

Dear Colleagues,

We are happy to share this next edition of the Public Health Vet Update! Thank you to everyone who helped prepare this season's issue. With hurricane disaster relief in full swing, we have had an influx of pets from out-of-state shelters, bringing with them potential non-endemic diseases and ectoparasites— staying aware and engaged in public health is more crucial than ever. If possible, please share the following link to our brief subscription form with your colleagues to make sure they stay

informed on local veterinary public health-related issues: www.kingcounty.gov/zoo. You can also subscribe to receive other communicable disease information from Public Health at: <http://www.kingcounty.gov/depts/health/communicable-diseases/newsletter/subscribe.aspx>. Please send us any feedback on this newsletter or questions regarding zoonotic disease.



Sincerely,

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BAYLISASCARIS PROCYONIS

A case of raccoon roundworm in a Washington child

Raccoon roundworm is a zoonotic infection caused by the roundworm *Baylisascaris procyonis*. Human infection occurs when larvated eggs in raccoon feces are ingested. Paratenic hosts, including dogs, cats and rodents, may also be infected and could shed eggs, acting as another source of human infection. Children under the age of ten, typically between one and two years of age, are most susceptible, especially those with pica, geophagia (consumption of soil), or preexisting mental disabilities. Exposure most commonly occurs at raccoon latrines, or sites of communal defecation. Most infections with raccoon roundworm are subclinical but have the potential to cause nausea, lethargy, ataxia, blindness and in severe cases, CNS symptoms associated with visceral, neural, and/or ocular larval migrans which can be fatal.

In May of 2017, a 19-month-old child was diagnosed with *Baylisascaris procyonis* and was the first case in Washington State. The previously healthy patient presented with ataxia, tremors in the extremities, and decreased interactivity. There was a history of geophagia occurring on the patient's property. Serum and CSF from the patient was positive for *B. procyonis* antibodies. Public Health helped determine the sites of raccoon latrines in the patient's backyard, and feces were collected and tested for *B. procyonis*, which was confirmed by fecal float. The family dog was negative for the parasite.

Treatment with albendazole and steroids have resulted in neurologic improvement in the toddler.

While *B. procyonis* is a rare disease (30 human cases reported to date in the US), the seroprevalance in raccoons has been shown to range from 66% to over 90% throughout the country, and infected raccoons can shed millions of eggs per day. An occupational association exists, and wildlife rehabilitators, veterinarians, zoo keepers, and lab workers have been shown to be at higher risk for infection. As a veterinarian, you might become aware of encounters with raccoons and should be knowledgeable of their potential risk for spreading disease.

Clients should be advised against keeping raccoons as pets or attracting them with food. Clients should encourage hand-washing of children after playing outdoors, and pets should be kept on a regular deworming schedule. If a raccoon latrine is located on a client's property, special precautions should be used while cleaning to prevent infection. For more details see: kingcounty.gov/raccoons.

If you or a client wishes to test raccoon feces they may be submitted to Washington Animal Disease Diagnostic Lab (WADDL) or Phoenix Central Laboratories.

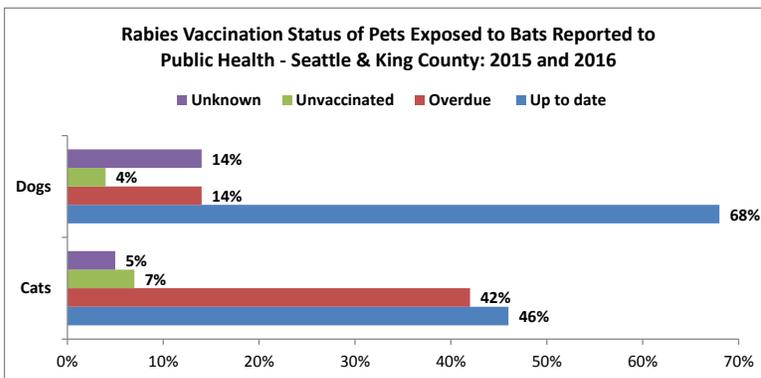


RABIES VACCINATION COVERAGE AMONG PETS EXPOSED TO BATS

Maintaining up to date rabies vaccination status is a legal requirement for all dogs, cats, and ferrets in Washington State. Failure to keep pets up to date on rabies vaccination leaves pets unprotected from potential exposure to a suspected or confirmed rabid animal, and can put the public's health at risk.

Bats are the only known reservoir for rabies in Washington. Frequent pet exposures to bats, especially during the summer and early fall months, carry potential for transmission of rabies virus. Pet exposures to bats are reportable to Public Health, and we give recommendations for rabies vaccination, monitor observation/confinement periods, and help coordinate rabies testing of the bat when possible. To obtain a rough estimate of rabies vaccination compliance, we used a convenience sample to analyze data collected from cases of cats and dogs reported to Public Health after exposure to bats during 2015 and 2016.

Our data showed that **only 46% (70/153) of cats exposed to bats were up to date on rabies vaccination**, while 42% (64/153) were overdue for a booster vaccine, 7% (11/153) were unvaccinated, and 5% (8/153) had an unknown vaccination status. Dogs had higher vaccination coverage than cats, although significantly fewer dogs were exposed to bats during this period. A total of 68% (15/22) were up to date on rabies vaccination, 14% (3/22) were overdue, 4% (1/22) were unvaccinated, and 14% (3/22) had an unknown vaccination status.



These findings show a clear need for improved compliance with the rabies vaccine law, particularly for cats. Low vaccination compliance in cats is especially troubling because they are much more likely to be exposed to bats as a result of their varied lifestyle, which may include living partially or completely outdoors unsupervised. Cats are also more inclined to prey upon bats and catch them effectively. State and local government and veterinarians share a responsibility to promote and protect the public's health and could collaborate to find solutions on ways to increase rabies vaccination rates in pets.

HOW MANY RABID BATS?



In the span of just 12 days this past August, three rabid bats were discovered in King County on the ground in open public spaces— the same number confirmed in King County during all of 2016. Nocturnal and reclusive, bats tend to avoid areas with a heavy human presence. By the start of October, another two rabid bats had been found in public places. This brings the count of rabid bats this year to eight (including rabid bats on private property), outpacing annual totals for the past five years (0–3 rabid bats/year), while the number of rabid bats in all of Washington this year is 22. Public Health receives more calls about bats during the summer. Bats generally stop hibernating or return from migrating in the late spring, and most species give birth during late May–early July, creating a seasonal swell in the population. The young fly within four weeks, and juvenile bats might be more prone to injury and human encounters as they learn to fly. **The proportion of bats testing positive in King County is higher to date this year than usual: close to 10% compared to 0–8% over the past five years**, though a very small number of bats is tested compared to the overall bat population. Unfortunately, very little is known about how rabies virus is maintained in the wild bat population. More than 15 species of bats live in WA, with varying roosting, feeding, breeding and hibernation patterns. In addition, there are no active surveillance systems to monitor rabies in bats, so it is challenging to estimate rabies prevalence rates over time. It is believed that less than 1% of all bats in nature are infected with rabies. Veterinarians are [required to immediately report suspected human cases or exposures to rabies and animal cases of rabies](#). Bats are the only known reservoir for rabies in WA; however, the risk for transmission to other animals always exists. For human exposures to bats, all bites and scratches are considered high risk, and Public Health provides rabies testing of these bats. For pet exposures to bats, the bat should be tested for rabies if it is available, but unlike with human exposures, it is the responsibility of the pet owner to pay for rabies testing ([\\$95 + shipping to OSU](#)). If a client has a cat or dog that has an encounter with a bat, instruct the client to collect the bat without touching it, keep a live bat in a container with small air holes or a deceased bat double-bagged in the refrigerator, and

In King County:

Report suspected human rabies exposures immediately to Public Health, Communicable Disease at 206.296.4774. Consultation is also available at this number 24 hours a day, 7 days a week. Report animal exposure only (no human exposure) within one day to the Public Health Veterinarian at 206.263.8454. For further resources, visit the King County page, "[Bats and rabies.](#)"

QUESTIONS ABOUT ANIMAL BITE PROTOCOLS?

Animal bites are a public health concern for several reasons, including the potential for transmission of rabies. In 2011, the Washington Administrative Code was revised to only require reporting of “Suspected Rabies Exposures,” instead of all animal bites, to the local health department. These exposures include two conditions listed in the rule revisions:

1. Rabies, suspected human exposure (from a bite or other exposure to an animal that is suspected of being infected with rabies); and
2. Animal bites (when human exposure to rabies is suspected).

For veterinarians, this means that only a suspected human case or exposure or an animal case of rabies is **immediately notifiable to the local health jurisdiction**; animal cases of rabies (excluding bats) are also [notifiable to Washington State Department of Agriculture](#).

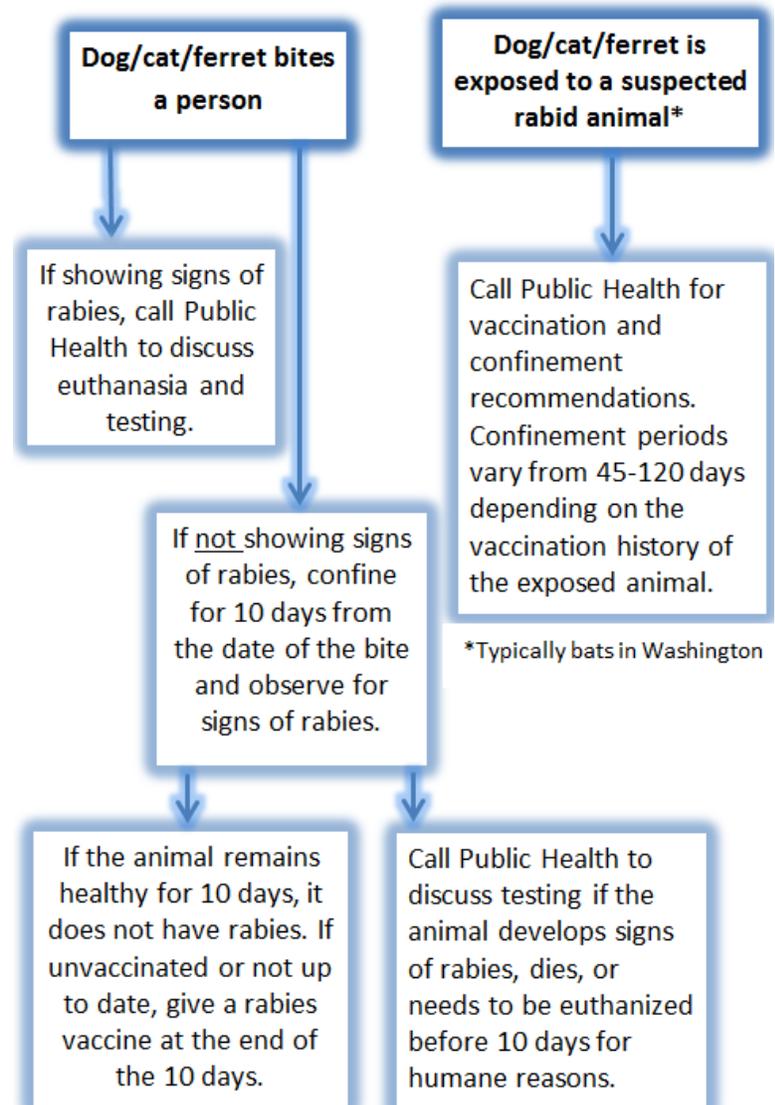
The risk of rabies from dog, cat and ferret bites in Washington State is low. However, some bites should always be evaluated for possible rabies risk, including those which occur by:

- An animal imported from another country within the past 6 months or a bite that happened overseas in a rabies-endemic country
- An animal known to have had recent contact with potentially rabid wild animals (e.g. bats)
- A hybrid dog or cat (an animal that is part domestic and part wild animal, e.g. wolf-dog hybrid)
- A wild animal, even if that animal is being kept as a pet
- An animal that was not acting normally or showing unexplained, neurological symptoms consistent with rabies infection

Whenever possible, **dogs, cats or ferrets that bite someone should be confined and observed for 10 days** (this is different from the 45–120 day confinement period required for dogs, cats, and ferrets exposed to potentially rabid animals like bats). A dog, cat, or ferret infected with rabies and able to transmit the virus at the time of the bite will get sick and die within 10 days. If the animal remains healthy for 10 days, it does not have rabies. If the animal gets sick or dies during the 10 day period, call Public Health at 206-263-8454 to discuss testing it for rabies. Not all animals that die or are euthanized during the 10 day confinement period need to be tested for rabies; the decision is made based on the animal’s vaccination status, the circumstances of the bite, the animal’s travel history, the animal’s potential exposure to a rabid animal (e.g. bat), and the animal’s clinical status. **If possible, do not euthanize or cremate an animal that has bitten someone in the previous 10 days without getting permission from Public Health.**

If an animal tests positive for rabies, preventive treatment is needed for persons bitten by it. Pet dogs, cats, and ferrets under confinement can be observed in the owner’s home under direct control of the owner. The animal should not have contact with other animals or people outside of the household during that time. If the owner can’t confine and observe the animal, some animal control agencies can assist with this. If the dog, cat, or ferret’s rabies vaccination is not up to date, plan to vaccinate the animal after the 10th day.

Public Health approval is needed for rabies testing of animals that have bitten a person. We can help facilitate testing of the animal at Washington State Public Health Laboratory (PHL) in Shoreline. PHL requires specific packaging of these animals using materials supplied by Public Health. In most cases, it is the responsibility of the veterinary hospital or clinic to pick up the packaging from Public Health, package the animal according to specific instructions, and deliver it to PHL. For any questions about rabies testing or packaging, please call Public Health.



HURRICANE UPDATE: RELOCATED PETS

The Washington State Veterinary Medical Association recently published an article on relocation of animals from hurricane zones: <https://wsvma.org/2017/09/08/wsvma-advisory-hurricane-animals-being-relocated-near-you/>.

The majority of shelter animals being relocated are likely to have appropriate health certificates and have received required vaccinations and veterinary care prior to travelling. Other non-shelter animals may arrive other ways.

Local veterinarians should be aware of diseases from these out-of-state animals that might not be common in local pets: H3N2 influenza, parvovirus, heartworm infection, pythiosis, histoplasmosis, leptospirosis and coccidiomycosis. Ectoparasites and internal parasites are also known to carry disease-causing organisms like Chagas disease and Rocky Mountain Spotted Fever.

It's a good idea to ask clients with new pets if the animal is local or translocated, getting as much travel history as possible. Owners should be aware of potential disease issues for animals from other regions of the country—advise them to watch their new pet closely for any signs of illness. It's also a good time to remind your clients that their family disaster plan needs to include their pets!

RAISING CLIENT AWARENESS: ZOO NOTIC DISEASES

Being aware of zoonotic diseases and how to prevent them is necessary for educating clients. Some examples of zoonotic diseases from common pets (dogs, cats, rodents, birds, etc.) include campylobacter, *Bartonella henselae*, chlamydiosis, leptospirosis, rabies and Salmonellosis. Some people are at higher risk for disease or more serious illness if infected. These clients should know about their risk and receive information about prevention. Certain pets are not appropriate for persons at higher risk.

The following measures can promote pets' health and prevent many zoonotic diseases: regular vaccinations, regular deworming, flea and tick prevention, and owner education on hygiene. Discussion on special precautions, including [raw meat diets](#) and wildlife interactions, can also lead to important prevention steps.

Read this [Public Health Insider](#) feature for information to share with your clients.

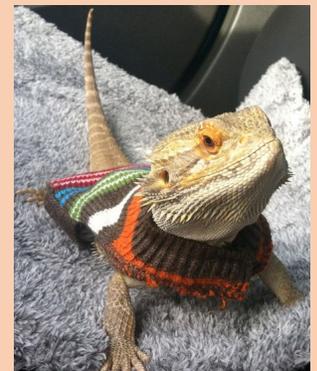
Selected Notifiable Conditions (# of cases reported)				
	King County		WA State	
	Yearly average, 2014-16	2017 through 10/5	Yearly average, 2014-16	2017 through 10/5
Human Cases:				
Brucellosis	1	0	3	0
Coccidiomycosis (Valley Fever)*	7	9	28	32
Cryptococcus gattii	0.3	0	5	1
Hantavirus pulmonary syndrome	0.3	2	1	5
Leptospirosis	0	0	1	0
Lyme disease	7	9	23	24
Plague	0	0	0	0
Psittacosis	0	0	0.3	0
Q Fever	0	0	4	2
Rabies suspected exposures	105	93	272	231
Tularemia	0.3	1	3	6
West Nile virus	0.3	1	15	9
Animal Surveillance:				
Positive rabies in bats tested	3	8	15	22
Positive rabies in other mammals**	0	0	0.3	0
Cryptococcus gattii	2	0	3	0
West Nile virus: mammals	0	0	23	9
West Nile virus: birds	0	0	3	4
West Nile virus: mosquitoes	0	0	111	34

Note: 2017 counts are preliminary & may change as case info. is reviewed and/or more cases are reported;*3 cases in 2014, 2 cases in 2016, and 1 case in 2017 exposed in-state; **a Jefferson County cat tested positive in 2015

To date, fewer human and animal cases of *Cryptococcus gattii* have been reported during 2017 compared to 2014-2016. The number of cases of hantavirus pulmonary syndrome for Washington (5) ties the highest annual number, seen in 1999. Confirmed rabid bats have been higher in both King County and Washington compared to 2014-2016.

People with weakened immune systems are at higher risk for zoonotic disease or for more serious illness if infected:

- organ transplant recipients
- people on cancer treatment or other medicines that suppress the immune system
- people with AIDS
- children under 5 years old
- adults age 65 and older
- pregnant women



People at higher risk for zoonotic disease should avoid:

- Reptiles & amphibians (lizards, snakes, frogs, turtles)
- Baby poultry (chicks & ducklings)
- Non-traditional pets like hedgehogs
- Sick animals, especially those with diarrhea
- **Pregnant women** should avoid contact with rodents due to the risk of LCMV (lymphocytic choriomeningitis virus) infection that can harm the unborn baby.