

SUMMARY OF REPORTED ANIMAL BITES 2022



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Allegheny County, PA

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INTRODUCTION

Rabies, a viral pathogen that is lethal if left untreated, is transmitted to humans through the saliva of infected mammals.¹ Once symptoms appear, rabies is 99% fatal in humans. It poses a public health threat across the globe.² Annually, an estimated 59,000 human deaths are attributed to rabies, with dog bites responsible for up to 99 percent of human cases.² Children bear a significant burden of these deaths, as more than 40 percent of human rabies cases occur in persons under 15 years of age.²

In the United States, wild animals, such as bats and raccoons, comprise more than 90 percent of reported animal rabies cases.³ There are only one or two human cases per year in this country.³ In Pennsylvania, there have not been any cases of human rabies since 1984.¹ The low incidence of human rabies in the US is attributed to a robust public health surveillance and testing system, widespread availability of post-exposure prophylaxis (PEP) and rabies vaccination for pets.

By Pennsylvania state law, all health care providers are required to report animal bites to the health department.⁴ If a domestic animal bites a human, the animal is placed on in-home quarantine, usually for a period of 10 days, and monitored for signs of rabies. If the animal is already deceased, the owner is asked to submit the animal for testing. If the animal cannot be quarantined or tested, or if it tests positive for rabies, the victim is directed to seek medical care to receive PEP. Rabies PEP consists of human rabies immune globulin (HRIG) and human diploid cell vaccine (HDCV) given on day of exposure and then three more doses of vaccine given on days three, seven, and fourteen.^{3,5} Rabies is almost 100 percent preventable if individuals receive PEP soon after exposure.³

In Allegheny County, health care providers must report bites† to the Allegheny County Health Department (ACHD). After notification, ACHD staff contact pet owners and bite victims to provide recommendations for quarantine of animals and treatment for bite victims. Deceased animals are submitted to the ACHD Public Health Laboratory for direct fluorescent antibody testing. This report describes the characteristics of persons bitten and treatment received for animal bites reported in 2022.



METHODS

The ACHD receives bite reports from health care providers via a web-based form or a faxed report. Bite reports are also received from police officers if they respond to animal bite incidents. Health Department staff enter data from faxed reports into the Oracle database. Staff then contact the bite victim and the pet owner, if applicable, to provide guidance and collect information missing from the original report.

Data on bites occurring in 2022 were exported from the Oracle database to a Microsoft Excel file. These data were then imported to SAS version 9.4 for cleaning and analysis. Duplicate observations, identified by name and bite date, were deleted. All bite reports for animals other than mammals were deleted, as rabies is exclusive to mammals. Descriptive statistics were generated in SAS. Tables and graphs were created in Microsoft Excel and Microsoft Word.

† Note that the terms “bite” and “exposure” are used interchangeably throughout this report and refer to both animal bites and scratches.

Population age group estimates were obtained from the US Census Bureau to calculate rates per 100,000 population. Population data from 2021 were used because estimates for 2022 were not available at the time of writing this report.



DATA

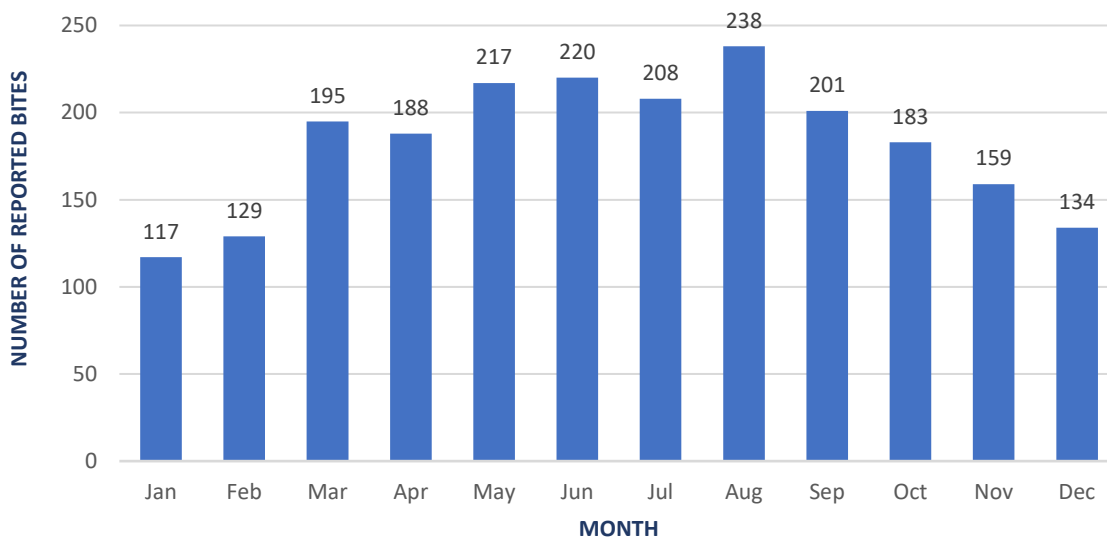
In 2022, ACHD received 2,189 unique animal bite reports. Most animal bites were attributed to dogs (77.8%) or cats (17.5%). Bats (1.0%), and raccoons (0.4%) were the most common wild animals listed in bite reports. The type of animal involved was not reported for 2.2% of the bites (**Table 1**).

Table 1. Number of reported bites by animal type, Allegheny County, 2022

Species	N= 2189	
	Frequency	Percent
Dog	1702	77.8%
Pet	1487	96.4%
Feral	5	0.3%
Stray	21	1.4%
Unknown/Missing	29	1.9%
Cat	384	17.5%
Pet	298	85.9%
Feral	24	6.9%
Stray	22	6.3%
Unknown/Missing	3	0.9%
Bat	21	1.0%
Raccoon	8	0.4%
Groundhog	6	0.3%
Guinea Pig	5	0.2%
Mouse	4	0.2%
Chipmunk	2	0.1%
Hamster	2	0.1%
Squirrel	2	0.1%
Horse	1	0.1%
Monkey	1	0.1%
Opossum	1	0.1%
Rabbit	1	0.1%
Missing	49	2.2%

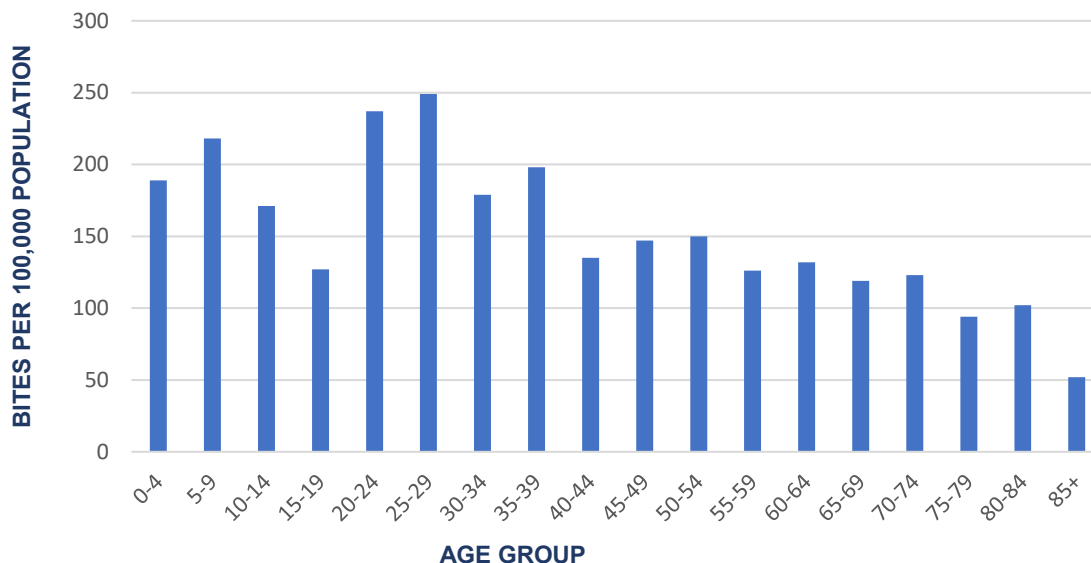
The number of reported bites peaked from May to August (**Figure 1**), possibly due to increased outdoor activities during summer.

Figure 1. Number of reported bites by month, Allegheny County, 2022



Bite victims' ages ranged from less than one year to 91 years of age with a median of 34 years. The bite rate per 100,000 population was highest for individuals 20 to 29 years of age (**Figure 2**).

Figure 2. Number of reported animal bites per 100,000 population by age group of victims, Allegheny County, 2022



In 2022, 57.3 percent of bite victims were female, and 42.7 percent were male. Male children aged 5-14 years had more bites than female children (**Figure 3**). Females had more bites than males in the 0–4 year age group and among those 15+ years.

Figure 3. Number of reported bites by age group and sex of victim, Allegheny County, 2022

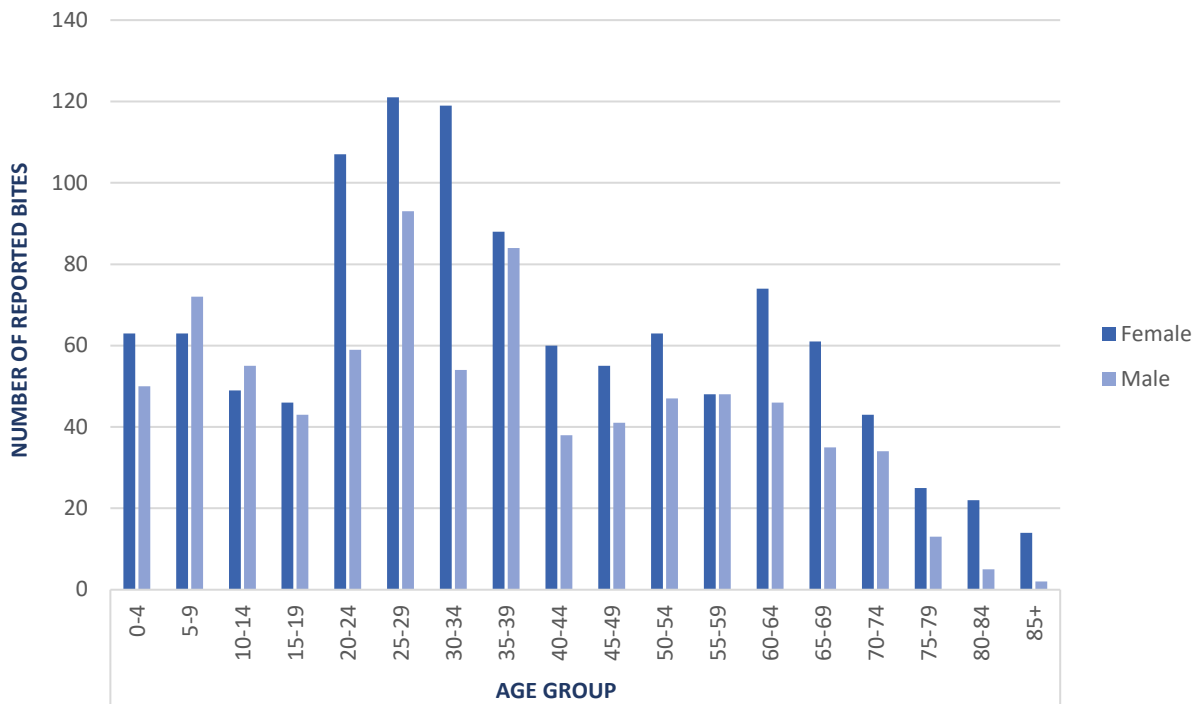


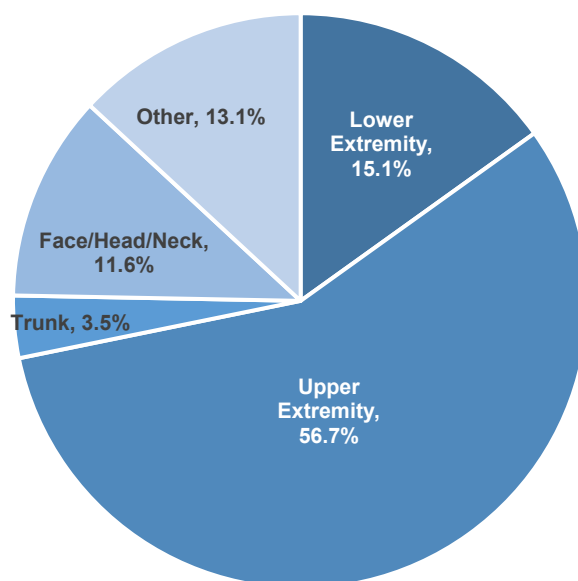
Table 2 lists the circumstances under which the bites occurred. It is worth noting that over half (72.1%) of the circumstances for animal bites were not reported. Among those with reported incident type, the most common circumstances were breaking up a fight (4.7%), playing with animal (3.9%), and the animal got spooked (3.6%). Situations in which the bite was not provoked (“at a community area and animal came up and bit the victim” and “walking on the road”) accounted for 101 (4.6%) bites. The data on circumstances are shown separately for dogs and cats (Table 2). Situations noted more frequently for cat bites than dog bites include trying to capture the animal, trying to put the animal in a crate, performing a medical procedure, and giving medication to or cleaning a wound.

Table 2. Type of incident for reported bites, Allegheny County, 2022

Bite Incident	All Bites N=2189		Dog Bites N=1702		Cat Bites N=384	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Breaking up a fight	103	4.7%	95	5.6%	7	1.8%
Playing with the animal	86	3.9%	79	4.6%	5	1.3%
The animal got spooked	79	3.6%	63	3.7%	13	3.4%
At a community area and animal came up and bit the victim	75	3.4%	70	4.1%	4	1.0%
Other	74	3.4%	65	3.8%	9	2.3%
Trying to pet the animal	34	1.6%	32	1.9%	2	5.3%
Walking on the road	26	1.2%	26	1.5%	0	0.0%
Circumstances with <1% occurrence	133	6.1%	104	6.1%	23	6.0%
Not Listed	1579	72.1%	1168	68.6%	321	83.6%

Most bites occurred on the upper extremities (56.7%), followed by the lower extremities (15.1%) and face/head/neck (11.6%). Only 3.5 percent of bites took place on the trunk area. For 122 (13.1%) reports, the bite sites were listed as “other,” and no other information was given. (Figure 4).

Figure 4. Location of exposure for reported animal bites, Allegheny County, 2022



Note: Upper extremity was defined as shoulder, arm, wrist, finger, hand, and shoulder. Lower extremity was defined as leg, foot, hip, ankle, and toe. Face/head/neck was defined as face, head, neck, ear, and chin. Trunk was defined as abdomen, chest, buttocks, and back. If a person was bitten in multiple locations, each bite site was included.

About two-thirds (63.6%) of the bite victims were treated with antibiotics, and about one third (31.8%) of the victims received a tetanus vaccine. Among the victims, 114 (5.2%) started rabies PEP, and 37 (1.7%) completed the PEP (**Table 3**). Data on treatment of dog bites, cat bites, and bat exposures are shown in Table 3.

Of the 114 people who started PEP, 29 people started unnecessarily. Of those who started unnecessarily, 24 people stopped PEP while five of them completed PEP unnecessarily. Of 85 people for whom PEP was indicated because the biting animal could not be observed or tested or tested positive, 32 finished PEP and 53 either stopped PEP or their treatment could not be verified. Two victims completed PEP because of exposure to a rabid bat and one victim completed PEP because of exposure to a rabid raccoon.

Of 533 animals tested for rabies at the ACHD Public Health Laboratory in 2022, 13 from Allegheny County tested positive, including 10 bats and 3 raccoons. Two positive bats and one positive raccoon were reported to have human exposure, as noted above.

Table 3. Type of treatment reported for animal bites, Allegheny County, 2022

Treatment	All Bites N=2189		Dog N=1702		Cat N=384		Bat N=21	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Wound Cleansed Yes	1386	63.3%	1131	66.5%	215	55.9%	2	9.5%
Tetanus Yes	696	31.8%	556	32.7%	123	32.0%	2	9.5%
Antibiotic Yes	1483	67.7%	1168	68.6%	285	74.2%	0	0.0%
PEP Started Yes	114	5.2%	67	3.9%	15	3.9%	21	100%
PEP Completed Yes	37	1.7%	21	1.2%	6	1.6%	6	28.6%

Amoxicillin/clavulanate (Augmentin) was the most common antibiotic prescribed for animal bites accounting for 64.8 percent of all antibiotics prescribed (**Table 4**). The type of antibiotic was not specified in 241 (16.3%) bite reports that indicated antibiotics were prescribed.

Table 4. Type of antibiotic prescribed for animal bite victims, Allegheny County, 2022

Antibiotic for Treatment/Antibiotic Description	N=1483	
	Frequency	Percent
Amoxicillin/Clavulanate (Augmentin) Alone	961	64.8%
Doxycycline Alone	43	2.9%
Amoxicillin/Clavulanate (Augmentin) and Other	40	2.7%
Doxycycline and Other	38	2.6%
Ampicillin/Sulbactam (Unasyn)	38	2.6%
Amoxicillin	26	1.8%
Clindamycin Alone	17	1.1%
Cephalosporin Alone	16	1.1%
Antibiotics with <10 occurrences	63	4.2%
Unknown	241	16.3%



The dog breeds involved in bite reports are shown in **Table 5**. The most common breeds involved in dog bites were pit bull (13.6% of all bites) and German Shepherds (6.4% of all bites). For 41.8% of dog bites, the breed was not specified in the report.

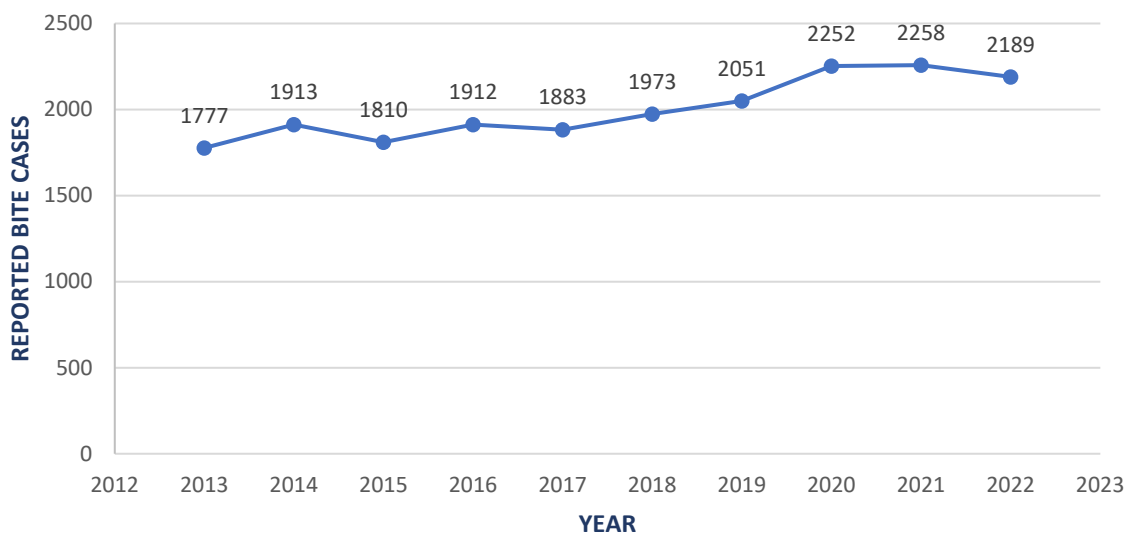
Table 5. Dog breeds involved in bites, Allegheny County, 2022

Dog Breed	N=1702	
	Frequency	Percent
Akita	11	0.7%
Australian Shepherd	25	1.5%
Beagle	25	1.5%
Border Collie	9	0.5%
Boston Terrier	6	0.4%
Boxer	23	1.4%
Bulldog	40	2.4%
Chihuahua	23	1.4%
Cocker Spaniel	5	0.3%
Corgi	9	0.5%
Dachshund	12	0.7%
Doberman Pinscher	7	0.4%
German Shepherd	108	6.4%
Golden Retriever	21	1.2%
Goldendoodle	8	0.5%
Great Dane	21	1.2%
Husky	19	1.1%
Jack Russell	8	0.5%
Labradoodle	13	0.8%
Labrador Retriever	41	2.4%
Maltese	5	0.3%
Mastiff	7	0.4%
Newfoundland	5	0.3%
Pit Bull	231	13.6%
Poodle	8	0.5%
Rottweiler	36	2.1%
Saint Bernard	5	0.3%
Shih-Tzu	13	0.8%
Terrier	7	0.4%
Yorkshire Terrier	16	0.9%
Mixed	129	7.6%
Not Listed	712	41.8%
Breed with <5 reported bites	87	5.1%

If two or more breeds were listed as a dog breed (e.g. pit bull + mastiff), breed was categorized as the first breed listed (pit bull). If a breed was listed as a single breed mix (e.g. pit bull mix), the breed was categorized as a single breed (pit bull).

From 2013 to 2022, the annual number of reported animal bites increased by 23.2 percent, from 1,777 bites in 2013 to 2,198 bites in 2022 (Figure 5).

Figure 5. Number of reported animal bites by year, Allegheny County, 2013-2022



The number of reported dog bites has increased steadily over the past several years but without much change from 2021 to 2022. The number of bites by bats and raccoons has remained relatively stable, while the number of bites by cats decreased in 2022 (Table 6).

Table 6. Number of exposures by select species by year, Allegheny County, 2017-2022

Year	Dog	Cat	Bat	Raccoon
2017	1330	452	25	12
2018	1477	438	14	8
2019	1480	495	18	12
2020	1685	433	20	11
2021	1710	442	19	4
2022	1702	384	21	8

SUMMARY

Among the 2,189 animal bites reported to the ACHD in 2022, most involved dogs or cats. The most common wild animals involved in bites were bats and raccoons. Wild animals remain the main reservoir for rabies in Allegheny County. There were two people exposed to a rabid bat and one person exposed to a rabid raccoon in the county in 2022; all three received rabies PEP.

Animal bites can be a source of infection and should be properly cleansed.⁵ Our data indicate that 63.3 percent of reported bites were cleansed, but this may be an underestimate as this information may not be recorded on the bite form. Antibiotics were prescribed for 68.2 percent of bites in Allegheny County in 2022. According to the American Academy of Family Practice (AAFP) guidelines, antibiotic prophylaxis should be considered for all bites requiring closure and for high-risk bites.⁵ Cat bites are considered high risk for infection,⁵ and 74.2 percent of cat bite victims received antibiotics in 2022. The AAFP antibiotic of choice, amoxicillin/clavulanate (Augmentin), accounted for 64.8 percent of antibiotics prescribed.⁵

In Allegheny County in 2022, 31.8 percent of victims received a tetanus vaccine. This is recommended if the victim had not received the tetanus vaccine in the last five years or if vaccination status is unknown.⁵ If a victim is unsure when they last received a tetanus shot, health care providers should consult the Pennsylvania Statewide Immunization Information System (PA-SIIS) to see when the last tetanus vaccine was administered; however, PA-SIIS does not include vaccines given out of state or by providers who do not submit data. The ACHD is not able to assess the appropriateness of tetanus vaccination from bite report data.

The rabies PEP regimen should only be administered if someone is exposed to 1) a rabid animal, 2) a domestic animal that cannot be quarantined for observation, or 3) an animal that cannot be tested for rabies. Of bite victims reported to ACHD, five reportedly completed the PEP regimen unnecessarily. Some persons began the regimen, but stopped, most likely because the biting animal tested negative or was located and quarantined.

The number of animal bites reported to ACHD increased by 23 percent from 2013 to 2022. This trend may reflect an increase in the number of animal bites annually, or it may reflect an increase in care seeking behavior or improved reporting of bites.

RECOMMENDATIONS

1. All persons should avoid contact with wild animals. Do not attempt to feed, touch, or take in wild animals as pets. Avoid contact with dead wild animals to prevent rabies exposure.
2. Pet owners should comply with Pennsylvania’s rabies vaccine regulations for pets. All pet owners should have their pets vaccinated by three months of age, and rabies vaccinations should be kept up to date throughout the pet’s lifetime. This will protect pets and their owners from the rabies virus. Pets should be supervised in situations where they could encounter wildlife.
3. Health care providers should be familiar with the protocol for treatment of animal bites, rabies PEP, and reporting requirements. Health care providers should follow current guidelines and recommendations for treating animal bites. Health care providers should only administer the PEP vaccine series for rabies if the victim was exposed to an animal that had rabies, an animal that could not be observed during a quarantine period, or an animal that could not be tested for rabies. Health care providers should check PA-SIIS for information on tetanus vaccinations, although the database may not be complete. Providers should continue to report bites to the Health Department.
4. Deceased animals with suspected rabies should be submitted for rabies testing. If pets involved in bites are euthanized during the quarantine period, the animal should be submitted for rabies testing. If bats are found in the home in rooms where people were sleeping, they should be captured and submitted for testing at the ACHD laboratory. To safely capture a bat, wear thick work gloves and place a container over the bat when it lands. Slip a piece of cardboard underneath the container and tape it shut. Be careful to avoid contact with the bat. If there is no reason to suspect contact between the bat and humans or pets, release the bat outdoors.

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