

Committee: Infectious

Title: Public Health Reporting and National Notification for Animal Rabies

I. Statement of the Problem

CSTE position statement 07-EC-02 recognized the need to develop an official list of nationally notifiable conditions and a standardized reporting definition for each condition on the official list. The position statement also specified that each definition had to comply with American Health Information Community recommended standards to support “automated case reporting from electronic health records or other clinical care information systems.” In July 2008, CSTE identified sixty-eight conditions warranting inclusion on the official list, each of which now requires a standardized reporting definition.

II. Background and Justification

Background¹

Rabies virus infection produces an acute, progressive and fatal encephalitis in humans and mammals. Reported rabies infections in domestic animals have declined dramatically in the US since the introduction of animal control and vaccination programs in the 1940s and 1950s. While cats are currently the most frequently infected domestic animals, wild animals accounted for 93% of cases of rabies detected in animals in 2007. Raccoons are the most commonly detected species infected with rabies, followed by bats, skunks and then foxes. Other mammals, including rodents and lagomorphs are rarely infected. Among terrestrial mammals, raccoon rabies is endemic on the Eastern seaboard of the US. Skunk rabies predominates in the North Central, South Central and Southwest States plus California. Texas, Arizona and Alaska have limited foci of fox rabies. Mongoose rabies is present in Puerto Rico. Rabies infected bats are found throughout the 49 continental states. Animal rabies must be carefully monitored to ensure that informed advice is available when recommending post exposure prophylaxis for potential rabies exposures as well as planning and evaluating rabies control programs.

Reported cases of rabies in humans has dropped since the 1940s as canine rabies has been controlled and ultimately eliminated in the United States. However, during this time period the number of wildlife associated cases of rabies reported in animals has increased. Subsequently potential human exposure to rabies and postexposure prophylaxis (PEP) remains a relatively common event in the United States (35,000 to 45,000 PEP's annually). Monitoring the epizootiology of animal rabies provides critical information in relation to human exposure risk. Geographic occurrence and temporal characteristics of animal rabies, as determined by routine surveillance, provides information used in exposure assessment for recommending human rabies postexposure prophylaxis in the absence of diagnostic testing. In addition, routine surveillance provides critical information in support of interventions such as oral rabies vaccination program.

¹ Much of the material in the background is directly quoted from the CDC's animal rabies Website. See the References for further information on this source.

Canine rabies virus variants (responsible for dog-to-dog transmission) have been eliminated from the United States. Re-introduction of this variant from domestic animals imported from countries where canine rabies is still enzootic would require an extensive public health response. When an imported case of rabies is identified, immediate action and response is required to determine the variant and ensure secondary exposures to humans and animals did not occur.

CDC provides laboratory assistance for viral typing and exposure (human and animal) tracing and assessment. Response from multiple CIO's within CDC may be required to investigate quarantine requirements and importation regulations. CDC provides support with interstate coordination for animals which may have been further distributed within the United States after importation.

Justification

Animal rabies meets the following criteria for a nationally notifiable condition, as specified in CSTE position statement 08-EC-02. Depending on circumstances, animal rabies may be **routinely (standard)** or **immediately (urgent)** notifiable:

- A majority of state and territorial jurisdictions—or jurisdictions comprising a majority of the US population—have laws or regulations requiring **routine (standard)** reporting of animal rabies to public health authorities.
- CDC requests **immediate (urgent)** notification of animal rabies to federal authorities under the following circumstance:
 - Cases of rabies occurring in animals imported from outside the continental United States within the previous 60 days.
- CDC requests **routine (standard)** notification of animal rabies to federal authorities for cases that do not meet the above criteria.
- CDC has condition-specific policies and practices concerning the agency's response to, and use of, notifications.

III. Statement of the desired action(s) to be taken

CSTE requests that CDC adopt this standardized reporting definition for animal rabies to facilitate more timely, complete, and standardized local and national reporting of this condition.

IV. Goals of Surveillance

To provide information on the temporal, geographic, and demographic occurrence of animal rabies to facilitate its prevention and control.

V. Methods for Surveillance

Surveillance for animal rabies should use the sources of data and the extent of coverage listed in Table V.

Table V. Recommended sources of data and extent of coverage for ascertaining cases of Animal Rabies.

Source of data for case ascertainment	Coverage	
	Population-wide	Sentinel sites
clinician reporting		
laboratory reporting	X	
reporting by other entities (e.g., hospitals, veterinarians, pharmacies)	X	
death certificates		
hospital discharge or outpatient records		
extracts from electronic medical records		
telephone survey		
school-based survey		
other _____		

VI. Criteria for Reporting

Reporting refers to the process of healthcare providers or institutions (e.g., clinicians, clinical laboratories, hospitals) submitting basic information to governmental public health agencies about cases of illness that meet certain reporting requirements or criteria. The purpose of this section is to provide those criteria that should be used to determine whether a specific illness should be reported.

A. Narrative description of criteria to determine whether a case should be reported to public health authorities

Report any illness to public health authorities that meets any of the following criteria:

1. Veterinary healthcare record contains diagnosis
2. All animals which test positive for rabies virus should be reported. Accepted laboratory tests are a direct fluorescent antibody test (ideally on central nervous system tissue), or isolation of rabies virus (either in a viral culture or a laboratory animal), or reverse transcriptase PCR product from appropriate brain tissue confirmed as rabies by sequencing.

Other recommended reporting procedures

- All cases of Animal Rabies should be reported.
- Reporting should be on-going and routine.
- Frequency of reporting should follow the state health department's routine schedule.

B. Table of criteria to determine whether a case should be reported to public health authorities

Table VI-B. Table of criteria to determine whether a case should be reported to public health authorities. Requirements for reporting are established under State and Territorial laws and/or regulations and may differ from jurisdiction to jurisdiction. These criteria are suggested as a standard approach to identifying cases of this condition for purposes of reporting, but reporting should follow State and Territorial law/regulation if any conflicts occur between these criteria and those laws/regulations.

Criterion	Reporting
<i>Clinical Evidence</i>	
Veterinary healthcare record contains a diagnosis of rabies	S
<i>Laboratory Evidence</i>	
Detection of rabies virus by positive direct fluorescent antibody test performed ideally on central nervous system tissue	S
Isolation of rabies virus (in cell culture or in a laboratory animal)	S
A reverse transcriptase PCR product from appropriate brain tissue confirmed as rabies by sequencing	S

Notes:

S = This criterion alone is Sufficient to identify a case for reporting.

C. Disease Specific Data Elements:

Disease-specific data elements to be included in the initial report are listed below.

Epidemiological Risk Factors

Species

Sex

Age

Vaccination history (domestic animals)

Location where captured or taken into custody

Address

City

State

Zip code

County

Latitude

Longitude

Surveillance type – passive/active

Rabies virus variant

Animal exposure (Y/N)

Species and number exposed

Human exposure (Y/N)

Bite
Non-bite
PEP

VII. Case Definition for Case Classification

A. Narrative description of criteria to determine whether a case should be classified as confirmed is provided.

Laboratory criteria for diagnosis

- A positive direct fluorescent antibody test (preferably performed on central nervous system tissue)
- Isolation of rabies virus (in cell culture or in a laboratory animal)

Case classification

Confirmed: a case that is laboratory confirmed

B. Classification Tables

Table VII-B lists the criteria that must be met for a case to be classified as confirmed.

Table VII-B. Table of criteria to determine whether a case is classified.

Criterion	Case Definition
	Confirmed
<i>Laboratory Evidence</i>	
A positive direct fluorescent antibody test performed ideally on central nervous system tissue	S
Isolation of rabies virus (in cell culture or in a laboratory animal)	S

Notes:

S = This criterion alone is Sufficient to classify a case.

VIII. Period of Surveillance

Surveillance should be on-going.

IX. Data sharing/release and print criteria

Expectations for sharing case data

- CDC will submit aggregate national counts of reports of cases of animal rabies to WHO **annually**.

This document contains minor technical corrections approved by the CSTE membership on June 10, 2010.

Limitations on releasing case data

- Release of any identifying data to any entity other than to another state's or territory's health agency or to the CDC requires a signed data sharing agreement using a format pre-approved by the state or territorial health agency. (Refer to the *CDC-CSTE Intergovernmental Data Release Guidelines Working Group Report: CDC-ATSDR Data Release Guidelines and Procedures for Re-release of State-Provided Data* for further information.)

Restrictions on publishing case data

- CDC will only publish data on **confirmed** cases of animal rabies. Provisional data will not be used until verification procedures are complete.
- Notification to CDC of confirmed cases of animal rabies is recommended.

Data reported through the National Notifiable Diseases Surveillance System (NNDSS) is summarized weekly in the MMWR Tables and yearly in the MMWR Summary of Notifiable Diseases. Summary of reported cases of animal rabies are compiled and published annually in September of each year. Ad-hoc analyses of animal rabies surveillance data consists of planning and evaluation for oral rabies vaccination programs, predictive modeling, and spatial analysis. Aggregate number of cases by species for the United States are reported annually to WHO.

X. References

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7. Council of State and Territorial Epidemiologists, Centers for Disease Control and Prevention. CDC-CSTE Intergovernmental Data Release Guidelines Working Group (DRGWG) Report: CDC-ATSDR Data Release Guidelines and Procedures for Re-release of State-Provided Data. Atlanta: CSTE; 2005. Available from: <http://www.cste.org/pdffiles/2005/drgwgreport.pdf> or <http://www.cdc.gov/od/foia/policies/drgwg.pdf>.
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