal infection which may result from an animal bite. In the United States, unlike the rest of the world, wild animals such as bats, skunks, raccoons, and foxes spread more than 90% of rabies infection. Report animal bites to your public health department. They may ask your assistance in locating the animal so that it can be confined and observed for symptoms of rabies.

Human Bites

Human bite wounds contain very high concentrations of bacteria so the risk of infection is high. These infections can progress quickly and result in substantial complications, so early treatment is necessary (see **Figure 2**). Often, human bites occur when a person's fist is driven into another's mouth, such as during a fistfight. After the skin is broken, bacteria are seeded into the soft tissue and the 'knuckle' joint, which if left untreated often results in deep infection in the joint which may ultimately destroy the joint. These problems can be effectively treated by early diagnosis, intravenous antibiotics, and surgery to drain the infection out of the joint and wash it out.

Symptoms of Concern with Animal Bites to the Hand

If the bite results in swelling, redness, warmth, continued pain beyond 24 hours, pus draining from the bite wound, red streaks extending up the arm or forearm, swollen lymph nodes ("glands") around the elbow or in the armpit, loss of mobility, loss of sensation in the hand or fingertip, fever, malaise, night sweats, or rigors, emergency treatment should be sought either in your physician's office or the emergency room.

Figure 1: Finger infection from cat bite



Figure 2: Wound infection of a thumb tip after a human bite.



Treatment of animal bites

Your doctor will examine the wound and ask about contributing factors to the injury. A complete history of the bite, including the type of animal and its status (general health, rabies vaccine, behavior), the time and location of the event, circumstances of the bite, whereabouts of the animal, and pre-hospital treatment will be reviewed.

It is crucial to update your tetanus status if you have not had a booster shot within the past ten years.

X-rays may be used to identify any damage to the bones and joints or tooth fragments that may have broken off. If an infected bite to the hand goes untreated for too long, x-rays may reveal evidence of *osteomyelitis*, or the spread of infection to the bone.

Animal bites to the hand require meticulous cleansing. Your doctor or other medical personnel will wash the wound and might trim away any devitalized (dead) tissue, damaged skin, blood clots, or other particles that could be a source of infection. It is important to look for signs of lymphangitis, indicated by the presence of red streaks on the forearm. Your doctor will feel the inner side of the elbow for evidence of enlarged lymph nodes. When the wound is infected, a culture is obtained to identify the type of bacteria that is causing the infection and thus help determine the antibiotic that is most effective for treatment.

The use of antibiotics for animal bites depends on the particular circumstances of the injury, patient health and sensitivity to various medications, and the appearance of the wound. Some bites require the use of IV antibiotics, while others may be treated with oral medication. The presence of an underlying fracture usually dictates inpatient antibiotic treatment. If you are diagnosed as having an infection of a flexor tendon sheath or a joint, you will need hand surgery, which will need to be performed as soon as possible.

Follow-up care is crucial in the case of animal bite wounds, to ensure that infection is diminishing or has not developed, and to restore the hand as much as possible to its former condition.