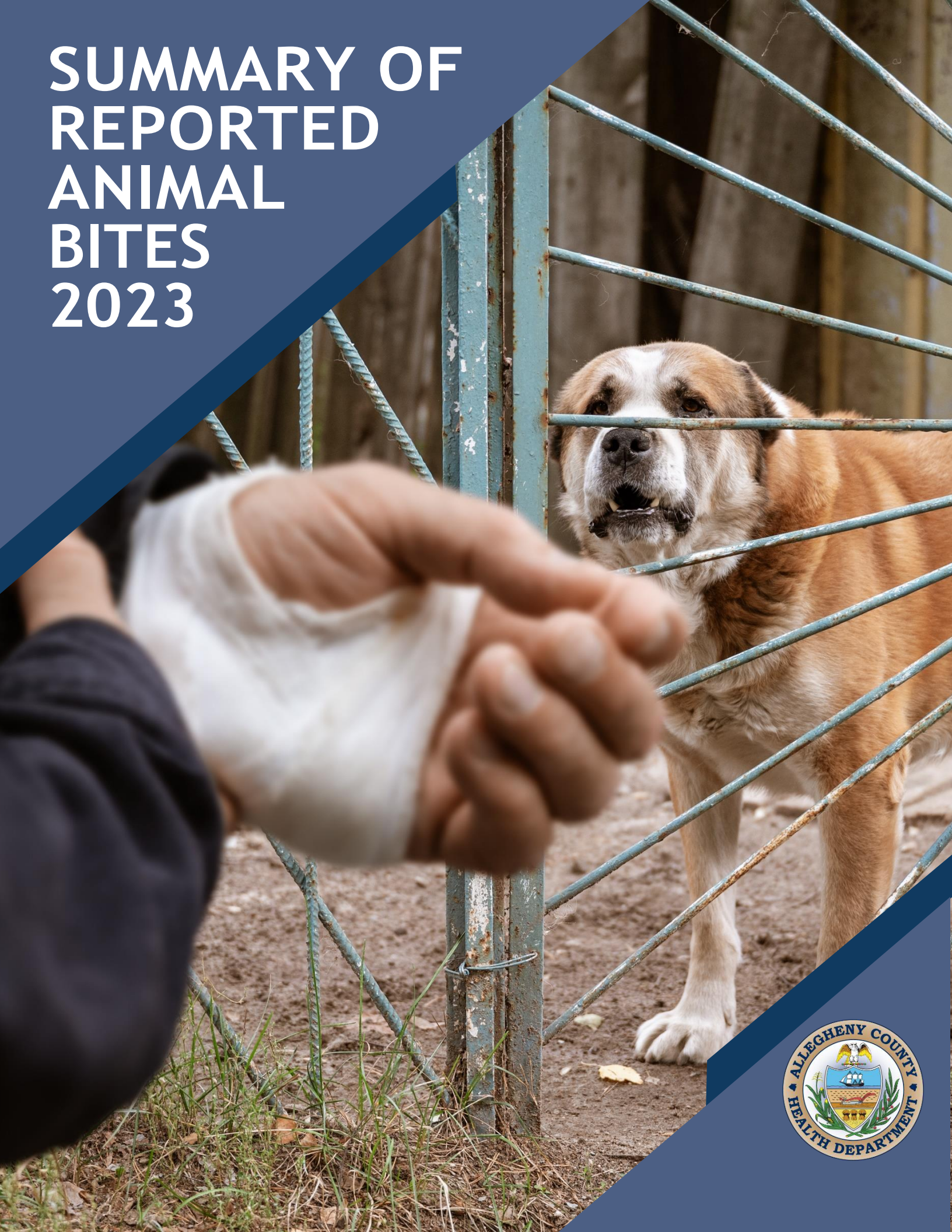


SUMMARY OF REPORTED ANIMAL BITES 2023



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Allegheny County, PA

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Iulia Vann, MD, MPH, Director

Report prepared by:

Bureau of Data, Reporting, and Disease Control

542 Fourth Avenue, Pittsburgh, PA 15219

Alex Lai, BS, Graduate School of Public Health
University of Pittsburgh

Kristen Mertz, MD, MPH, Infectious Disease Epidemiology Program
Allegheny County Health Department

Linda Henley-Coates, Immunization Program
Allegheny County Health Department

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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. Once symptoms appear, rabies is 100 percent fatal in humans.¹ It poses a public health threat across the globe.¹ Annually, an estimated 70,000 human deaths are attributed to rabies, with domestic dog bites responsible for more than 95 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.¹

In the United States, wild animals, such as bats and raccoons, comprise more than 90 percent of reported animal rabies cases.² There are fewer than ten deaths reported each year in this country.² In Pennsylvania, there have not been any cases of human rabies since 1984.³ 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.²

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 post-exposure prophylaxis includes human rabies immune globulin (HRIG) given on day zero and human diploid cell vaccine (HDCV) given on days zero, three, seven, and 14 after being evaluated by a health care provider.⁵ Rabies is almost 100 percent preventable, if exposed individuals receive PEP soon after exposure.²

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 occurring in 2023.

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

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.

Bite data from 2023 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. Victim address, owner address, and bite site address were all geocoded, and bites without an Allegheny County connection were excluded.

Descriptive statistics were generated in SAS. Tables and graphs were created in Microsoft Excel and Microsoft Word. Population age group estimates were obtained from the US Census Bureau to calculate rates per 100,000 population. Population data from 2022 were used because estimates for 2023 were not available at the time of writing this report.

Data were extracted from prior annual reports to show the trends in animal bite incidents from 2013 through 2023.



DATA

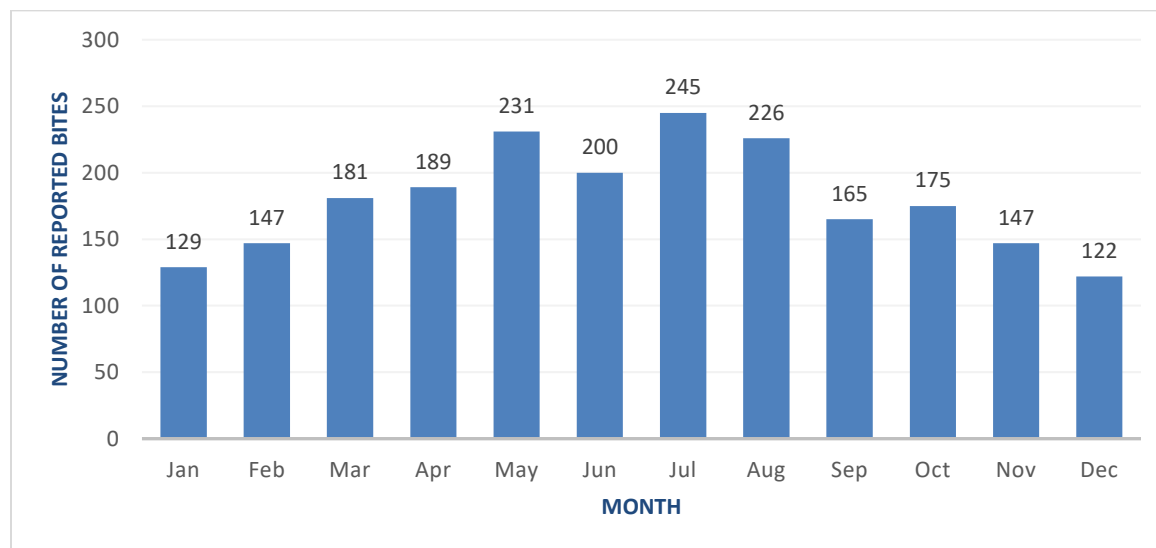
In 2023, ACHD received 2,157 unique animal bite reports. Most animal bites were attributed to dogs (76.2%) and cats (20.4%). Bats (1.2%) were the most common wild animals listed in bite reports. The type of animal involved was not reported for one percent of the bites (**Table 1**).

Table 1. Reported bites by animal type, Allegheny County, 2023

Species	N = 2157	
	Frequency	Percent
Dog	1644	76.2%
Pet	1543	93.9%
Feral	3	0.2%
Stray	40	2.4%
Unknown/Missing	57	3.5%
Cat	439	20.4%
Pet	399	88.4%
Feral	7	1.6%
Stray	39	8.9%
Unknown/Missing	5	1.1%
Bat	26	1.2%
Raccoon	4	0.2%
Rat	4	0.2%
Squirrel	4	0.2%
Chipmunk	2	0.1%
Groundhog	2	0.1%
Mouse	2	0.1%
Rabbit	1	<0.1%
Other	6	0.3%
Missing	23	1.1%

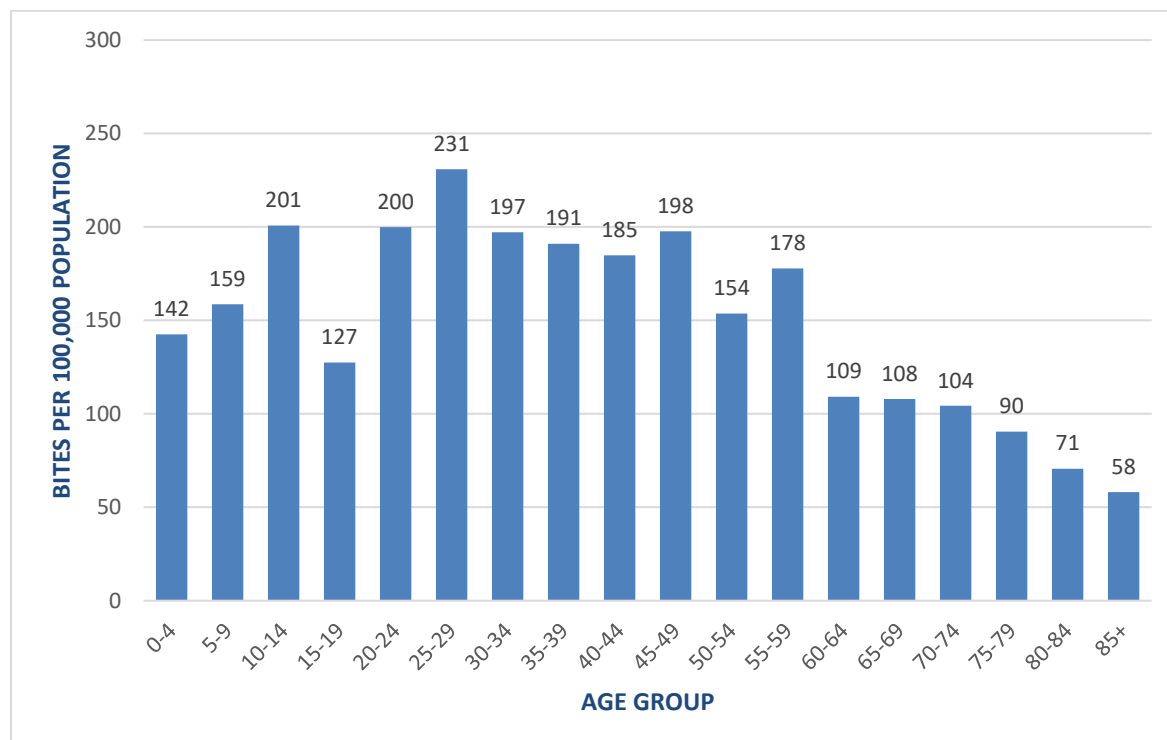
The number of reported bites peaked from May to August (**Figure 1**), possibly due to increased outdoor activities during summer.

Figure 1. Distribution of reported animal bites by month, Allegheny County, 2023



Bite victims' ages ranged from less than one year to 95 years of age with a median of 35 years. The bite rate per 100,000 population was highest for individuals 25 to 29 years of age (**Figure 2**).

Figure 2. Reported bites per 100,000 population by age group of victims, Allegheny County, 2023



In 2023, 57.9 percent of bite victims were female and 42.1 percent were male. Male children had more bites than female children in ages 5-9 and 15-19. (Figure 3). Females had equal or more bites than males in all other age groups.

Figure 3. Reported bite incidents by age group and sex of victim, Allegheny County, 2023

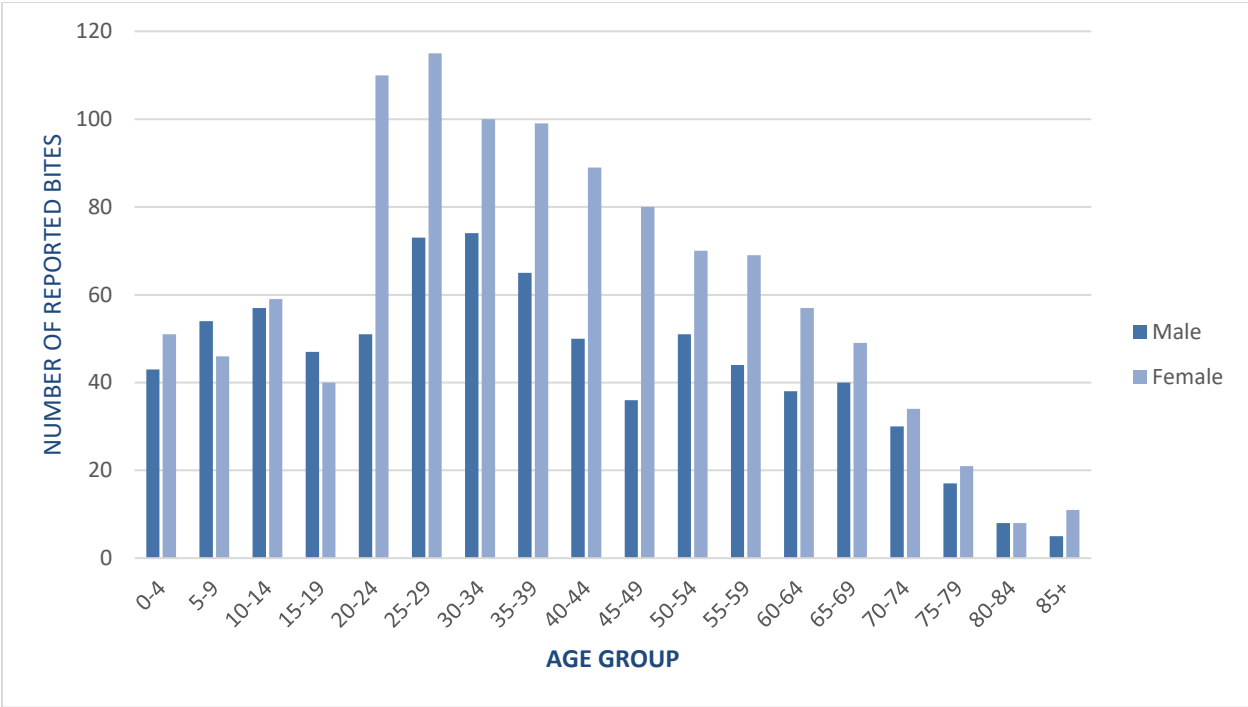


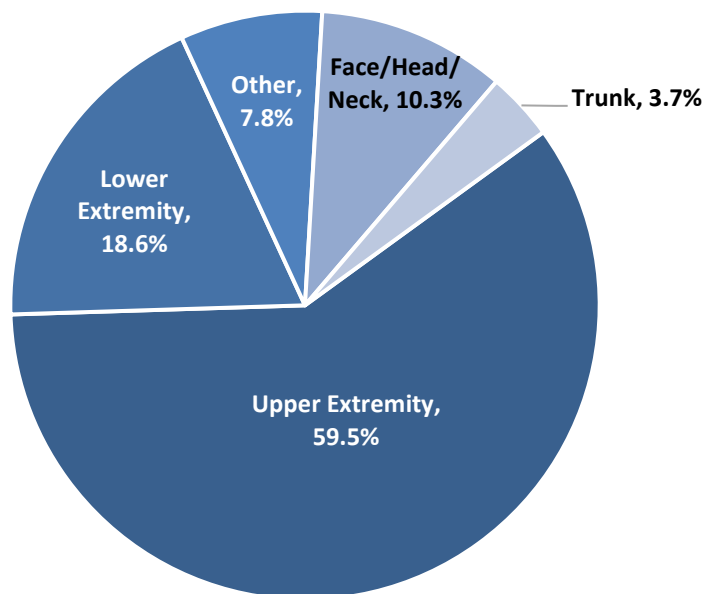
Table 2 lists the circumstances under which the bites occurred. It is worth noting that over three-quarters (77.1%) of the circumstances of the animal bites were not reported. Among those with reported incident type, the most common circumstances were breaking up a fight (4.0%), playing with the animal (3.5%), and trying to pet the animal (1.5%). 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 50 (2.4%) bites.

Table 2. Type of incident for reported bites, Allegheny County, 2023

Bite Incident	All Bites N = 2157		Dog Bites N =1644		Cat Bites N = 439	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Breaking up a fight	87	4.0%	78	4.7%	9	2.1%
Playing with the animal	75	3.5%	67	4.1%	8	1.8%
Other	72	3.3%	59	3.6%	12	2.7%
Trying to pet the animal	32	1.5%	27	1.6%	4	0.9%
Walking on the road	27	1.3%	27	1.6%	0	0.0%
The animal got spooked	25	1.2%	19	1.2%	6	1.4%
At a community area and animal came up and bit the victim	23	1.1%	23	1.4%	0	0.0%
Entering the owner's house	21	1.0%	21	1.3%	0	0.0%
Circumstances with <1% occurrence	133	6.2%	79	4.8%	46	10.5%
Not Listed	1662	77.1%	1244	75.7%	354	80.6%

Most bites occurred on the upper extremities (59.5%), followed by the lower extremities (18.6%) and face/head/neck (10.3%). Only 3.7 percent of bites took place on the trunk area. For 161 (7.8%) reports, the bite sites were listed as “other,” and no other information was given. (Figure 4).

Figure 4. Location of exposure for bites reported, Allegheny County, 2023



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

The dog breeds involved in bite reports are shown in Table 3. The most common breeds involved in dog bites were pit bull and German shepherd. Of 1,644 dog bites, 205 (12.5%) bites were attributed to a pit bull and 79 (4.8%) bites were attributed to German shepherds. For 42.6% of dog bites, the breed was not specified in the report.

Table 3. Dog breeds involved in bites, Allegheny County, 2023

Dog Breed	N = 1644	
	Frequency	Percent
Akita	10	0.6%
Australian Shepherd	17	1.0%
Basset Hound	4	0.2%
Beagle	12	0.7%
Border Collie	12	0.7%
Boxer	14	0.9%
Bulldog	49	3.0%
Chihuahua	10	0.6%
Cocker Spaniel	8	0.5%
Collie	7	0.4%
Corgi	7	0.4%
Dachshund	7	0.4%
German Shepherd	79	4.8%
Golden Retriever	23	1.4%
Great Dane	11	0.7%
Husky	27	1.6%
Jack Russell	6	0.4%
Labradoodle	11	0.7%
Labrador Retriever	23	1.4%
Maltese	5	0.3%
Mastiff	13	0.8%
Pit Bull	205	12.5%
Poodle	7	0.4%
Rottweiler	31	1.9%
Shih-Tzu	5	0.3%
Yorkshire Terrier	12	0.7%
Breed with < 5 reported bites	55	3.3%
Mixed Breed	277	16.8%
Not Specified	701	42.6%

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).

TREATMENT FOR BITES

Of the bite victims, 71.9 percent received antibiotics for treatment, and 33.9 percent received a tetanus vaccine. Among the victims, 143 (6.6%) started rabies PEP, and 70 (3.2%) completed the PEP (**Table 4**).

Among victims bitten by dogs, 66.4% received antibiotics, 33.9 percent received a tetanus vaccine, 82 (5.0%) started rabies PEP, and 33 (2.0%) completed the PEP (**Table 4**).

Among victims bitten by cats, 61.6 percent were prescribed antibiotics, 35.6 percent received a tetanus vaccine, 36 (8.2%) started rabies PEP, and 23 (5.3%) completed the PEP (**Table 4**).

Among the 26 victims exposed to bats, two (7.7%) were prescribed antibiotics, two (7.7%) received a tetanus vaccine, 18 (69.2%) started rabies PEP, and 11 (42.3%) completed the PEP (**Table 4**).

Of the 143 bite victims who started PEP, 25 started inappropriately as observation of the animal was ongoing. Of the 70 bite victims who completed PEP, nine completed the full course of PEP unnecessarily as rabies was ruled out by observation or testing of animals. Sixty-one completed the full course of PEP because the biting animal could not be observed or tested.

Table 4. Type of treatment reported for animal bites, Allegheny County, 2023

Treatment	All Bites N= 2157		Dog N = 1644		Cat N = 439		Bat N = 26	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Wound Cleansed Yes	1384	64.2%	1092	66.4%	270	61.6%	2	7.7%
Tetanus Yes	731	33.9%	558	33.9%	157	35.8%	2	7.7%
Antibiotic Yes	1550	71.9%	1174	71.4%	350	79.7%	2	7.7%
PEP Started Yes	143	6.6%	82	5.0%	36	8.2%	18	69.2%
PEP Completed Yes	70	3.2%	33	2.0%	23	5.3%	11	42.3%

Amoxicillin/clavulanate (Augmentin) was the most common antibiotic prescribed for animal bites (Table 5). The type of antibiotic prescribed was not specified in 741 (47.7%) bite reports.

Table 5. Type of antibiotic prescribed among bite victims receiving antibiotics, Allegheny County, 2023

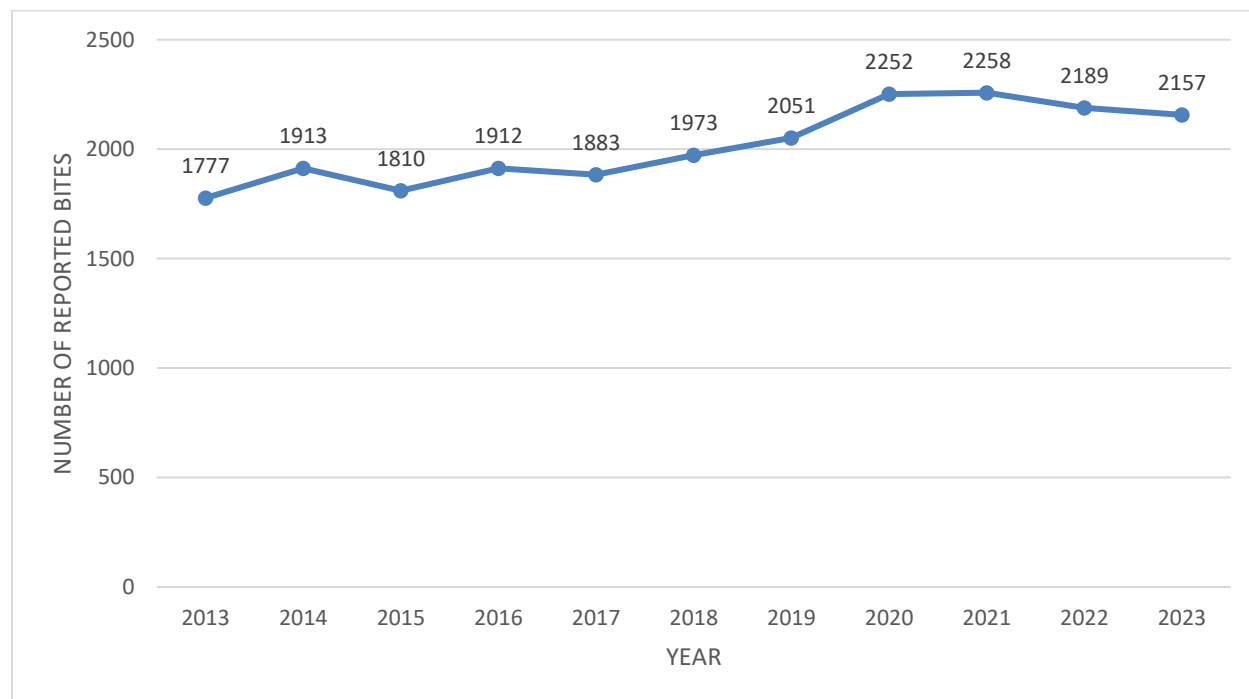
Antibiotic for Treatment/Antibiotic Description	N=1550	
	Frequency	Percent
Amoxicillin/Clavulanate (Augmentin)	635	40.9%
Doxycycline Alone	21	1.4%
Amoxicillin/Clavulanate (Augmentin) and Other	23	1.5%
Doxycycline and Other	28	1.8%
Ampicillin/Sulbactam (Unasyn)	22	1.4%
Amoxicillin	25	1.6%
Cephalosporin Alone	11	0.7%
Antibiotics with <10 occurrences	44	2.8%
Unknown	741	47.7%



TRENDS IN REPORTED BITES

From 2013 to 2023, the annual number of reported animal bites increased by 21.4 percent, from 1,777 bites in 2013 to 2,157 bites in 2023 (Figure 5).

Figure 5. Reported bites by year, Allegheny County, 2013-2023



From 2017 to 2021, the number of reported dog bites increased steadily, followed by successive decreases in 2022 and 2023. The number of exposures by cats and bats remained relatively stable, whereas the number of raccoon bites decreased (Table 6).

Table 6. Number of exposures by select species, Allegheny County, 2017-2021

Year	Dog	Cat	Bat	Raccoon
2017	1330 (70.6%)	452 (24.0%)	25 (1.3%)	12 (0.6%)
2018	1477 (74.9%)	438 (22.2%)	14 (0.7%)	8 (0.4%)
2019	1480 (72.2%)	495(24.1%)	18 (0.9%)	12 (0.6%)
2020	1685 (74.8%)	433 (19.2%)	20 (0.9%)	11(0.5%)
2021	1710 (75.7%)	442 (19.6%)	19 (0.8%)	4 (0.2%)
2022	1702 (77.8%)	384 (17.5%)	21 (1.0%)	8 (0.4%)
2023	1644 (76.2%)	439 (20.4%)	26 (1.2%)	4 (0.2%)

From 2017 to 2021, there was a downward trend in the number of bite victims completing a full course of PEP. The percentage of all bite victims who completed rabies PEP decreased from 4.3 percent in 2020 to 0.8 percent in 2021. However, bites in 2022 and 2023 increased to 1.7 percent and 3.2 percent, respectively. (Table 7).

Table 7. Bite victims completing rabies PEP, Allegheny County, 2017-2023

Year	Total Number of Bite Victims	Number of Bite Victims Completing PEP (%)
2017	1883	104 (5.5)
2018	1973	103 (5.2)
2019	2051	86 (4.2)
2020	2252	55 (4.3)
2021	2258	18 (0.8)
2022	2189	37 (1.7)
2023	2157	70 (3.2)



DISCUSSION

In summary, among the 2,157 animal bites reported to the ACHD in 2023, most involved dogs (76.2 percent) or cats (20.4 percent). The most common wild animal involved in human exposures was bats.

The number of animal bites reported to ACHD increased by 21.4 percent from 2013 to 2023. This trend may reflect an actual increase in the number of animal bites annually, or it may reflect an increase in care-seeking behavior or improved reporting within this timeframe.

To prevent rabies and other infections, animal bite wounds should be properly cleansed immediately.³ Thorough washing of the wound plays an important part in preventing rabies in bite victims.² Our data indicate that 64.2 percent of reported bites were cleansed, although this may be an underestimate as this information may not be recorded on the bite form.

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. Antibiotics were prescribed for 71.9 percent of bites in Allegheny County in 2023. Cat bites are considered high risk for infection,⁵ and 79.7 percent of cat bite victims received antibiotics in 2023. The AAFP antibiotic of choice, amoxicillin/clavulanate (Augmentin), was the most prescribed antibiotic.⁵

In 2023, 33.9 percent of victims in Allegheny County received a tetanus vaccine. This is recommended if the victim had not received the tetanus vaccine in the last 10 years or if vaccination status is unknown.³ 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) a wild animal that cannot be tested for rabies. Of bite victims reported to ACHD, 25 reportedly started the PEP regimen unnecessarily. More education for providers and the public may help to reduce treatment when not warranted and ensure recommended treatment for those truly at risk.

RECOMMENDATIONS

1. **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 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 recommend/provide 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 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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