

Introduction:

What is Rabies?

A zoonotic disease, rabies is an acute encephalomyelitis of mammals that almost always progresses to coma or death within 10 days after the first symptom. Illness in humans may, however, be prevented by prompt medical treatment (post-exposure vaccinations) once a person is exposed. Rabies is caused by a type of Lyssavirus belonging to the Rhabdoviridae family in the order Mononegavirales, viruses with nonsegmented, negative-stranded RNA genomes (see CDC: www.cdc.gov/rabies/transmission/virus.html).

Rabies is a viral disease of mammals and is most often transmitted through the bite of a rabid animal. It can also be transmitted when the rabid animal's infectious saliva comes into contact with another mammal's mucous membranes or fresh open wound. The vast majority of rabies cases reported to the Centers for Disease Control and Prevention (CDC) each year occur in wild animals such as raccoons, skunks, bats and foxes. Rabies is rare in domestic pets and livestock because interactions with wild animals are not common unless the wild animal is sick, and domestic animals are often vaccinated against rabies.

The rabies virus infects the central nervous system, ultimately causing disease in the brain and death. When the rabies virus is introduced into a muscle through a bite from a rabid animal or through contact with a mucous membrane, the virus travels from that site to the brain by moving within nerves but does not yet cause symptoms. Once the virus reaches the spinal cord and brain and multiplies, it causes an inflammation of the brain and symptoms of illness may shortly begin to appear. The virus then progresses to the salivary glands and saliva, where it can be transmitted to people or other animals that come in contact with the saliva. The time between the introduction of the virus into the body and the appearance of symptoms, called the incubation period, may last for weeks or even months. Transmission of the virus does not occur until the very end of the incubation period, when the virus has moved into the salivary glands and the saliva.

The early **symptoms of rabies in people** are similar to that of many other illnesses and include fever, headache, and general weakness or discomfort. As the disease progresses, more specific symptoms appear and may include insomnia, anxiety, confusion, slight or partial paralysis, excitation, hallucinations, agitation, hypersalivation (increase in saliva), difficulty swallowing, and hydrophobia (fear of water). Death usually occurs within days of the onset of these symptoms.

In animals, the first symptoms of rabies may be nonspecific and include lethargy, fever, vomiting, and anorexia. Signs progress within days to cerebral dysfunction, cranial nerve dysfunction, ataxia, weakness, paralysis, seizures, difficulty breathing, difficulty swallowing, excessive salivation, abnormal behavior, aggression and/or self-mutilation, and ultimately death.

When a person is exposed to the rabies virus, disease prevention includes thorough washing of the wound site for 15 minutes and administration of both passive antibody (through an injection of human rabies immune globulin) and a series of injections with rabies vaccine.

Once a person begins to exhibit signs of the disease, survival is rare. According to the CDC, fewer than 10 documented cases of human survival from clinical rabies have been reported to date, and only two of those cases did not have a history of pre- or post-exposure prophylaxis.

See also:

- **N.C. Communicable Disease Manual** (<http://epi.publichealth.nc.gov/cd/lhds/manuals/cd/toc.html>)
- **N.C. Communicable Disease Branch: Rabies** (<http://epi.publichealth.nc.gov/cd/diseases/rabies.html>)
- **Centers for Disease Control and Prevention: Rabies**, www.cdc.gov/rabies/ .