Texas Department of State Health Services
DSHS-Supplied Rabies Biologicals
2016 Surveillance Summary

Texas Health and Safety Code §826.025 and Texas Administrative Code Chapter 97, Subchapter E allow the Texas Department of State Health Services (DSHS) to supply rabies biologicals (vaccine and immune globulin) for persons who have been exposed to rabid, or potentially rabid, animals. In an effort to make the biologicals available to Texas residents throughout the state, DSHS Health Service Region (HSR) offices may store and distribute rabies biologicals and some HSR offices partner with local health departments to serve as depots for storing and distributing biologicals. Surveillance data, including the demographic information on who received the biologicals and the reasons the biologicals were distributed, are maintained by DSHS (mandated by §97.123, Texas Administrative Code, "Provision of Anti-Rabies Biologicals").

Some private sources- such as clinics, hospitals, pharmacies, and healthcare systems- directly provide rabies biologicals to patients. These sources do not supply surveillance information to DSHS and are not included in this summary.

Postexposure Rabies Prophylaxis

During 2016, rabies biologicals were distributed for postexposure prophylaxis (PEP) to 338 people, of whom 105 (31.1%) acquired the biologicals from DSHS HSR offices and 233 (68.9%) from depots. The reported total cost of the biologicals distributed from DSHS inventory was $937,300 ($678,796 for 1,266 vials [2 ml] of human rabies immune globulin [HRIG] and $258,504 for 1,165 vials [1 ml] of vaccine). A full PEP series of biologicals (HRIG plus 4-5 doses of vaccine) was distributed to 219 people (64.8% of people receiving biologicals from DSHS inventory) at a total cost of $805,269 and an average cost of $3,677 per person (median: $3,564, range: $1,280-$7,284).

Rabies biologicals were distributed to 335 (99.1%) Texas residents and 3 (0.9%) residents of other states (1 each from Florida, Illinois, and Pennsylvania) who were traveling in Texas. Distribution of postexposure biologicals based on the HSR of patient residence is summarized in Figure 1. Distribution of rabies biologicals by month is shown in Figure 2.

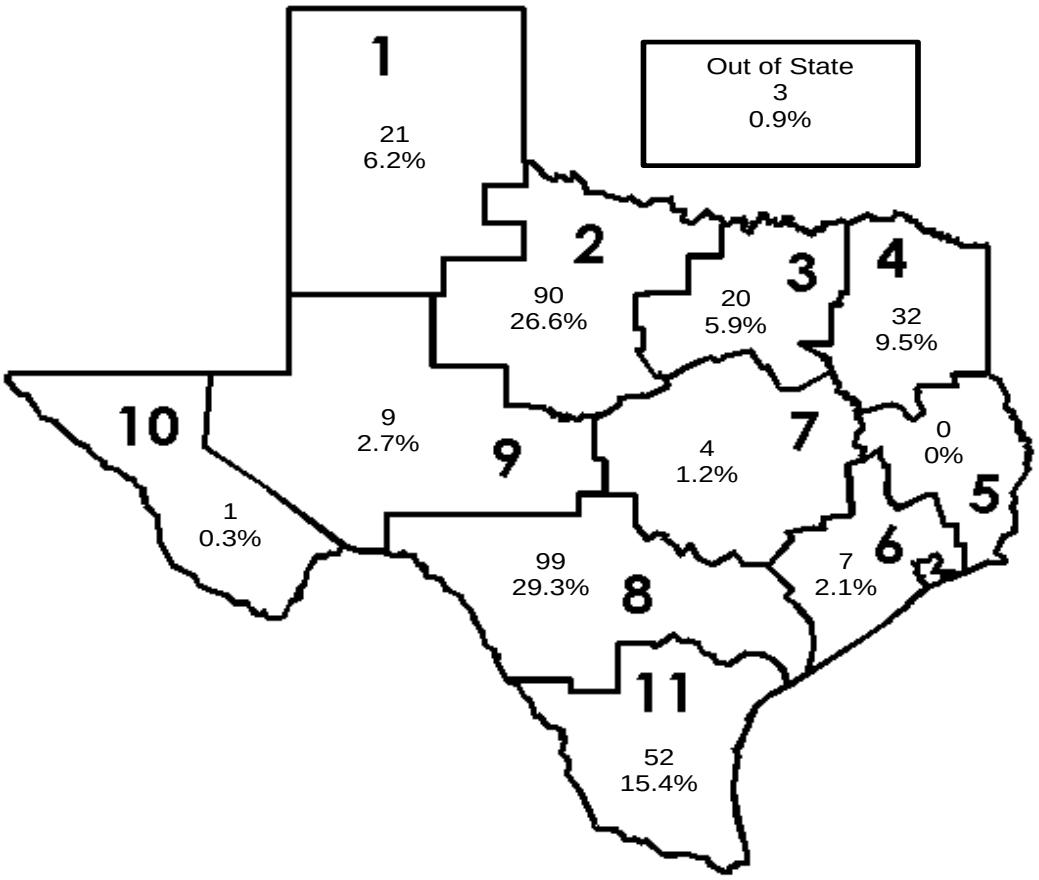


Figure 1. Number of People Receiving Rabies Biologicals by Health Service Region of Patient Residence, 2016

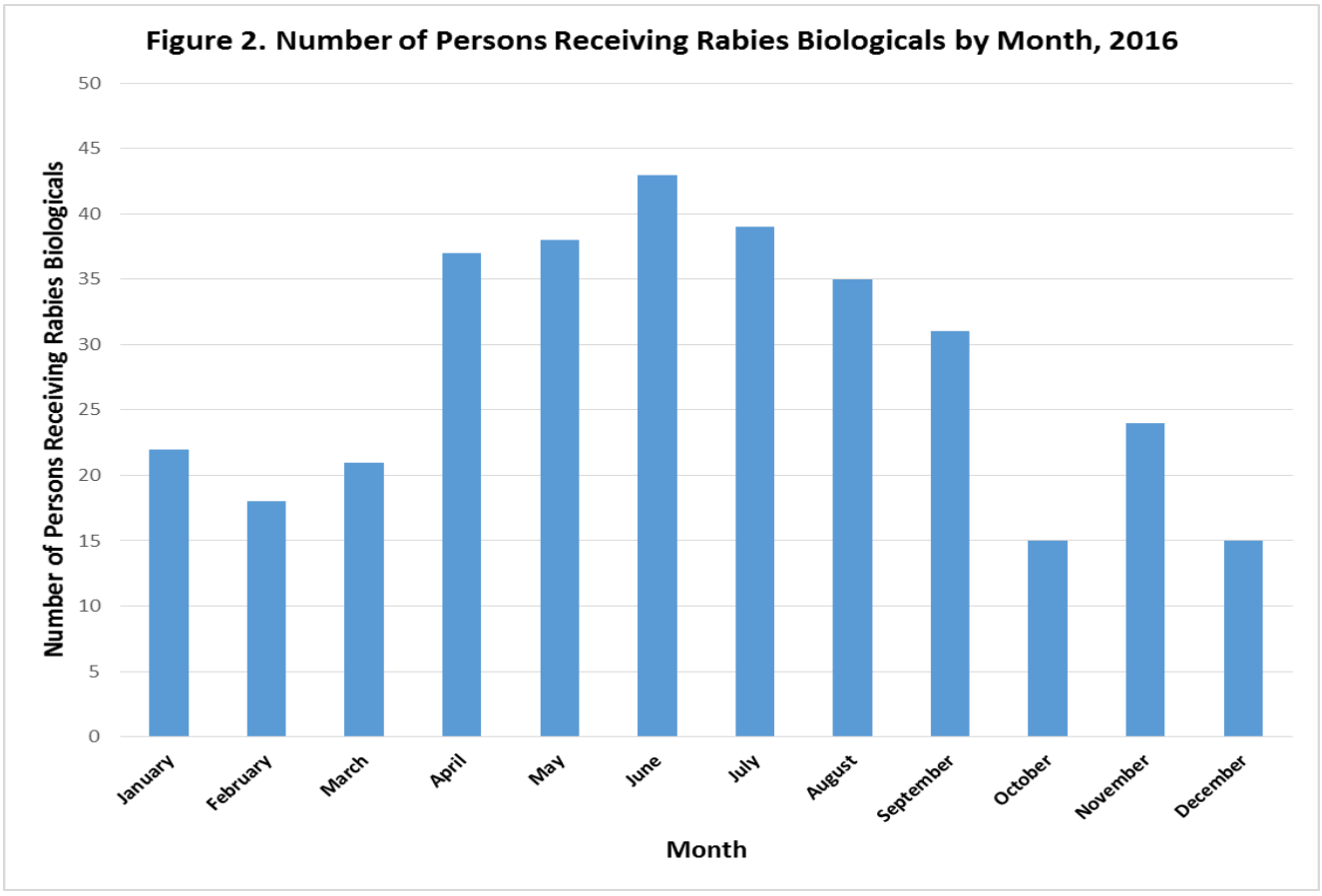


Table 1 shows the distribution of rabies biologicals by month and HSR of the patient's residence.

Month	Health Service Region										Out of State Resident	Total	%
	1	2	3	4	6	7	8	9	10	11			
January	2	7		2			8			2	1	**22**	**6.5%**
February	1	5			1		6			5		**18**	**5.3%**
March	2	4		3			10	2				**21**	**6.2%**
April	1	14	7	1			11	1		2		**37**	**10.9%**
May	2	10	1	2	1	1	9			11	1	**38**	**11.2%**
June	2	11	3	2	1	1	14	1		8		**43**	**12.7%**
July	2	9	3	9	2		8	2	1	2	1	**39**	**11.5%**
August		8	2	5	2		13	1		4		**35**	**10.4%**
September	4	7	1	3			9	1		6		**31**	**9.2%**
October	1	6	1	2						5		**15**	**4.4%**
November	2	6	1	3		2	7	1		2		**24**	**7.1%**
December	2	3	1				4			5		**15**	**4.4%**
Total	**21**	**90**	**20**	**32**	**7**	**4**	**99**	**9**	**1**	**52**	**3**	**338**	**100.0%**
%	**6.2%**	**26.6%**	**5.9%**	**9.5%**	**2.1%**	**1.2%**	**29.3%**	**2.7%**	**0.3%**	**15.4%**	**0.9%**	**100.0%**	

Table 1. Number of Persons Receiving Rabies Biologicals by Health Service Region of Patient Residence, 2016

The species of animals associated with the potential rabies exposures are detailed in Table 2. The number of persons receiving biologicals by HSR and animal causing the potential rabies exposure are detailed in Table 3.

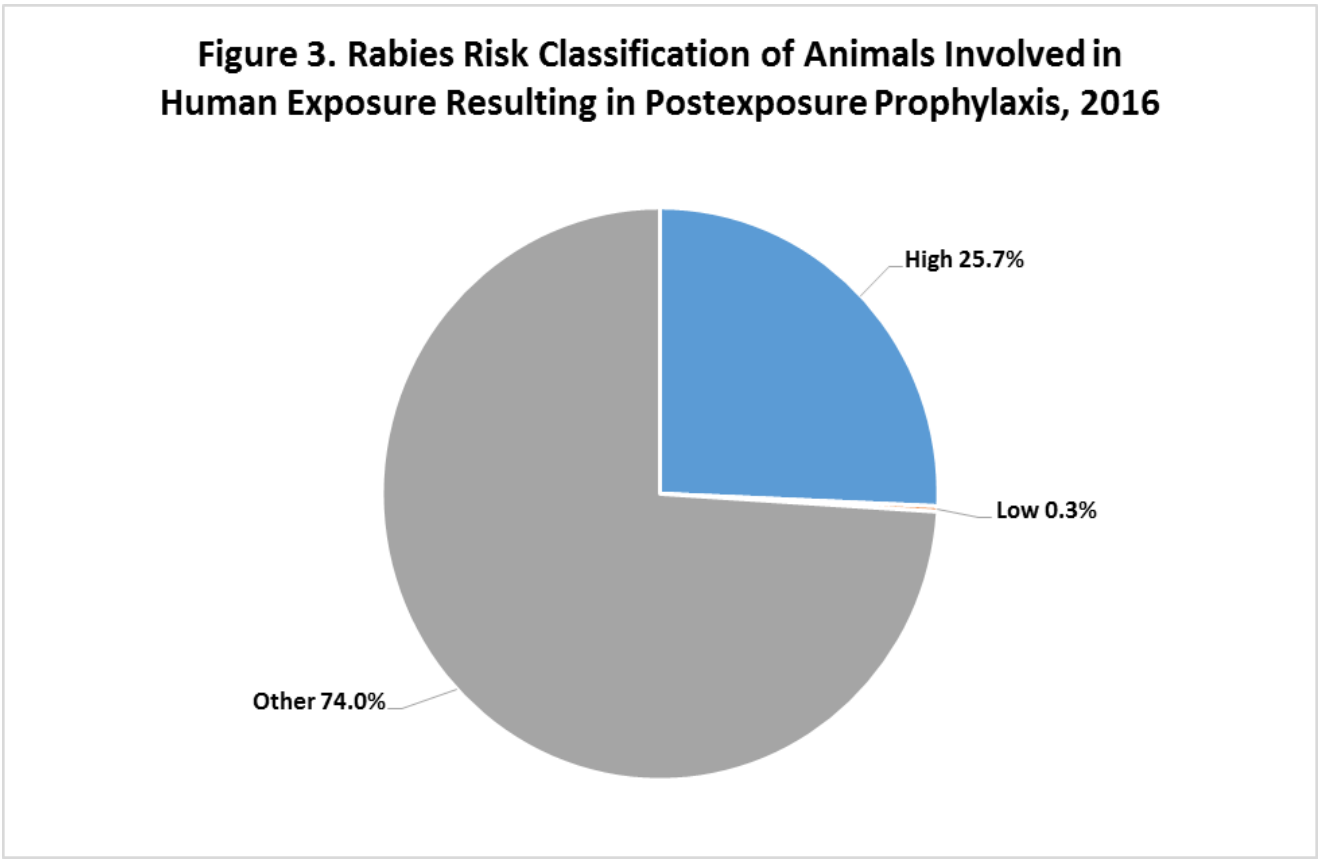
Animals designated as being of high risk for transmitting rabies (bats, coyotes, foxes, raccoons, and skunks) accounted for 86 (25.4%) of the exposures. Animals classified as low risk for rabies (e.g. rodents, rabbits, moles, and opossums) accounted for 1 (0.3%) exposures (Figure 3). Although some species are considered low risk for rabies, all mammals are capable of becoming infected with and transmitting rabies. A risk assessment process, which includes many other factors besides species of exposing animal, is utilized to determine a general level of rabies transmission risk for a given exposure setting. In certain circumstances, post-exposure prophylaxis may be recommended even for exposures involving low-risk species.

Species Associated with Exposure Resulting in PEP	Number	%
Dog	148	43.8%
Cat	90	26.6%
Bat	55	16.3%
Raccoon	20	5.9%
Skunk	7	2.1%
Unknown/Not Listed	4	1.2%
Primate	4	1.2%
Fox	3	0.9%
Cattle	2	0.6%
Squirrel	1	0.3%
Deer	1	0.3%
Horse	1	0.3%
Pig	1	0.3%
Coyote	1	0.3%
Total	**338**	**100.0%**

Table 2. Species Associated with Exposure Resulting in Rabies PEP, 2016

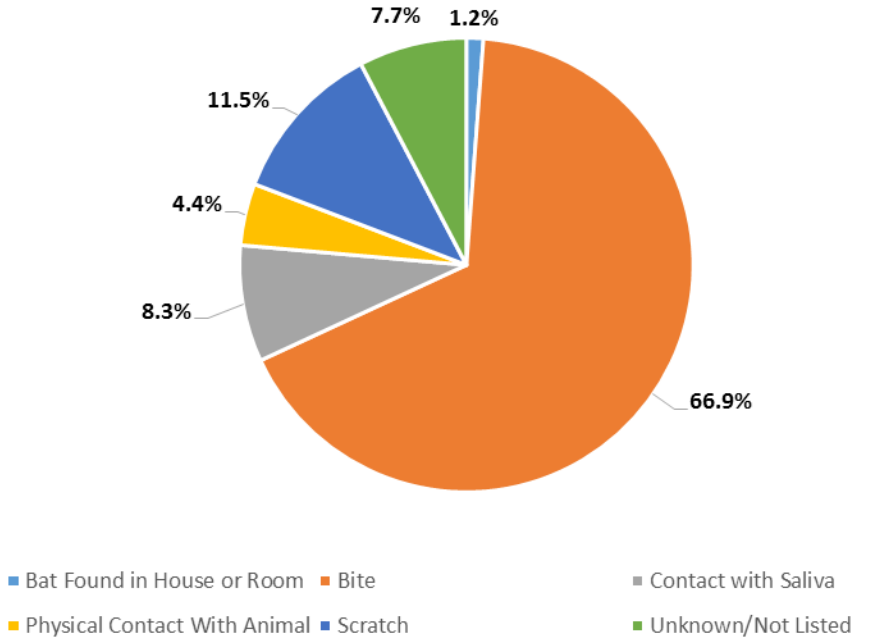
Exposing Animal	Health Service Region										Out of State Resident	Total	%
	1	2	3	4	6	7	8	9	10	11			
Bat		5	2	15	5		9			18	1	**55**	**16.3%**
Cat	5	38	5	11		3	22	2		4		**90**	**26.6%**
Cattle		1		1								**2**	**0.6%**
Coyote										1		**1**	**0.3%**
Deer		1										**1**	**0.3%**
Dog	15	31	11	2	2		54	6	1	25	1	**148**	**43.8%**
Fox		2					1					**3**	**0.9%**
Horse		1										**1**	**0.3%**
Pig		1										**1**	**0.3%**
Primate			2				2					**4**	**1.2%**
Raccoon	1	5		1		1	9	1		1	1	**20**	**5.9%**
Skunk		4		2			1					**7**	**2.1%**
Squirrel							1					**1**	**0.3%**
Unknown/ Not Listed		1								3		**4**	**1.2%**
Total	**21**	**90**	**20**	**32**	**7**	**4**	**99**	**9**	**1**	**52**	**3**	**338**	**100.0%**
%	**6.2%**	**26.6%**	**5.9%**	**9.5%**	**2.1%**	**1.2%**	**29.3%**	**2.7%**	**0.3%**	**15.4%**	**0.9%**	**100.0%**	

Table 3. Number of Persons Receiving Rabies Biologicals by Health Service Region of Patient Residence and Exposing Animal, 2016



Reported routes of exposure are shown in Figure 4.

Figure 4. Primary Route of Exposure for Persons Receiving Postexposure Prophylaxis, 2016



Dogs and cats accounted for 238 (70.4%) of the reports of potential rabies exposures resulting in PEP. Of those, 30 (12.6%) were owned by the patient's family, 40 (16.8%) were owned by someone other than the patient's family, 163 (68.5%) were listed as either a stray or wild animal, and 5 (2.1%) had no ownership information identified (Figure 5). The vaccination status of 68 (28.6%) of the dogs and cats was reported as known, with 63 (92.6% of those with vaccination status known) being not currently vaccinated and 5 (7.4% of those with vaccination status known) being currently vaccinated. The vaccination status of 167 (70.2%) of the dogs and cats was reported as unknown and the vaccination status of 3 (1.3%) of the dogs and cats was not reported.

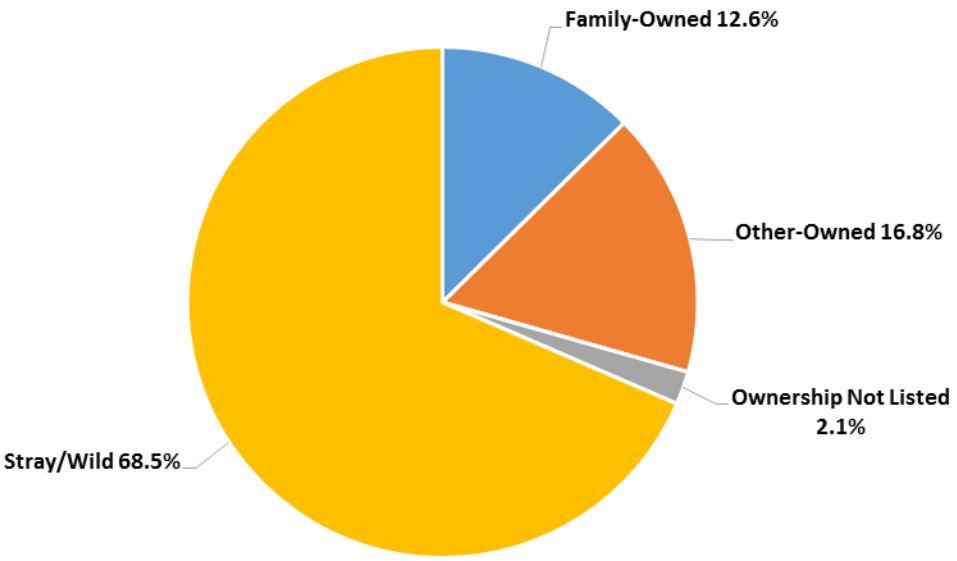
The average age of those receiving PEP was 31.6 years (males 30.3 years, females 33.1 years). The median age of those receiving PEP was 27.0 years (males 25.0 years, females 29.5 years). Of the recipients, 172 (50.9%) were male and 164 (48.5%) were female; sex was not reported for 2 (0.6%) recipients. Of those persons receiving PEP, 6 (1.8%) were previously immunized for rabies, 4 (1.2%) were not previously immunized for rabies, and the rabies immunization status for 328 (97.0%) was not listed. The primary anatomic sites of exposure are listed in Table 4.

Anatomic Location of Exposure	Number of People	%
Hand	114	33.7%
Leg	74	21.9%
Multiple Anatomic Sites	42	12.4%
Arm	36	10.7%
Head/Neck	34	10.1%
Unknown/Not Listed	22	6.5%
Torso	12	3.6%
Foot	4	1.2%
Total	**338**	**100.0%**

Table 4. Primary Anatomic Location of Rabies Exposures, 2016

The animal causing the exposure was tested for rabies in a public health laboratory in 73 (21.6%) cases; the animal was quarantined in lieu of testing in 3 (0.9%) cases; the animal was not available for testing or quarantine in 243 (71.9%) cases; and the testing status was not listed in 19 (5.6%) cases. Biologicals were distributed to 3 persons (0.9% of persons receiving PEP) while the animal causing the exposure was being quarantined for rabies observation. Biologicals were distributed to 5 people (1.5% of persons receiving PEP) while laboratory results were pending. The final laboratory results for those samples which were pending at the time rabies biologicals were distributed were not recorded in the database (Table 5). PEP is occasionally begun while the exposing animal is being tested when the animal or exposure situation is deemed high risk. Additionally, sometimes the exposing animal is located for testing or quarantine after PEP has been initiated. PEP is generally discontinued if the laboratory result is negative or the animal successfully completes quarantine.

Figure 5. Ownership of Cats and Dogs Involved in Potential Rabies Exposure to Humans, 2016



Laboratory Testing Status	Number	%
Animal Quarantined*	3	0.9%
Animal Not Available for Testing or Quarantine	243	71.9%
Testing Status Not Listed	19	5.6%
Tested	73	21.6%

Test Result	Number	% of Tested Specimens
Positive	59	80.8%
Sample Decomposed	5	6.8%
Results pending at the time the PEP biologicals were distributed*	5	6.8%
Result Inconclusive	0	0.0%
Test Result Not Listed	3	4.1%
Sample Destroyed	1	1.4%
Sample Unsatisfactory	0	0.0%

Table 5. Rabies Testing Status and Test Results from Animals That Caused People to Receive Postexposure Prophylaxis, 2016

*PEP is occasionally begun while the exposing animal is being tested when the animal or exposure situation is deemed high risk. Additionally, sometimes the exposing animal is located for testing or quarantine after PEP has been initiated. PEP is generally discontinued if the laboratory result is negative or the animal successfully completes quarantine.

Table 6 lists the number of persons receiving rabies biologicals for those instances in which the exposing animal was not available for testing or quarantine for rabies.

Exposing Animal	Health Service Region									Out of State Resident	Total	%
	1	2	3	4	6	7	8	9	11			
Bat		5	1	14	4		5		13	1	**43**	**17.7%**
Cat	5	15	4	1		1	21	1	4		**52**	**21.4%**
Cattle		1									**1**	**0.4%**
Coyote									1		**1**	**0.4%**
Deer		1									**1**	**0.4%**
Dog	14	17	6		2		50	6	24	1	**120**	**49.4%**
Fox		1					1				**2**	**0.8%**
Pig		1									**1**	**0.4%**
Primate			2				2				**4**	**1.6%**
Raccoon	1	4				1	5	1	1		**13**	**5.3%**
Skunk		1									**1**	**0.4%**
Squirrel							1				**1**	**0.4%**
Unknown/Not Listed									3		**3**	**1.2%**
Total	**20**	**46**	**13**	**15**	**6**	**2**	**85**	**8**	**46**	**2**	**243**	**100.0%**
%	**8.2%**	**18.9%**	**5.3%**	**6.2%**	**2.5%**	**0.8%**	**35.0%**	**3.3%**	**18.9%**	**0.8%**	**100.0%**	

Table 6. Number of Persons Receiving Rabies Biologicals Due to Exposures to Animals That Were Not Available for Testing or Quarantine for Rabies, 2016

Table 7 lists the number of persons receiving rabies biologicals in those instances where the exposing animal tested non-negative for rabies.

Exposing Animal	Health Service Region							%
	2	3	4	6	8	11	Total	
Bat		1	1	1	2	4	**9**	**13.8%**
Cat	17	1	9				**27**	**41.5%**
Cattle			1				**1**	**1.5%**
Dog	11	5	2		2		**20**	**30.8%**
Raccoon			1		3		**4**	**6.2%**
Skunk	1		1		1		**3**	**4.6%**
Unknown/Not Listed	1						**1**	**1.5%**
Total	**30**	**7**	**15**	**1**	**8**	**4**	**65**	**100.0%**
%	**46.2%**	**10.8%**	**23.1%**	**1.5%**	**12.3%**	**6.2%**	**100.0%**	

Table 7. Number of Persons Receiving Rabies Biologicals Due to Exposures to Animals That Tested Non-negative for Rabies, 2016