


## MEMORANDUM

**DATE:** February 13, 2008

**TO:** PVM Students

**FROM:** Peter W. Hellyer   
Associate Dean

**RE:** Rabies Prophylaxis

The top priority in this College is to provide our students an excellent and safe education. Since students are at much higher risk of exposure to rabies within our clinical program, the Dean's Office felt it was necessary to review our policy pertaining to the prophylactic vaccination against rabies. Our policy has previously been to encourage PVM students to be vaccinated and under certain circumstances, such as being employed in the Diagnostic Laboratory, to require vaccination. In 2007 there has been an apparent rise in the numbers of terrestrial mammals with rabies in the state of Colorado. In light of the fact that rabies is often a fatal disease and our students are at a higher risk of coming into contact with rabies infected animals than the general public, the College has revised its policy on vaccination.

- Entering Freshmen PVM students are required to complete the rabies vaccination series during their first year of the PVM Program. The three shot series is given on days 0, 7 and 21 or 28. The two products available are Rabavert®, chick embryo origin or Imovax®, human diploid origin. The approximate cost of each vaccination is \$160, resulting in an overall price of ~\$500.
- Beginning Fall Semester 2008, all students entering the PVM program must be vaccinated during the first year. Vaccination at any time in the past is acceptable since post-exposure prophylaxis is the same regardless of time since the last vaccination.

- Since this is a new policy, current 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> year PVM students may not be vaccinated against rabies at this time. Students entering the 2<sup>nd</sup> and 3<sup>rd</sup> year of the PVM Program must be vaccinated during Fall semester, 2008. Students entering the 4<sup>th</sup> year of the PVM Program in 2008 must be vaccinated by June, 2008.
- *Exemptions:* PVM students wishing to be exempted from vaccination must provide a written statement explaining their reasons to the Associate Dean for the PVM Program who will evaluate the request in consultation with the Director of the Diagnostic Laboratory and the Director of the VTH. Individuals who have completed the rabies vaccination series previously are exempted. Although there may be a number of other legitimate reasons to be exempted, cost of vaccination will not be considered a compelling reason.
- All PVM students must have completed the vaccination sequence or have an exemption by the dates listed above. Failure to do so will prevent the student from continuing in the program.
- Logistics: Rabies vaccination can be arranged through the Hartshorn Health Service. Students may charge the cost of vaccination to their University student account.
- Student financial aid has been consulted about this new policy and the cost of vaccination will be included in the financial aid packages for next year. Requiring vaccination, rather than recommending it, facilitates including the costs within the financial aid award.

The following information regarding rabies in the U.S. was obtained from the Center for Disease Control and Prevention website:

*About Rabies:* <http://www.cdc.gov/rabies/about.html>

Rabies is a preventable viral disease of mammals most often transmitted through the bite of a rabid animal. The vast majority of rabies cases reported to the Centers for Disease Control and Prevention (CDC) each year occur in wild animals like raccoons, skunks, bats, and foxes. Domestic animals account for less than 10% of the reported rabies cases, with cats, cattle, and dogs most often reported rabid.

Rabies virus infects the central nervous system, causing encephalopathy and ultimately death. Early symptoms of rabies in humans are nonspecific, consisting of fever, headache, and general malaise. As the disease progresses, neurological symptoms appear and may include insomnia, anxiety, confusion, slight or partial paralysis, excitation, hallucinations, agitation, hypersalivation, difficulty swallowing, and hydrophobia (fear of water). Death usually occurs within days of the onset of symptoms.

### **Public Health Importance of Rabies**

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Over the last 100 years, rabies in the United States has changed dramatically. More than 90% of all animal cases reported annually to CDC now occur in wildlife; before 1960 the majority were in domestic animals. The principal rabies hosts today are wild carnivores and bats. The number of rabies-related human deaths in the United States has declined from more than 100 annually at the turn of the century to one or two per year in the 1990's. Modern day prophylaxis has proven nearly 100% successful. In the United States, human fatalities associated with rabies occur in people who fail to seek medical assistance, usually because they were unaware of their exposure.

## **Cost of Rabies Prevention**

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Although human rabies deaths are rare, the estimated public health costs associated with disease detection, prevention, and control have risen, exceeding \$300 million annually. These costs include the vaccination of companion animals, animal control programs, maintenance of rabies laboratories, and medical costs, such as those incurred for rabies postexposure prophylaxis (PEP).

Accurate estimates of these expenditures are not available. Although the number of PEPs given in the United States each year is unknown, it is estimated to be about 40,000. When rabies becomes epizootic or enzootic in a region, the number of PEPs in that area increases. Although the cost varies, a course of rabies immune globulin and five doses of vaccine given over a 4-week period typically exceeds \$1,000. The cost per human life saved from rabies ranges from approximately \$10,000 to \$100 million, depending on the nature of the exposure and the probability of rabies in a region.

*Epidemiology:* <http://www.cdc.gov/rabies/epidemiology.html>

## **United States Rabies Surveillance Data, 2006**

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Each year, scientists from the Centers for Disease Control and Prevention (CDC) collect information about cases of animal and human rabies from the state health departments and publish the information in a summary report. The most recent report, entitled "Rabies surveillance in the United States during 2006," contains the epidemiologic information on rabies during 2006. [On the website] is a brief summary of the surveillance information for 2006, including maps showing the distribution of rabies in the United States.

In 2006, 49 states, the District of Columbia, and Puerto Rico tested over 113,000 animals and reported 6,940 cases of rabies in animals and 3 human cases to CDC (Hawaii is the only state that is rabies free). The total number of reported cases increased by 8.2% from those reported in 2005 (6,418 cases).

## **Wild Animals**

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Wild animals accounted for 92% of reported cases of rabies in 2006. Raccoons continued to be the most frequently reported rabid wildlife species (37.7% of all animal cases during 2006), followed by bats (24.4%), skunks (21.5%), foxes (6.2%), and other wild animals, including rodents and lagomorphs (0.6%). Reported cases increased among all wild animals during 2006.

Outbreaks of rabies infections in terrestrial mammals like raccoons, skunks, foxes, and coyotes are found in broad geographic regions across the United States. Geographic boundaries of currently recognized reservoirs for rabies in terrestrial mammals are shown [on the website].

## **Domestic Animals**

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Domestic species accounted for 8% of all rabid animals reported in the United States in 2006. The number of reported rabid domestic animals increased among all species during 2006 except cattle which decreased by 11.8% compared to 2005.

In 2006, cases of rabies in cats increased 18.2% compared with the number reported in 2005. The number of rabies cases reported in cats is routinely 3-4 times as that of rabies reported in cattle or dogs. Pennsylvania reported the largest number of rabid domestic animals (72) for any state, followed by Virginia (62). In 2006 approximately 1% of cats and 0.3% of dogs tested for rabies were found positive.

## **Human Rabies**

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In this century, the number of human deaths in the United States attributed to rabies has declined from 100 or more each year to an average of 2 or 3 each year. Two programs have been responsible for this decline. First, animal control and vaccination programs begun in the 1940's and oral rabies vaccination programs in the 2000's have eliminated domestic dogs as reservoirs of rabies in the United States. Second, effective human rabies vaccines and immunoglobins have been developed .