Summary of Reported Animal Bites

Allegheny County, PA, 2017

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Prepared by

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Introduction

Animal bites can result in serious injury and may require substantial medical resources to prevent long term effects and infection. Among infected mammals, the rabies virus is spread in saliva or brain/nervous system tissue, making bites the main route of infection. Symptoms may take months or years to present, but once they begin to manifest, the fatality rate is almost 100%.[1]

Each year in the United States there are approximately 60-70 rabid dogs, over 250 rabid cats, and thousands of rabid wild animals reported (most commonly raccoons, bats, skunks, and foxes).[1] Despite the relatively high numbers of rabid animals, only 1-3 human rabies cases occur in the United States per year, and Pennsylvania has not had a human rabies case since 1984.[2] The low risk of human rabies in the United States is attributable to medical advances and public health efforts.

The rabies post-exposure prophylaxis (PEP) vaccine series includes a dose of human rabies immune globulin (HRIG) and four doses of human diploid cell vaccine (HDCV). When properly administered, this sequence is 100% effective at preventing rabies in humans. Globally, over 90% of human rabies cases occur because of dog bites, but in the United States, rabid dogs are much rarer.[1] Vaccination of domestic animals protects both the animal being vaccinated and the people interacting with it. A vaccinated pet is a protective intermediary between rabid wild animals and humans, rather than a source of infection.

Health care providers are required to report animal bites to the health department so public health officials can communicate with animal bite victims and pet owners to advise them on animal quarantines, rabies testing, and vaccination. Some health departments, such as the Allegheny County Health Department (ACHD), may also act to vaccinate wild animals by distributing the vaccine throughout animal habitat. The vaccine is often encased in fishmeal or other desirable bait, depending on the target animal.[3]

This report analyzes data on the animal bites reported to ACHD in 2017.

Methods

Police and medical facilities are required by law to report animal bites to ACHD. A standardized form is used to report case information. The Immunization Program at ACHD is then responsible for contacting the bite victim and owner (where applicable). ACHD seeks to obtain any information that has been left blank on the initial report. If the animal involved in the bite can be observed, a 10-day in-home quarantine is issued to monitor the animal for signs and symptoms of rabies. ACHD may also seek out vaccination records for an animal to check if it is up-to-date on rabies vaccination. If an animal is deceased or dies during quarantine, ACHD requests that the animal be officially tested for rabies. If a biting animal cannot be quarantined or tested, then HRIG/HDCV is recommended for the bite victim. Likewise, if an animal tests positive for rabies, HRIG/HDCV is recommended, and ACHD will monitor the progress of the four dose PEP vaccine sequence to ensure the victim receives doses on the correct days and completes all doses.

All testing result data in this report was obtained from the ACHD laboratory. The ACHD laboratory examines all animals submitted for rabies testing using a direct fluorescent antibody test.

Information on the initial bite report and additional data gathered throughout this process are entered into an Oracle database. For this project, all reports with a bite date in 2016 or 2017 were exported to a Microsoft Excel spreadsheet. If the bite date was not provided, but the report date was in 2016 or 2017, the record was included. After exportation, the data were cleaned to remove duplicate entries. Duplicate entries were identified using the victim's name and bite date, and the entire bite description was read if there were still multiples. Reports involving non-mammals (snakes, birds, etc.) were also removed since non-mammals do not contract rabies. Reports were excluded if neither victim residence, pet residence, nor place of bite were in Allegheny County. After initial cleaning, the data were imported into SAS (version 9.4). Other data cleaning was then performed, including re-categorizing responses for certain fields and recoding duplicate values in a field to one value. If discrepancies or doubts arose for certain fields (example: number receiving HRIG/HDCV or number of animals testing positive for rabies), the full description was read to determine the true values. Descriptive analysis was performed for the 2017 data, and graphs and tables were created in Microsoft Excel using the SAS output.

The Allegheny County Treasurer's Office provided data on the number of dogs of each breed licensed in Allegheny County in 2017, which was compared with the number in each breed involved in a bite.

The victims' zip codes were used to identify the number of people in each zip code who had been bitten compared to the total population in the zip code. With this information, a map was created using ArcMap 10.5.1 to display the rate of bites per 10,000 people by zip code area. Rates were calculated using the total population of each zip code area, but the number of bites in Allegheny County only. Therefore, the rate for zip codes not entirely within Allegheny County may be an over- or under-representation. ArcGIS® and ArcMap™ are the intellectual property of Esri and are used herein under license. ArcMap™ created four categories for display with an equal number of zip codes per category (quartiles).

Results

In 2017, there were a total of 1,883 bites reported to the ACHD, a 1.5% decrease from 2016. Over 92% of the bite victims involved were Allegheny County residents; the remaining 8% of bites either occurred in the county or the animal's owner lived in Allegheny County (**Figure 1**).

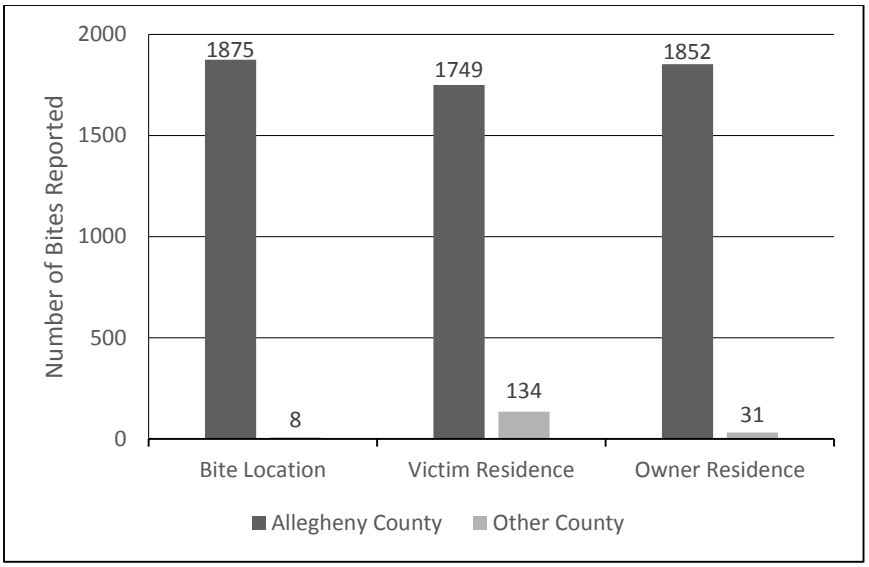

Figure 1: The number of bites occurring in Allegheny County, the number of victims living in Allegheny County, and the number of animal owners living in Allegheny County for bites reported to ACHD in 2017.

Most bites were by dogs (70.6%) or cats (24.0%) (**Table 1**). The most common wild animals involved in exposures were bats (1.3%) and raccoons (0.6%). In 1.3% of cases, the animal species involved was unidentified. All other species involved accounted for less than 0.5% of cases.

Table 1: Number of each animal species involved in bite incidents, Allegheny County, 2017.

Species	Number of persons exposed (%)
Dog	1330 (70.6)
Cat (total)	452 (24.0)
Pet	373 (19.8)
Stray/Feral	78 (4.1)
Bat	25 (1.3)
Raccoon	12 (0.6)
Rat	8 (0.4)
Groundhog	5 (0.3)
Horse	4 (0.2)
Mouse	3 (0.2)
Squirrel	3 (0.2)
Primate	2 (0.1)
Ferret	1 (<0.1)
Chipmunk	1 (<0.1)
Mole	1 (<0.1)
Opossum	1 (<0.1)
Rabbit	1 (<0.1)
Skunk	1 (<0.1)
Goat	1 (<0.1)
Pig	1 (<0.1)
Bearcat	1 (<0.1)
Unknown/Missing	30 (1.6)
Total	1883 (100.0)

Bite victim density by zip code can be seen for Allegheny County in **Figure 2**.

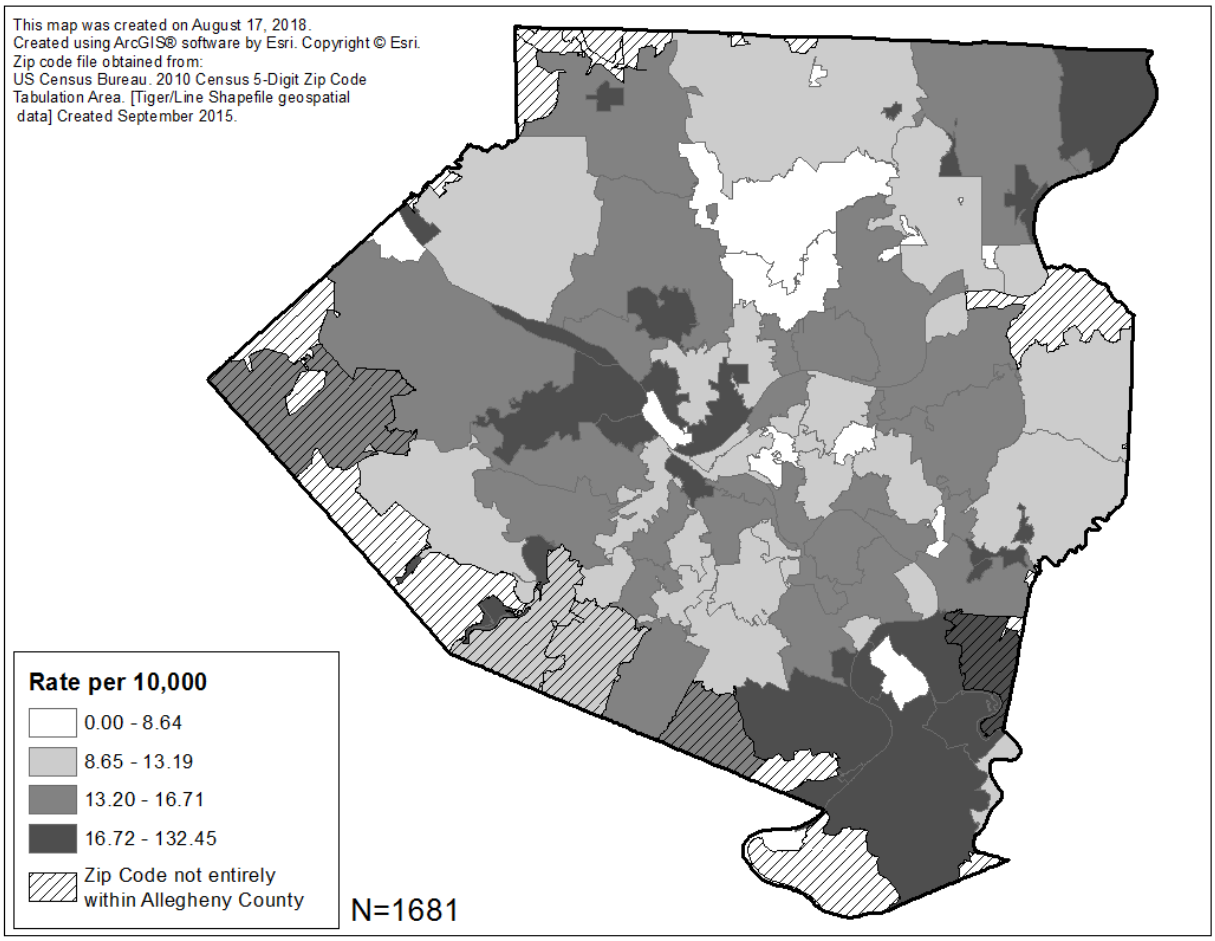

Figure 2: Number of bites per 10,000 people living in each zip code, Allegheny County, 2017. The zip code of victim's residence was available for 1681 (89.3%) of reported bites.
*Bite rates for zip codes not entirely within Allegheny County may be an under-estimation.

Bite report numbers increased as temperatures did, peaking in June and remaining higher in the autumn as compared with the winter or early spring (**Figure 3**).

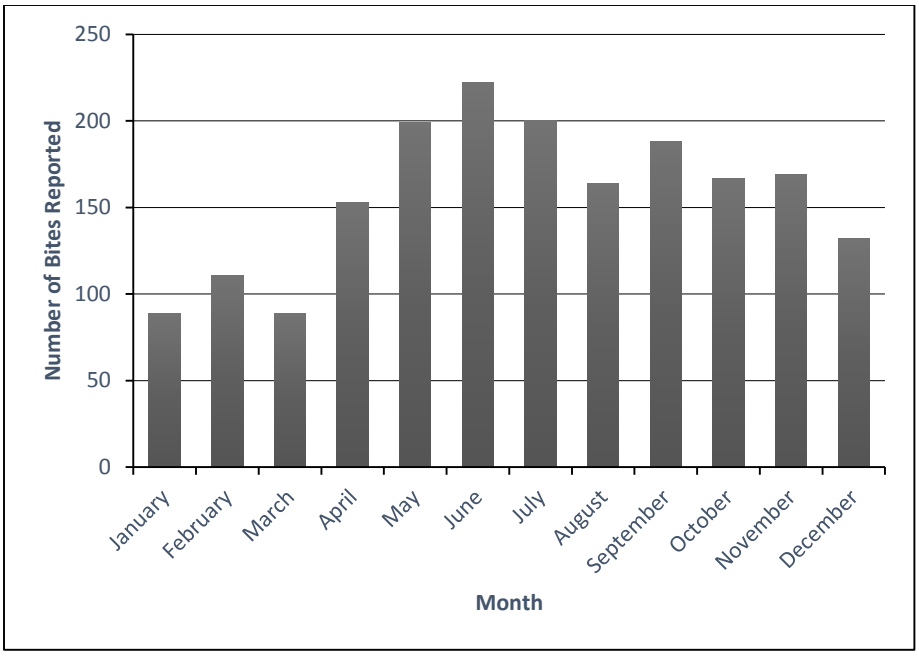

Figure 3: The number of reported bites by month, Allegheny County, 2017.

Victims ranged in age from less than 1 year to 100 years, with a median of 33 years and a mean of 36.7 years. Bites per 100,000 population were highest among adults aged 25-34 years and children 5-14 years, followed by those aged 15-24 years and 35-44 years, respectively (**Figure 4**).

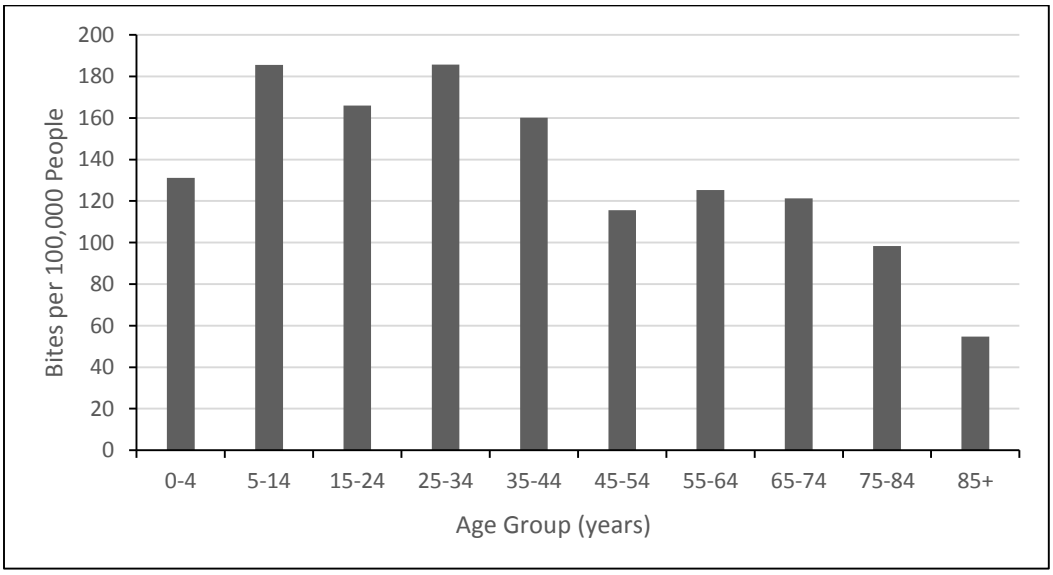

Figure 4: Bite rate per 100,000 people by age group, Allegheny County, 2017.

Of 1,824 bite victims with known sex, 60.2% were female and 39.8% were male. In almost all five-year age groups, more females were reported than males (**Figure 5**). The exceptions were among children 0-4 years, 5-9 years, and 10-14 years, with male children aged 5-9 years having almost double the bite incidents as female children.

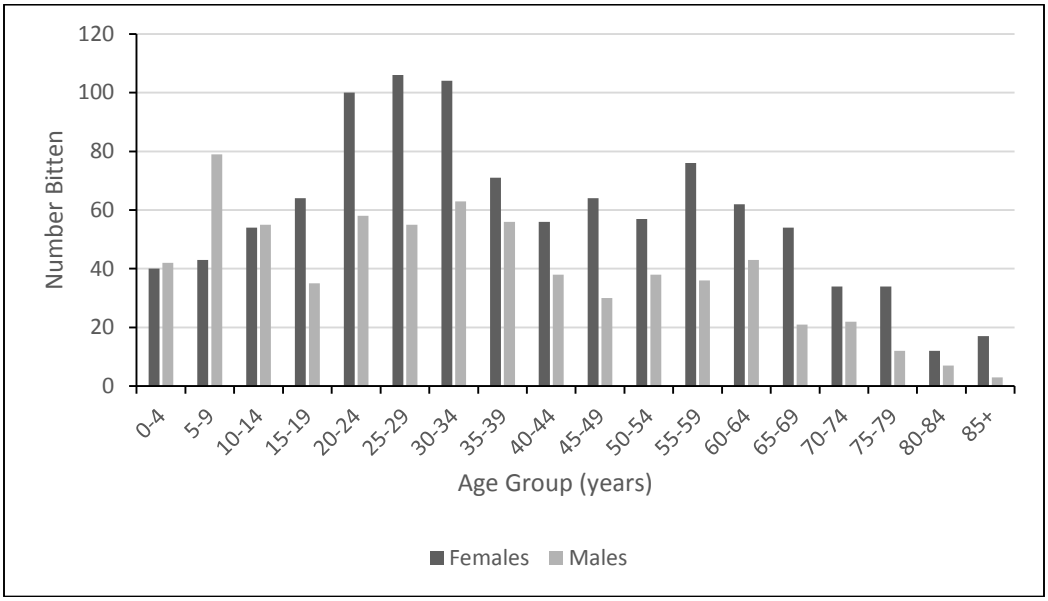

Figure 5: Number of bites reported by sex and age group, Allegheny County, 2017.

Circumstances under which animal bites occurred are shown in **Table 2**. Over a quarter of the reports did not include the circumstances surrounding the incident. The most common situations reported were animals getting spooked, playing with the animals, and breaking up a fight between animals. The two situations where bites were not instigated, "at a community area and animal came up and bit the victim" and "walking on the road," comprised 141 bites.

Bite incidents are also shown separately for dogs and cats. There were five situations in which cat bites occurred more frequently than dog bites: performing a medical procedure, trying to capture the animal, bathing/grooming the animal, trying to put the animal in a crate, and giving medication to or cleaning a wound on the animal.

Table 2: Reported causes of animal bites, Allegheny County, 2017.

Incident Type	All Bites N= 1883 n (%)		Dog Bites N= 1330 n (%)		Cat Bites N= 452 n (%)	
The animal got spooked	193	(10.2)	129	(9.7)	61	(13.5)
Playing with the animal	154	(8.2)	122	(9.2)	32	(7.1)
Breaking up a fight	137	(7.3)	122	(9.2)	15	(3.3)
At a community area and the animal came up and bit the victim	93	(4.9)	89	(6.7)	2	(0.4)
Performing a medical procedure	85	(4.5)	38	(2.9)	46	(10.2)
Trying to pet the animal	79	(4.2)	51	(3.8)	25	(5.5)
Trying to capture the animal	51	(2.7)	21	(1.6)	27	(6.0)
Walking on the road	48	(2.5)	47	(3.5)	0	(0)
Bathing/Grooming the animal	39	(2.1)	15	(1.1)	24	(5.3)
Trying to feed the animal	39	(2.1)	24	(1.8)	10	(2.2)
Walking into the owner's yard	36	(1.9)	34	(2.6)	1	(0.2)
Entering the owner's house	31	(1.6)	29	(2.2)	2	(0.4)
Taking something from the animal	26	(1.4)	23	(1.7)	3	(0.7)
Delivering the mail	24	(1.4)	24	(1.8)	0	(0)
Trying to put the animal in a crate	23	(1.2)	6	(0.5)	17	(3.8)
Greeting a new animal	23	(1.2)	18	(1.4)	4	(0.9)
Touching a wound or painful spot on the animal	16	(0.8)	14	(1.1)	2	(0.4)
Giving medication to or cleaning a wound on the animal	16	(0.8)	3	(0.2)	13	(2.9)
Waking up in the room with a bat	12	(0.6)	0	(0)	0	(0)
Bitten by a bat	6	(0.3)	0	(0)	0	(0)
Bitten by a wild animal	6	(0.3)	0	(0)	0	(0)
Repairing/installing an item on the owner's property	2	(0.1)	2	(0.2)	0	(0)
Yelling at or hitting the animal	2	(0.1)	2	(0.2)	0	(0)
Checking the animal for a collar and tags	1	(0.05)	1	(0.1)	0	(0)
Working from phone/cable company that is on or near the owner's property	1	(0.05)	1	(0.1)	0	(0)
Other	233	(12.4)	179	(13.5)	43	(9.5)
Missing	507	(26.9)	336	(25.3)	125	(27.7)

The majority of bites/scratches were to the upper extremities (arms and hands), followed by lower extremities (legs and feet) and face/head/neck (**Figure 6**). Only 2% of victims were bitten/scratched on the trunk of their body, while 5% percent of victims were bitten/scratched on multiple body regions. Fifteen percent of reports did not contain information about the location of exposure on the body and are not included in the graph.

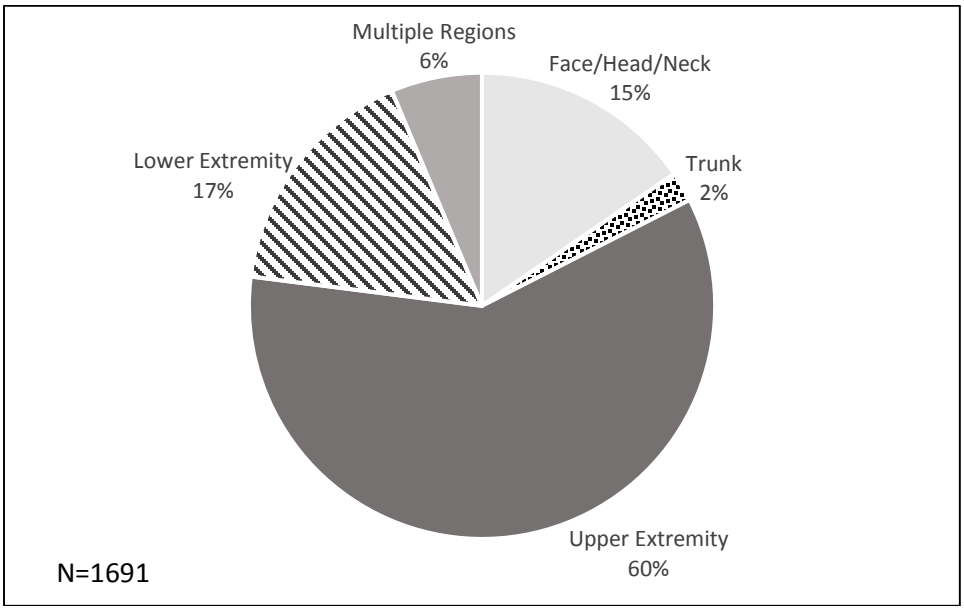

Figure 6: Bite location on the body. Upper extremities were defined as shoulders, arms, forearms, wrists, or hands. Lower extremities were defined as hip, thigh, leg, ankle, or foot. Trunk exposure was defined as any part of the body not included as an upper extremity, lower extremity, face, head, or neck.

The ACHD lab tested 708 animals in 2017, with 17 testing positive for rabies. After conducting follow-up investigations, it was determined that 63 of the 708 animals tested were involved in reported bite incidents. Only 4 of those 63 animals were positive for rabies, down from 20 positive exposures in 2015-2016. Three (75%) of the four positive animals were stray/feral cats, and one (25%) of the positive animals was a bat (**Table 3**).

Table 3: The number of each animal species involved in bite incidents tested for rabies, and the number of each animal species involved in bite incidents that tested positive for rabies, Allegheny County, 2017.

Species	Number of animals tested for rabies (%)		Number of animals that tested positive for rabies (%)	
Dog	35	(55.6)	0	(0.0)
Cat (total)	22	(34.9)	0	(0.0)
Pet	12	(19.0)	0	(0.0)
Stray/Feral	10	(15.9)	3	(75.0)
Bat	3	(4.8)	1	(25.0)
Raccoon	0	(0.0)	0	(0.0)
Rat	0	(0.0)	0	(0.0)
Groundhog	1	(1.6)	0	(0.0)
Horse	0	(0.0)	0	(0.0)
Mouse	1	(1.6)	0	(0.0)
Squirrel	0	(0.0)	0	(0.0)
Primate	0	(0.0)	0	(0.0)
Ferret	1	(1.6)	0	(0.0)
Chipmunk	0	(0.0)	0	(0.0)
Mole	0	(0.0)	0	(0.0)
Opossum	0	(0.0)	0	(0.0)
Rabbit	0	(0.0)	0	(0.0)
Skunk	0	(0.0)	0	(0.0)
Goat	0	(0.0)	0	(0.0)
Pig	0	(0.0)	0	(0.0)
Bearcat	0	(0.0)	0	(0.0)
Unknown/Missing	0	(0.0)	0	(0.0)
Total	63	(100.0)	4	(100.0)

A total of 117 (6.2%) bite victims received HRIG/HDCV in 2017 (**Table 4**). Most of them (104) completed the full vaccine series of HRIG/HDCV, including all 4 of the victims exposed to rabies positive animals. Of the victims who completed HRIG/HDCV, 87 (83.7%) did so because the animal involved in the exposure could not be observed for a quarantine period or tested for rabies. The remaining 13 who completed the HRIG/HDCV sequence did so unnecessarily; the animal involved was not quarantined or tested when they could have been, or the victim chose to complete PEP even though the animal was healthy.

Table 4: Reasons for receiving HRIG/HDCV, Allegheny County, 2017.

Reason	N= 104 n (%)	
Exposed to rabies positive animal	4	(3.8)
Exposed to animal that could not be observed or tested	87	(83.7)
Invalid Reason (received vaccination unnecessarily)	13	(12.5)

HRIG/HDCV were given to 6.2% of animal bite/scratch victims, antibiotics to 60.1% of victims, and tetanus shots to 31.2% of victims. Almost 30% of victims did not receive any treatment (**Figure 7**).

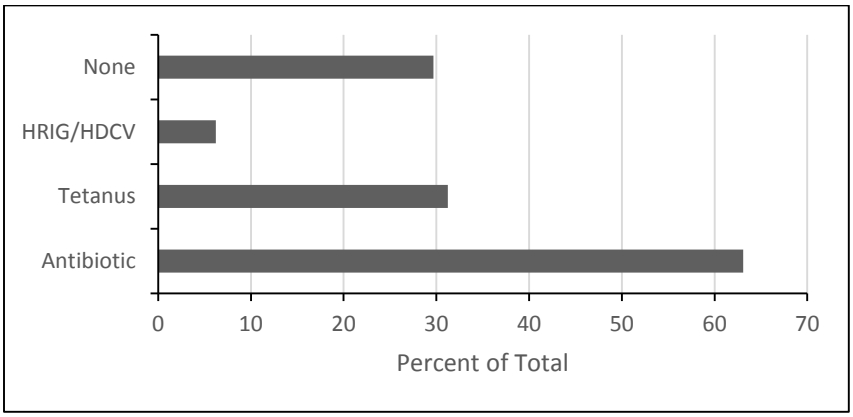

Figure 7: Treatments received by bite victims, Allegheny County, 2017.
*534 people received more than one treatment

Among those bitten by dogs, 65.3% were prescribed an antibiotic, 32.9% were given a tetanus shot, 2.7% received PEP, and 20.6% were not prescribed any treatment, while among those bitten by cats, 65% were prescribed an antibiotic, 29% were given a tetanus shot, 6.9% received PEP, and 27.7% were not prescribed any treatment (**Figure 8**).

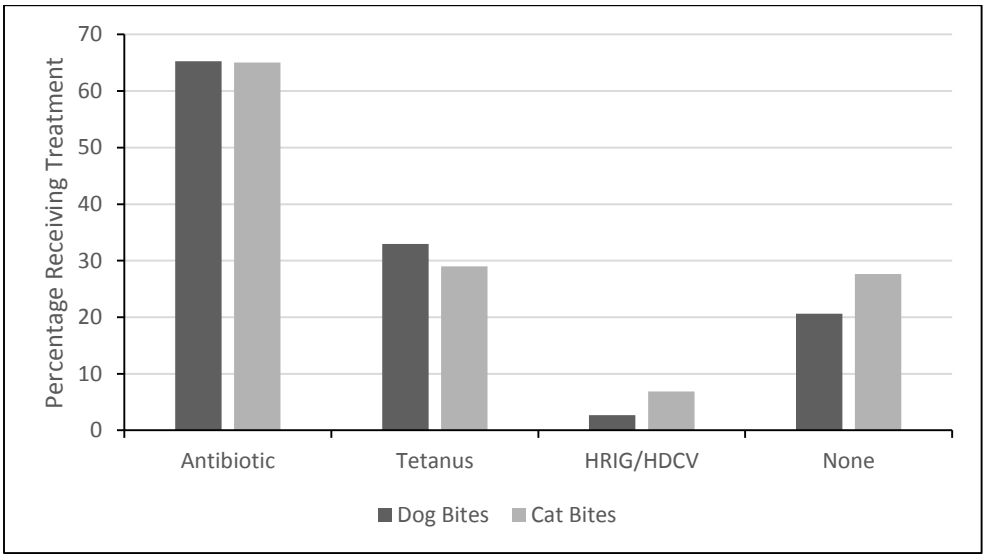

Figure 8: Treatments received by victims of dog and cat bites, Allegheny County, 2017.

Most (60.9%) reports did not specify the type of antibiotic prescribed. Of 464 bites for which the antibiotic prescribed was known, Augmentin was by far the most prescribed, given in at least 367 cases (79.0%) (**Table 5**).

Table 5: Antibiotic type used to treat animal bite victims, Allegheny County, 2017.

Antibiotic Prescribed	All Bites Treated with Antibiotics N= 1188 n (%)	Dog Bites Treated with Antibiotics N= 868 n (%)	Cat Bites Treated with Antibiotics N= 294 n (%)
Augmentin	367 (30.9)	266 (30.6)	94 (32.0)
Doxycycline	26 (2.2)	17 (2.0)	9 (3.1)
Amoxicillin	17 (1.4)	13 (1.5)	4 (1.4)
Unasyn	13 (1.1)	10 (1.2)	3 (1.0)
Clindamycin	5 (0.3)	5 (0.6)	0 (0)
Keflex	4 (0.3)	3 (0.3)	1 (0.3)
Azithromycin	3 (0.2)	1 (0.1)	2 (0.7)
Ciprofloxacin	2 (0.2)	0 (0)	1 (0.3)
Ancef	1 (0.1)	1 (0.1)	0 (0)
Bactrim	1 (0.1)	1 (0.1)	0 (0)
Zosyn	1 (0.1)	1 (0.1)	0 (0)
Multiple	24 (2.0)	18 (2.1)	6 (2.0)
Not Specified	724 (60.9)	532 (61.3)	174 (59.2)

A breakdown of treatment combinations is shown in **Table 6**.

Table 6: Treatment combinations used to treat animal bite victims, Allegheny County, 2017.

Treatment Combination	N= 1883 n (%)
Antibiotic only	657 (34.9)
Tetanus only	84 (4.5)
HRIG/HDCV only	44 (2.3)
Antibiotic+Tetanus	466 (24.7)
Antibiotic+HRIG/HDCV	35 (1.9)
Tetanus+HRIG/HDCV	8 (0.4)
All Three	30 (1.6)
None	559 (29.7)

Among dogs involved in bites/scratches, 64.3% were reported to be previously vaccinated against rabies versus 58.2% of cats (68.6% of pets and 9.0% of strays). Only 4.3% of dogs and 9.3% of cats definitely did not receive rabies vaccination. It is unclear whether the remaining animals were truly not vaccinated or their vaccination information simply was not provided.

After a reported bite, just over half of the dogs were quarantined as compared to 84% of cats. Again, it is unclear whether the remaining animals were not quarantined or the information was not provided in the bite report database. However, there are circumstances in which animals cannot be quarantined, such as if a stray or wild animal is involved or if the owner of the pet is unknown or cannot be reached.

Information on breed was available for 755 (56.8%) of the 1,330 dogs involved in bites. **Table 7** contains dog breeds that were responsible for at least 8 bites in 2017 (or greater than 1% of bites). Many other breeds make up the remaining 109 bites, but all have less than 8 bites attributed to them. Mixed breed dogs were the most commonly involved in bites, followed by Pit Bulls. Some of the breeds are overrepresented in the bite data relative to county breed registry statistics. Breeds that had a higher percentage of bite involvements as compared to the percent licensed in Allegheny County are bolded (**Table 7**), most notably Pit Bulls (3.6% of licensed dogs, 21.1% of bites), mixed breed dogs (12.5% of licensed dogs, 24.3% of bites), and German Shepherds (4.9% of licensed dogs, 7.9% of bites). Inversely, Labrador Retrievers constituted 4% of reported bites but 12.8% of licensed dogs in the county. The percentage involved in bites for other breeds was approximately equal to the percentage licensed or was too small for accurate comparison.

Table 7: Number of dogs in each breed involved in reported animal bite incidents as compared to the number in each breed licensed in Allegheny County, 2017.

Breed Name	Involved in Bites N (%)		Licensed in Allegheny County N (%)	
Mixed Breed	**184**	**(24.3)**	10313	(12.5)
Pit Bull	**160**	**(21.1)**	2983	(3.6)
German Shepherd	**60**	**(7.9)**	4043	(4.9)
Labrador Retriever	30	(4.0)	10620	(12.8)
Boxer	**23**	**(3.0)**	2345	(2.8)
Rottweiler	**22**	**(2.9)**	845	(1.0)
Mastiff	**21**	**(2.8)**	152	(0.2)
Bulldog	**20**	**(2.6)**	121	(0.1)
Husky	**20**	**(2.6)**	973	(1.2)
Beagle	16	(2.1)	3959	(4.8)
Dachshund	14	(1.9)	2027	(2.5)
Australian Shepherd	**12**	**(1.6)**	585	(0.7)
Labradoodle	**12**	**(1.6)**	491	(0.6)
Cocker Spaniel	**11**	**(1.5)**	969	(1.2)
Yorkshire Terrier	10	(1.3)	2707	(3.3)
Chihuahua	9	(1.2)	2983	(3.6)
Golden Retriever	9	(1.2)	2822	(3.4)
Great Dane	**9**	**(1.2)**	459	(0.6)
Border Collie	8	(1.0)	931	(1.1)
Poodle	8	(1.0)	1757	(2.1)
Saint Bernard	**8**	**(1.0)**	211	(0.3)
Other Breed	109	(14.4)		(~37%)
Total	755		82,716	

**Only includes breeds with >7 bites

*575 missing; percentages are based on 755 rather than 1330

Discussion

In summary, there were a total of 1,883 mammal bites inflicted to humans reported to ACHD in 2017. However, the conclusion in other locations is that animal bites are under-reported,[4,5] and the number of bites reported to ACHD may be a gross underestimate of the actual number of bites occurring.

Only 4 (0.2%) of the bites reported involved an animal that tested positive for rabies. The rabies-positive animals included 3 stray cats and 1 bat. No pets tested positive for rabies. Wild animals continue to be the main threat of human rabies in Allegheny County.

For persons ≥15 years, the number of women being bitten by animals appears to be higher than the number of men in all five-year age groups. This trend is the opposite of elsewhere in the United States where there are more males reportedly bitten.[6,7] However, in the first 14 years of life, the number of reported bites is higher for males or approximately equal for males and females in Allegheny County. The higher number of females could be attributable to a difference in healthcare-seeking and reporting behavior in adults, with females more likely to seek care for a bite than males.
Most of the bites in 2017 can be attributed to dogs (70.6%) and cats (24.0%). While animal vaccination status was not always available for dogs and cats, 64.3% of dogs and 58.2 % of cats involved in bites were reported as being vaccinated against rabies. Pennsylvania does not enforce rabies vaccination of dogs and cats even though vaccination is legally required by 3 months of age. Although vaccination rates around 60% are far below health and legal goals, the CDC found that in the United States overall, only about 48% of dogs and 8% of cats involved in reported animal bites were vaccinated in 2001.[8]

Dog owners in Pennsylvania are required to obtain a dog license, so we have relatively accurate information on the number of dogs in Allegheny County and their breed type. Certain dog breeds seem to consistently have bite rates higher than what is expected. For example, Pit Bulls, German Shepherds, and Rottweilers were overrepresented in bite data relative to the county breed registry statistics from 2015 through to 2017. "Mixed breed" dogs were similarly overrepresented, but it is possible those numbers were inaccurate if a victim did not know the breed type when reporting, and the owner could not subsequently be contacted. Cats do not have any licensing requirements, and thus could not be further analyzed.

Published treatment guidelines for dog and cat bites place importance on the proper cleaning of a wound by irrigation to prevent infection.[9] The literature varies on the use of antibiotics, but general recommendations are to prescribe antibiotics for "high-risk" bite wounds and wounds to the hands, and to consider antibiotics for average-risk wounds.[9] In Allegheny County, over 60% of bite victims received an antibiotic in 2017. It is important to note that most cat bites are considered "high-risk," but the antibiotic prescription rates for dogs and cats was approximately equal in Allegheny County for 2017 (65.26% for dogs, 65.04% for cats). Augmentin is regarded as the antibiotic of choice for animal bites[9] and was the most common antibiotic prescribed for bites in Allegheny County.

The HRIG/HDCV series is only necessary when an animal tests positive for rabies or if the animal cannot be observed for a 10-day quarantine period.[9] HRIG/HDCV is a very expensive treatment; the CDC estimates it costs between $3,000-$7,000 per person. Of the documented 104 bite victims who completed the HRIG/HDCV sequence in Allegheny County in 2017, 13 (12.5%) had an invalid reason for receiving it, meaning between $39,000-$91,000 were unnecessarily spent.

Tetanus vaccination is recommended for those who have had less than 3 doses in their lifetime or who have not been vaccinated in more than 10 years for minor wounds and less than 5 years for all other wounds.[9] Approximately 31% of bite victims in Allegheny County received a tetanus shot in 2017. The Pennsylvania Statewide Immunization Information System (PA-SIIS) contains vaccine records that could be checked prior to administration to reduce unnecessary tetanus vaccination.

Recommendations

1. **Avoid contact with wild animals.** The public should refrain from taking in, feeding, and playing with wild animals. Also avoid contact with dead animals to reduce risk of rabies exposure.

2. **Educate medical providers on protocol for rabies PEP.** HRIG/HDCV is not immediately necessary if the animal involved in a bite is available for observation or testing. Check PA-SIIS prior to administering tetanus vaccines. Use the electronic animal bite reporting form.

3. **Encourage all pet owners to abide by state law and vaccinate their pets!!** Keeping pets up to date on vaccinations will not only protect them from disease, but will also protect their owners from infection. Pet owners should also prevent pets from wandering outdoors unsupervised, so they have less chance to interact with rabid wildlife.

4. **Require proof of vaccination when licensing dogs.** Dog owners are already required to license their pets, and because vaccination is also required by law, it is reasonable to require that dog owners show vaccination records at the time of licensing. This provides a chance to educate pet owners on the importance of rabies vaccination and provide resources/information about pet vaccination. Overall, this would improve dog vaccination rates and better protect pets and their owners from rabies.

5. **Capture a bat or contact a service to capture a bat if it is found inside a dwelling with people present.** Submit it for rabies testing at the ACHD laboratory. Ruling out rabies will prevent unnecessary anxiety and medical costs for PEP.

6. **Improve public understanding of animal bite reporting.** Some public outreach should be organized to better spread the message about the importance of animal bite reporting. Bite victims are strongly encouraged to obtain animal owner contact information when possible. Animal owners should be reminded that the health department is concerned only with the health of the bite victim and animal, and the animal will not be taken away by the health department. Cooperation from all parties involved is greatly appreciated.

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