



Mississippi Morbidity Report

Rabies

Background/History/Risk of Rabies

Rabies is a viral neurologic disease transmitted from animals to humans, usually through a bite from an infected animal. The first symptoms of rabies may be nonspecific flu-like signs which may last for days. There may be discomfort or paresthesia at the site of exposure (bite), progressing within days to symptoms of cerebral dysfunction, anxiety, confusion, agitation, progressing to delirium, abnormal behavior, hallucinations, and insomnia. Once clinical signs of rabies appear, the disease is nearly always fatal, and treatment is typically supportive. Non-lethal exceptions are extremely rare. To date there have been only six documented cases of human survival.

All mammals are susceptible to rabies but some animals are more susceptible than others. Wildlife species that are particularly susceptible to rabies and contribute to the maintenance of wildlife rabies variants in the U.S. include raccoons, skunks, canids (foxes, coyotes), and bats. In the U.S. in the 1940s and 1950s, canine rabies was the predominant reservoir and cause of human rabies. In 2006, approximately 92% of animal rabies cases were in wildlife, and 8% were in domestic animals. Targeted vaccination campaigns and stray animal control have reduced the number of canine rabies cases from 6,947 in 1947 to 79 in 2006. Now, most human cases in the U.S. are caused by bat strains. Bats are now the second most reported rabid animal behind raccoons.

The MSDH Public Health Laboratory (PHL) reports an average of three confirmed rabid bats a year. Mississippi reported a human case of rabies due to bat strain in a 10 year old boy in 2005. Mississippi's last reported case of human rabies caused by a terrestrial animal was in 1953. There has not been an indigenous terrestrial rabies case reported since 1961, however, rabies is reported in terrestrial animals annually in states that border Mississippi. Health care providers should be aware that risk remains for human and animal rabies from three main sources:

- Bats: Most cases of human rabies in the US are caused by bats. Data suggest that transmission of the virus can occur from minor, seemingly unimportant, or unrecognized bites.
- Translocation of a rabid animal into Mississippi from a rabies enzootic/epizootic state: Animals (e.g., foxes) are sometimes moved into the state (legally and illegally) for hunting purposes.
- Movement of the southeastern raccoon rabies variant westward from Alabama: Since Alabama reported the first rabid raccoon from Mobile County in 1997, the possibility that the raccoon variant may be identified in Mississippi has existed. In 2004, a rabid raccoon in Clarke County, Alabama, 25 miles from Wayne County in southeast Mississippi. This is alarming when the rabies epizootic fronts have moved an average of 18-25 miles a year. Thus, southeast Mississippi is the area of highest risk.

Although epidemiologic data are limited for Mississippi, the available information contributes significantly to how recommendations for postexposure prophylaxis are derived. In addition to occurrence data, public health consultants will request particular patient and animal information when assisting health care workers in determining the need for postexposure prophylaxis. Some of this information includes:

- Exposure information: date of exposure, exposure type (bite vs. nonbite), whether the bite was provoked or not, location of bite on the body
- Animal information: animal species (dog, cat, raccoon, etc.), disposition (live vs. dead, captured vs. not), vaccination status, ownership status

Recommendations for Follow-up if Bitten by an Animal

- All wounds should be immediately washed and irrigated with a virucidal Agent.
- Healthy domestic dogs, cats, or ferrets that bite a person should be confined and observed for 10 days. A health officer's order can be issued if owners do not cooperate. Any illness in the animal during the confinement period or before release should be evaluated by a veterinarian and reported immediately to the local public health department. If signs suggestive of rabies develop in an animal, postexposure prophylaxis

should be initiated in the patient. The animal should be euthanized, its head removed and shipped, under refrigeration, for examination by the PHL.

- Stray or unwanted dogs, cats, or ferrets should either be confined and observed for 10 days or be euthanized immediately and submitted for rabies examination.
- Skunks, raccoons and foxes that bite humans should be euthanized and tested as soon as possible. The length of time between rabies virus appearing in the saliva and onset of symptoms is unknown for these animals and holding them for observation is not acceptable.
- Wild animal hybrids (wolf-hybrids) have an unknown period of rabies virus shedding so these animals should be euthanized and tested rather than confined and observed when they bite humans.
- Bats: Rabies postexposure prophylaxis is recommended for all persons with a bite, scratch, or mucous membrane exposure to a bat, unless the bat is available for testing and is negative for evidence of rabies. Postexposure prophylaxis should be considered for persons who were in the same room as a bat and who might be unaware that a bite or direct contact had occurred (e.g., a sleeping person awakens to find a bat in the room or an adult witnesses a bat in the room with a previously unattended child, mentally disabled person, or intoxicated person) and rabies cannot be ruled out by testing the bat.
- Rodents, lagomorphs and livestock: Squirrels, hamsters, guinea pigs, gerbils, chipmunks, rats, mice, rabbits and hares are almost never infected with rabies and have not been known to transmit it, therefore only rarely require administration of postexposure prophylaxis. Livestock should be considered on a case by case basis.

Submission of Animals to the MSDH PHL for Rabies Testing

The Public Health Laboratory offers free testing of potentially rabid animals that have had contact with humans or pets. Submission of animals that have not bitten a human or pet is discouraged since laboratory capacity is limited. All suspect exposure requires consultation with the District Health Officer or the State Epidemiology Office. Please see the MSDH website at www.healthmys.com for a list of the District Offices or call your local health department for more information.

If there is no reported human or pet exposure or if the animal is one of the following low risk species: squirrel, chipmunk, hamster, guinea pig, gerbil, mole, opossum, rat or mouse, rabbit or hare, woodchuck, beaver, or other animals such as domestic livestock, consult with the District Health Officer or the State Epidemiology Office prior to arranging specimen shipping.

Postexposure Prophylaxis

Rabies is considered medical urgency, not an emergency. However, decisions regarding exposure follow-up should be done as soon as possible. In the United States, many people that receive rabies postexposure prophylaxis (PEP) do not truly need it. MSDH health officials are available for consultation to help determine which bite exposures necessitate PEP.

The essential components of rabies postexposure prophylaxis are wound treatment and, for previously unvaccinated persons, the administration of both Human Rabies Immune Globulin (HRIG) and vaccine. For many types of bite wounds, immediate gentle irrigation with water or a dilute water povidine-iodine solution has been shown to markedly decrease the risk of bacterial infection. In animal studies, thorough wound cleansing alone without other postexposure prophylaxis has been shown to markedly reduce the likelihood of rabies.

Incubation periods of greater than one year have been reported in humans. Thus, when a documented or likely exposure has occurred, postexposure prophylaxis is indicated regardless of the length of the delay, provided the clinical signs of rabies are not present in the person. See the table below for the recommended PEP regimens for persons who have not had pre-exposure vaccination for rabies.

Rabies Diagnosis in Humans

Diagnostic tests may be performed on samples of saliva, serum, spinal fluid, and skin biopsies of hair follicles at the nape of the neck by the CDC. Please call the State Epidemiology Office at 601-576-7725 or 601 576-7400 for information regarding submission of samples from a suspect case.

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References available on request*



Mississippi

Provisional Reportable Disease Statistics

April 2008

		Public Health District									State Totals*			
		I	II	III	IV	V	VI	VII	VIII	IX	Apr 2008	Apr 2007	YTD 2008	YTD 2007
Sexually Transmitted Diseases	Primary & Secondary Syphilis	4	0	0	0	1	1	1	1	3	11	16	36	42
	Total Early Syphilis	5	1	1	1	8	2	1	2	4	25	38	89	154
	Gonorrhea	50	29	106	27	159	71	57	61	60	620	691	2296	2799
	Chlamydia	162	115	223	122	433	170	125	165	155	1670	1873	6008	7905
	HIV Disease	6	4	11	3	13	3	1	0	8	49	48	196	213
Mycobacterial Diseases	Pulmonary Tuberculosis (TB)	2	1	2	0	2	3	1	1	0	12	9	25	29
	Extrapulmonary TB	0	0	1	0	0	0	0	0	1	2	1	6	3
	Mycobacteria Other Than TB	4	2	1	2	7	1	0	4	5	26	13	82	74
Vaccine Preventable Diseases	Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pertussis	1	1	0	0	0	0	1	0	0	3	4	29	14
	Tetanus	0	0	0	0	0	0	0	0	0	0	0	0	0
	Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0	0
	Measles	0	0	0	0	0	0	0	0	0	0	0	0	0
	Mumps	0	0	0	0	0	0	0	0	0	0	0	0	0
Viral Hepatitis	Hepatitis A (acute)	0	0	0	0	0	0	0	0	0	0	0	0	4
	Hepatitis B (acute)	0	0	0	0	0	0	0	0	0	0	2	13	7
	Hepatitis C infection	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Enteric Diseases	Salmonellosis	1	4	0	1	9	1	2	2	1	21	39	107	113
	Shigellosis	0	3	3	1	17	1	0	1	0	26	39	159	86
	Campylobacter Disease	1	0	0	0	3	1	1	0	0	6	15	27	30
	E. coli O157:H7/HUS	0	0	0	0	0	0	0	0	0	0	0	2	1
Other Conditions of Public Health Significance	Invasive Meningococcal Disease	0	0	1	0	1	0	0	0	0	2	0	7	5
	Invasive <i>H. influenzae</i> b Disease	0	0	0	0	0	0	0	0	0	0	1	1	3
	RMSF	0	0	0	0	0	0	0	0	0	0	1	1	1
	West Nile Virus	0	0	0	0	0	0	0	0	0	0	0	2	3
	Lyme Disease	0	0	0	0	0	0	0	0	0	0	0	0	0
	Animal Rabies (bats)	0	0	0	0	0	0	0	0	0	0	0	1	0

*Totals include reports from Department of Corrections and those not reported from a specific District.

Postexposure Prophylaxis for Individuals Not Previously Vaccinated[†]

Treatment	Regimen
Wound treatment	All postexposure prophylaxis should begin with immediate thorough cleansing of all wounds with soap and water. If available, a virucidal agent such as povidine-iodine solution should be used to irrigate the wound.
HRIG*	Administer 20 IU/kg body weight. If possible, the full dose should be infiltrated around any wound(s) and any remaining volume should be administered IM at an anatomical site distant from vaccine administration. Also, HRIG should not be administered in the same syringe as vaccine. Because HRIG might partially suppress active production of antibody, no more than the recommended dose should be given.
Vaccine	HDCV** or PCECV*** 1.0 mL, IM (deltoid area), one each on days 0, 3, 7, 14, and 28.
*	HRIG - Human Rabies Immune Globulin
**	HDCV – Human Diploid Cell Vaccine
***	PCECV – Purified Chick Embryo Cell Vaccine

[†] Adapted from CDC. Human Rabies Prevention – United States, 2008: recommendations of the Advisory Committee on Immunization Practices. MMWR Early Release 2008;57[15].

Useful rabies information may also be found at the following websites:

<http://www.cdc.gov/mmwr/pdf/rr/rr57e507.pdf> - CDC. Human Rabies Prevention – United States, 2008: recommendations of the Advisory Committee on Immunization Practices. MMWR Early Release 2008;57[1-28].

http://www.cdc.gov/ncidod/diseases/submenus/sub_rabies.htm - Centers for Disease Control and Prevention:

www.healthys.com - Mississippi State Department of Health:

www.mbah.state.ms.us - Mississippi Board of Animal Health

<http://www.aphis.usda.gov/ws/rabies/> - United States Department of Agriculture-Wildlife Service: