

ANIMAL BITES

Includes Mammal Bites Only. Includes Methodology for Determining Rabies Exposure and Rabies Post-Exposure Prophylaxis

Background

This case definition was developed by the Armed Forces Health Surveillance Branch (AFHSB) for the purpose of epidemiological surveillance of a condition important to military-associated populations.

Clinical Description

Human animal-bite injuries are a relatively common occurrence among members of the U.S. Armed Forces. They represent a significant public health problem because of the associated risk of rabies virus exposure, skin infection, and tissue damage. Most animal bites produce only minor injuries; however, depending on the size and type of biting animal, wounds can range from minimal to life-threatening. Risk of infectious complications increases if animal bites are left untreated or if treatment is delayed.¹ Wound treatment involves vigorous irrigation, exploration for tendon or bone injury and foreign bodies and antibiotic prophylaxis when there is a high risk of infection. Tetanus vaccination is recommended after an animal bite if it has been more than five years since the patient has been immunized. Rabies post-exposure prophylaxis is indicated in all persons who have been possibly exposed to a rabid animal.²

Case Definition and Incidence Rules

For surveillance purposes, a case of “animal bite” is defined as:

- *One hospitalization or outpatient medical encounter* with a case defining diagnosis of animal bite (see ICD9 and ICD10 code lists below) in *any* diagnostic position.

Incidence rules:

For individuals who meet the case definition:

- The incidence date is considered the date of the first hospitalization or outpatient medical encounter that includes a case defining diagnosis of animal bite.
- An individual is considered an incident case only *once per calendar year*.
- For individuals with more than one animal bite diagnosis in a calendar year, diagnoses associated with deployments to overseas theaters of operations (Theater Medical Data Store) are prioritized over those from non-deployed settings (Defense Medical Surveillance System)

Exclusions:

- None

¹ Armed Forces Health Surveillance Branch. Animal Bites and Rabies Post-exposure Prophylaxis, Active and Reserve Components, U.S. Armed Forces, 2011-2018. *Medical Surveillance Monthly Report (MSMR)*. 2019 October; Vol 26(10): 13-20.

² Ellis, R, Ellis, C. Dog and Cat Bites. *American Family Physician*. 2014 Aug 15; Vol 90(4): 239-243. Available at: <https://www.aafp.org/afp/2014/0815/p239.html>. Accessed October 2019.



Codes

The following ICD9 and ICD10 codes are included in the case definition:

Condition	ICD-10-CM Codes	ICD-9-CM Codes
Rodent bites	W53.01 (bitten by <i>mouse...</i>)	E906.1 (rat bite)
	- W53.01X [A,S,D] (initial, subsequent, and sequela encounters)	
	W53.11 (bitten by <i>rat...</i>)	
	- W53.11X [A,S,D] (initial, subsequent, and sequela encounters)	
	W53.21 (bitten by <i>squirrel...</i>)	E906.3 (bite of other animal except arthropod)
	- W53.21X [A,S,D] (initial, subsequent, and sequela encounters)	
	W53.81 (bitten by <i>other rodent...</i>)	
- W53.81X [A,S,D] (initial, subsequent, and sequela encounters)		
Dog bites	W54.0 (bitten by <i>dog...</i>)	E906.0 (dog bite)
	- W54.0XX [A,S,D] (initial, subsequent, and sequela encounters)	
Other mammal bites	W55.01 (bitten by <i>cat...</i>)	E906.3 (above)
	- W55.01X [A,S,D] (initial, subsequent, and sequela encounters)	
	W55.11 (bitten by <i>horse...</i>)	
	- W55.11X [A,S,D] (initial, subsequent, and sequela encounters)	
	W55.21 (bitten by <i>cow...</i>)	
	- W55.21X [A,S,D] (initial, subsequent, and sequela encounters)	
	W55.31 (bitten by <i>other hoof stock...</i>)	
	- W55.31X [A,S,D] (initial, subsequent, and sequela encounters)	
	W55.41 (bitten by <i>pig...</i>)	
	- W55.41X [A,S,D] (initial, subsequent, and sequela encounters)	
	W55.51 (bitten by <i>raccoon...</i>)	
- W55.51X [A,S,D] (initial, subsequent, and sequela encounters)		

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	W55.81 (bitten by <i>other mammals...</i>)	E906.5 (bite by unspecified animal)
	- W55.81X [A,S,D] (initial, subsequent, and sequela encounters)	

Development and Revisions

- This case definition was developed in October 2019 by the *Medical Surveillance Monthly Report (MSMR)* staff for use in a *MSMR* article on animal bites.¹ The case definition was developed based on reviews of the ICD9 and ICD10 codes, the scientific literature, and previous AFHSB analyses.

Case Definition and Incidence Rule Rationale

- This case definition is designed to provide a sensitive exploration of animal bites in the U.S. Armed Forces. In response to several limitations of the methodology discussed during the Surveillance Methods and Standards (SMS) workgroup review, future AFHSB analyses may include more specific case-finding criteria. For example:
 - An individual may be considered a new incident case if *at least 90 days* have passed since the last medical encounter with a case defining diagnosis of animal bite, (i.e., use of a gap rule). This modification would replace the previous limitation that states “An individual is considered an incident case only once per calendar year.” The use of such a gap rule would recognize the fact that some individuals (e.g., veterinary personnel, animal handlers, military police) are more likely than other service members to suffer multiple animal bites during a calendar year and that the recovery from almost all animal bites should be complete 90 days after the last health care encounter for such a bite.
 - An individual may be counted as an incident case multiple times during the surveillance period *if* the case defining diagnoses are coded for bites of different types of animals, (e.g., dog, cat, rat) and if the diagnosis for each animal bite satisfies the case definition, (i.e., one bite per type of animal per calendar year or other surveillance interval).
 - If the above case-finding criteria are added, the case defining codes may be restricted to codes with a 7th digit “A” (initial encounter) only.

Code Set Determination and Rationale

- The case definition includes codes with 7th digits “A” (initial encounter), “D” (subsequent encounter) and “S” (sequela). Analyses using these codes might increase the sensitivity of case-finding in health care records. Because the incidence rules permit an individual to be considered an incident case *only once per calendar year* it would be unlikely for combinations of diagnoses with A, D, and S 7th digits in a patient’s record to be counted as repeat events. See above for possible variations in the incidence rule other than the requirement of “only once per calendar year.”
- The code set used for the October 2019 *MSMR* article on animal bites did not include ICD10 codes W53.01* (bitten by mouse), W53.21* (bitten by squirrel), W53.81* (bitten by other rodent) and associated ICD9 codes E906.1 (rat bite) and E906.3 (bite of other animal except arthropod). These codes are included in this document and will be included in the code set for future analyses.

Reports

AFHSB reports on animal bites in the following reports:



- Periodic *MSMR* reports

Review

Nov 2019	Case definition reviewed and updated by the AFHSB Surveillance Methods and Standards (SMS) working group.
Oct 2019	Case definition developed and reviewed by AFHSC <i>MSMR</i> staff.

Comments

- **Case Definition for Rabies Exposure:** An individual is considered exposed to rabies if they meet the case defining criteria for an animal bite AND they have an associated case defining code for rabies exposure (see ICD9 and ICD10 codes below).

Condition	ICD-10-CM Codes	ICD-9-CM Codes
Rabies exposure	Z20.3 (contact with and [suspected] exposure to rabies)	V01.5 (contact with or exposure to rabies)

- **Case Definition for Rabies Post-exposure Prophylaxis (PEP):** An individual is considered to have received rabies post-exposure prophylaxis if they meet the case defining criteria for an animal bite AND they have *one* medical encounter with evidence of rabies vaccination and / or human rabies immune globulin (HRIG) administration *within 90 days* after the case-defining encounter; or *one* record of a Reportable Medical Event (RME) of *confirmed* rabies PEP with a date of onset documented in a reportable medical event report *within 90 days* after the case-defining encounter.

Evidence of rabies vaccination and/or HRIG administration is indicated by an immunization record containing *at least one* of following vaccine administered (CVX) codes, Current Procedure Terminology (CPT) codes or ICD9/ICD10 procedure codes.

In addition, evidence of rabies vaccination and/or HRIG administration is indicated if the DRUG-NAME field in the Pharmacy Data Transaction Service (PDTS) or the Theater Medical Data Store (TMDS_MEDS) contains one or more of the terms listed in the table below.

Rabies Vaccination

CVX codes	018 (rabies vaccine, for intramuscular injection) – retired code. Replaced by CVX 175 or CVX 176. 040 (rabies vaccine, for intradermal injection) – inactive code 090 (rabies vaccine, unspecified formulation) – inactive code, allow reporting of a vaccination when formulation is unknown. 175 (human rabies vaccine from human diploid cell culture) 176 (human rabies vaccine from chicken fibroblast culture)
CPT codes	90675 (rabies vaccine, intramuscular use) 90676 (rabies vaccine, intradermal use)



Pharmacy Data Transaction Service (PDTS)	DRUG_NAME field contains "RABIES VACCINATION," "RABIES VACCINE," or "RABIES VIRUS VACCINE"
Theater Medical Data Store (TMDS_MEDS)	DRUG_NAME field contains "RABIES VACCINATION," "RABIES VACCINE," or "RABIES VIRUS VACCINE"

Immune Globulin Administration

CVX codes	034 (rabies immune globulin / RIG) 014 (immune globulin, unspecified formulation) – inactive 086 (immune globulin, intramuscular/ IG) 087 (immune globulin, intravenous)	
CPT codes	90375 (rabies immune globulin / RIG, human, for intramuscular and/or subcutaneous use) 90376 (rabies immune globulin, heat-treated / RIG-HT, human, for intramuscular and/or subcutaneous use)	
ICD9 and ICD10 codes	ICD10: Z29.14 (encounter for prophylactic rabies immune globulin)	ICD9: <i>Too broad for inclusion</i>
Pharmacy Data Transaction Service (PDTS)	DRUG_NAME field contains "RABIES IGB," "RABIES IMM GLOB," "RABIES IMMUNE GLOB," "RABIES IMM GLOB," or "RABIES IMMUNE GLOBULIN;" or DRUG_NAME field contains "IMMUNE GLOB" or "GLOBULIN IMMUNE."	
Theater Medical Data Store (TMDS_MEDS)	DRUG_NAME field contains "RABIES IGB," "RABIES IMM GLOB," "RABIES IMMUNE GLOB," "RABIES IMM GLOB," or "RABIES IMMUNE GLOBULIN;" or DRUG_NAME field contains "IMMUNE GLOB" or "GLOBULIN IMMUNE."	

