

Rabies

Rabies is an acute infection of the central nervous system caused by a neurotropic rhabdovirus of the genus *Lyssavirus*. All mammals, including humans, are susceptible to rabies. In humans, rabies causes a rapidly progressive and fatal encephalomyelitis. The incubation period in humans is usually 2–12 weeks, but there have been documented incubation periods as long as seven years. Bites from infected animals constitute the primary route of transmission. Transplanted organs, including corneas from patients with undiagnosed rabies, have also caused infection in recipients.

The Pacific Northwest is considered to be free of terrestrial rabies. In Oregon, the main reservoir of rabies is bats. Mammals like foxes and cats may come in contact with rabid bats, acquire the infection and be capable of transmitting it to humans. Since 2000, 9% of the bats tested in Oregon have been positive for rabies. This, of course, is not a random sample of Oregon's bats; rather it represents bats that were neurologically impaired enough to have bitten humans or their pets, and then to have been captured. Any contact between a bat and a human should be evaluated carefully and immediately. All potential human exposures should result in a call to a local public health department office. Testing of an exposing mammal involves killing the animal, removing the head, and sending it to a laboratory for special staining and microscopic examination of brain tissue. The Oregon State Public Health Laboratory will test mammals involved in bona fide human exposures at no cost to the patient; and (for a fee) the Oregon State University's Veterinary Diagnostic Laboratory will test mammals involved in other exposures.

Ten bats and three foxes tested positive in 2014. Positive foxes were residents of Josephine, Douglas and Lane counties. Rabies in humans is 100% preventable through prompt appropriate medical care, beginning with thorough cleaning of the wound. Persons not previously immunized for rabies, who are exposed to a rabid animal, should be given human rabies immune globulin (HRIG), with as much as possible infiltrated into and around the bite wound(s), and the rest administered intramuscularly; and four doses of rabies vaccine, one each on days 0, 3, 7 and 14. Before 2008, a five-dose vaccine regimen was recommended. However, review of serologic and case data indicated four doses of vaccination in combination with HRIG elicited a protective immune response and a fifth dose of vaccine provided no additional benefit.

Though bats are the reservoir in Oregon, canine rabies still accounts for most human rabies cases worldwide. Travelers to rabies enzootic countries should be warned to seek immediate medical care if they are bitten by any mammal.

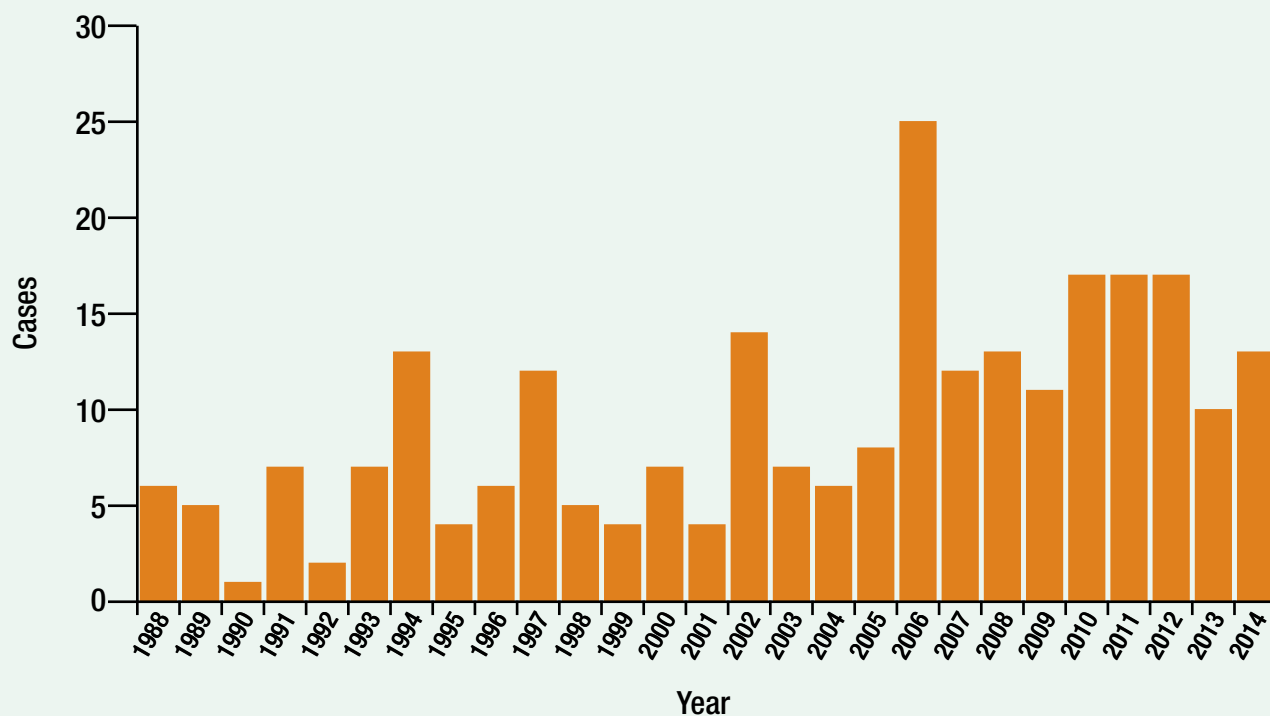
Additional information and an algorithm to follow for assessment of rabies risk.

Rabies tests in Oregon, 2000–2014 (number of positive/total tested)

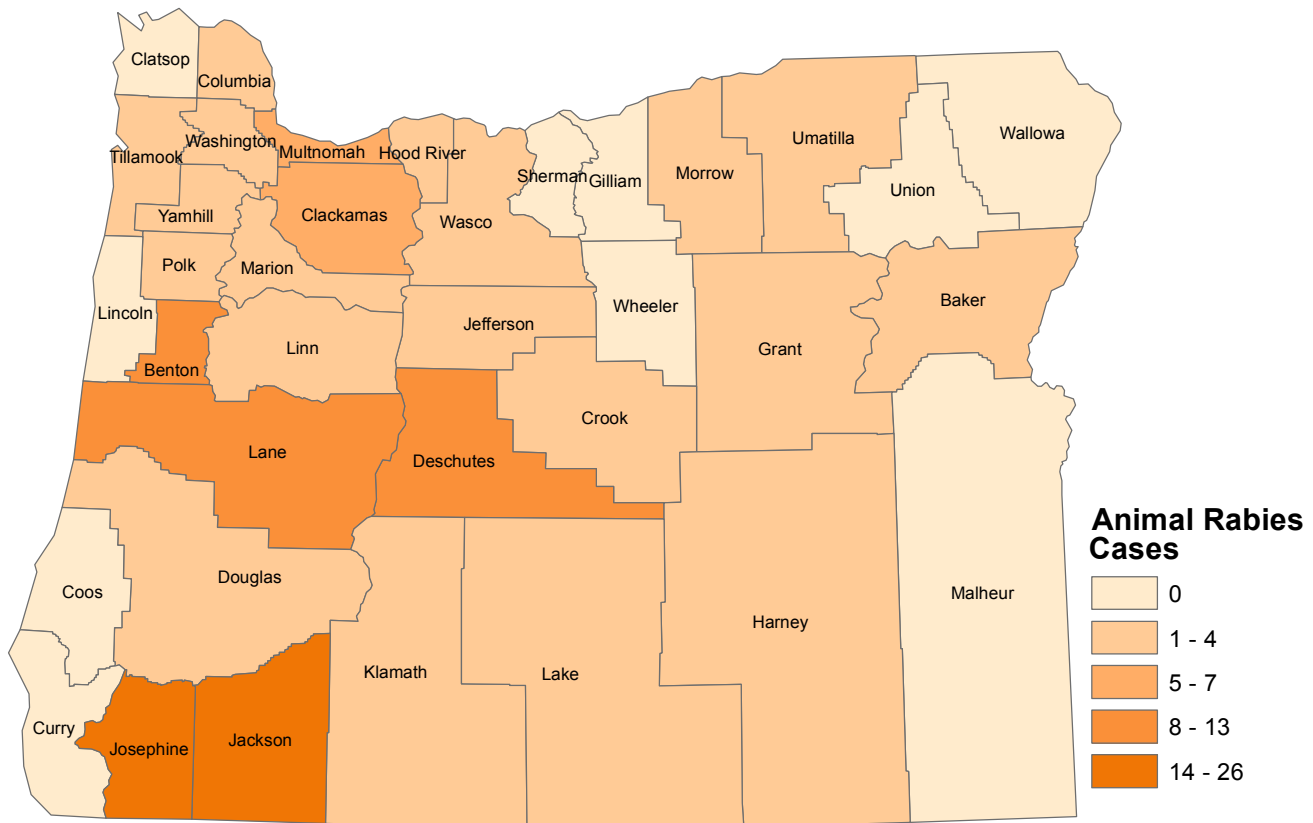
Year	Bat	Cat	Dog	Fox	Other
2000	8/73	0/79	0/56	1/4	0/4
2001	4/59	0/67	0/46	0/1	0/41
2002	12/134	0/102	0/27	2/4	0/29
2003	6/61	0/75	0/36	1/5	0/39
2004	7/88	0/105	0/42	0/2	0/27
2005	8/83	0/100	0/48	0/1	0/23
2006	23/126	0/72	0/26	2/4	0/41
2007	12/153	0/80	0/33	0/1	0/26
2008	13/128	0/58	0/23	0/3	0/53
2009	11/117	0/73	0/27	0/1	0/42
2010	10/104	0/67	0/41	6**/15	1/48 (goat)
2011	11/143	0/86	0/32	5**/44	1**/61 (coyote)
2012	14/203	0/79	0/37	3**/28	0/45
2013	7/193	0/90	0/36	2/34	0/31
2014	10/148	0/79	0/39	3/7	1/53 (coyote)
Totals 2000 – 2014	156/1813 8.6 %	0/1210	0/549	25/154 16.2%	3/563 0.53%

** enhanced surveillance due to positive goat and foxes in 2010–12

Rabies by year: Oregon, 1988–2014



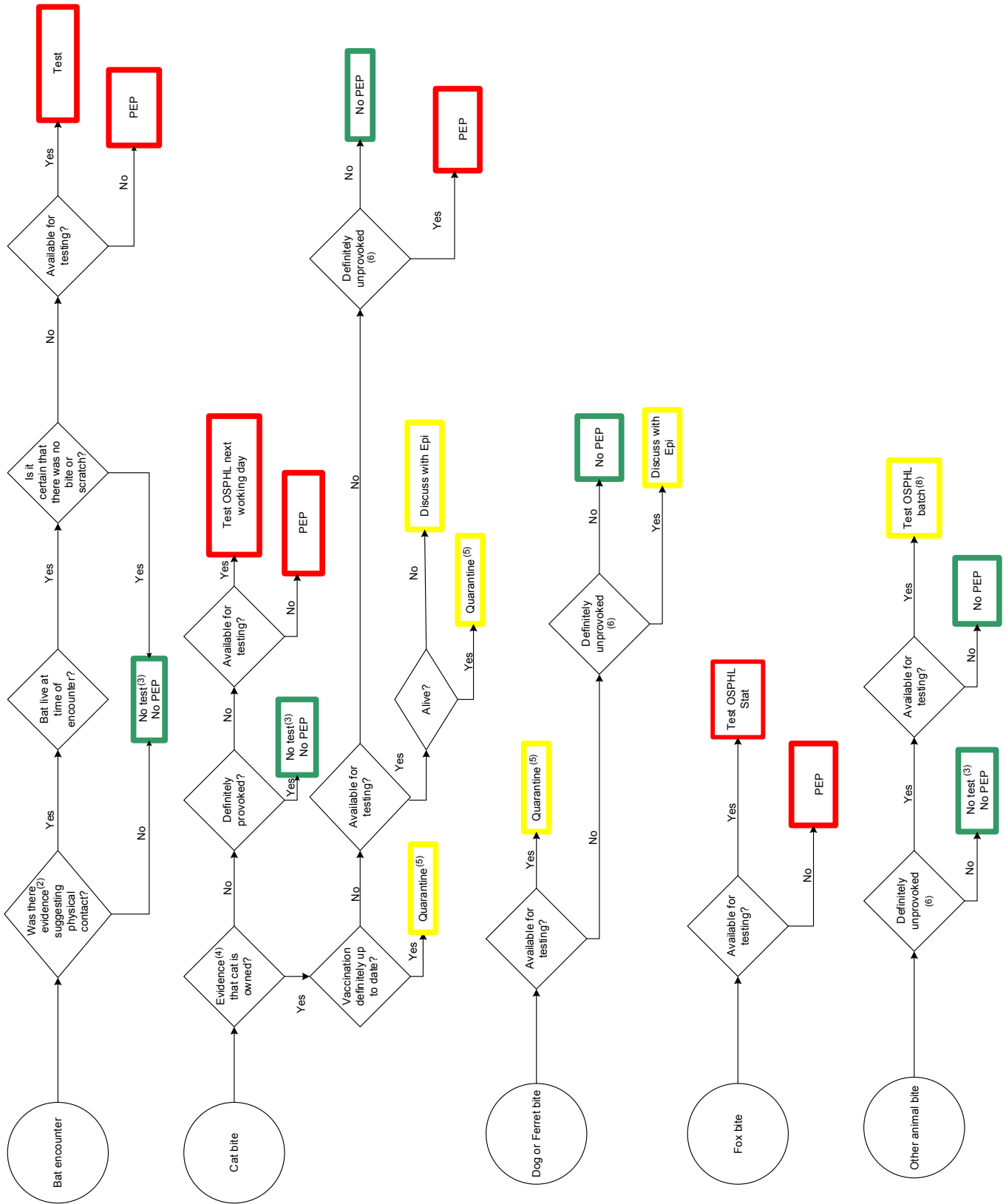
Animal rabies cases by county of residence: 2005–2014



Prevention

- Keep rabies vaccinations up to date for all pet cats, ferrets and dogs.
- Maintain control of pets by keeping cats and ferrets indoors and keeping dogs under direct supervision.
- Spay or neuter pets to help reduce the number of unwanted pets that may not be properly cared for or vaccinated regularly.
- Call animal control to remove stray animals from your neighborhood, because these animals may be unvaccinated or ill.
- Do not handle wildlife, especially bats and foxes.

Algorithm for prevention of rabies after animal encounter in Oregon¹



Algorithm for prevention of rabies after animal encounter in Oregon notes

Rabies testing, Oregon 2000–2014			
Animal	Positive	Tested	% Positive
Bat	156	1813	8.6%
Cat	0	1210	0
Dog	0	549	0
Fox	25	154	16.2%

Notes

- Oregon law mandates reporting of any bite of a human being by any other mammal (Oregon Administrative Rule 333-018-0015[5] [c]); such reports should be made to the local public health authority for the jurisdiction in which the patient resides. Decisions about rabies PEP are the purview of the clinician attending the patient; although these recommendations regarding the need for rabies PEP represent the best judgment of state public-health officials, they are not binding on clinicians. Clinicians should be advised that, aside from concern about rabies, prophylaxis against tetanus or bacterial infection might be warranted, depending on the nature of the wound and the animal involved. Local health department personnel are advised to call Acute and Communicable Disease Prevention at 971-673-1111 with specific questions regarding application of these guidelines.
- Such evidence might include, e.g., a young child's waking up, crying, with a bat found in the room.
- "No Test" means that the animal will not be tested at OSPHL, at state expense. In such cases, the animal may be tested at the Oregon State University Veterinary Diagnostics Laboratory (541-737-3261) at private expense.
- Evidence of ownership might include, e.g., presence of collar or previous appearances of the animal in a neighborhood.
- "Quarantine" means confining a dog, cat or ferret for 10 days to observe for signs of illness after biting a human being. The nature of the confinement is determined by the local public health authority. If the animal develops neurological illness during the period of quarantine, it should be euthanized and its head shipped to OSPHL for testing within one working day.
- "Unprovoked" implies that in the context of the situation there was no obvious alternative motivation for the animal to bite. A good history is essential. In practice, unprovoked bites are quite rare. Examples of provocation would include being hit by a car, being handled, fed, or caged; being cornered in a garage, having a jogger run past your yard or crowding animal's space, etc.
- For purposes of determining need for rabies PEP, wolf-hybrids are considered wild animals and not dogs. Wolf-dog hybrids that bite or otherwise expose persons, pets, or livestock should be considered for euthanasia and rabies examination. Whether an animal is a dog or a wolf-dog hybrid must be determined by a licensed veterinarian, subject to review by the State Public Health Veterinarian or designee (OR 333-019-0022).
- Batch testing for rabies is generally done at OSPHL on Mondays and Wednesdays. Results are available the following day.

Abbreviations:

OSPHL: Oregon State Public Health Laboratory
(503-229-5882)

PEP: Post-Exposure Prophylaxis against rabies

Epi: Epidemiologists at the Oregon Health Authority;
Weekdays, nights and weekends (971-673-1111)