

Public Veterinary Medicine: Public Health

Compendium of Animal Rabies Prevention and Control, 2000

The National Association of State Public Health Veterinarians (NASPHV) is pleased to provide the 2000 version of the *Compendium of Animal Rabies Prevention and Control* for distribution to practicing veterinarians and officials in animal control, public health, wildlife management, and agriculture in each state. Please note the addition of “prevention” to the title, a change that the Compendium Committee members and consultants believe is a more accurate reflection of the purpose for the document. This preface points out other changes that were made in the document this year and summarizes some of the discussions that took place during the Compendium meeting.

Compendium Changes

In Part I: B. Vaccine Selection, a change was made to address the issue of vaccines licensed by the United States Department of Agriculture (USDA) between Compendium meetings. The Compendium document lists all rabies vaccines licensed by USDA and marketed in the United States so by default any vaccines licensed between meeting of the Compendium Committee should be considered part of the list.

In Part I: C. Route of Inoculation, the reference to one site in the thigh was removed and replaced with the generic statement, “in accordance with the specifications of the product label or package insert” because each vaccine has its own recommendation. Information regarding where to report adverse reactions or vaccine failures was added to this section. The Compendium members and consultants believe that these data are critical to assessing vaccine efficacy and safety in the field and urge practitioners to be conscientious about reporting.

The list of vaccines has also had a title change. “NASPHV Recommendations” was removed from the

title because the information on species, dose, age at primary vaccination and booster doses reflects the USDA approved labeling for the vaccines and not unique recommendations of NASPHV. There are also changes in the group headings of the vaccines to reflect the addition of recombinant parenteral vaccines using canary pox as a vector for the rabies glycoprotein.

In Part III: A. A number 5 was added addressing the use of serology in lieu of vaccination. Previous notices have explained that an antibody titer measures the animal’s response to vaccine, but is not an indicator of protection. The Compendium members and consultants thought this was important enough to be included in the document itself.

In Part III: B. 1. Preexposure Vaccination and Management, the wording used to define “currently vaccinated” was revised in an attempt to clarify the necessity of waiting 30 days after the initial vaccination to consider an animal immunized.

In Part III: B. 1. (c) (2) Other Animals Maintained in Exhibits and in Zoological Parks, the following statement was added: “Carnivores and bats should be housed in a manner that precludes direct contact with the public.”

In Part III: B. 3. (b) Interstate Movement of Animals, the following statement was added: “When an interstate health certificate or certificate of veterinary inspection is required, it should contain the same rabies vaccination information as Form #51.”

In Part III: C. Control Methods in Wildlife, language addressing the role of wildlife rehabilitators in rabies control and the need for standards for such persons was added.

In addition to these substantive changes to the document, many grammatical and some formatting changes were made to improve the quality of the product.

Wolves and Wolf Hybrids

The USDA has published a Proposed Rule in the Federal Register to amend the Virus-Serum-Toxin Act regulations by adding a definition of the term dog to include all members of the species *Canis familiaris*, *Canis lupis* or any dog-wolf cross. Comments on the proposal that were received by November 29, 1999, are being considered and a final rule will probably appear in the spring. If approved, all vaccines that are currently licensed for dogs will automatically be available for on-label use for wolves and wolf hybrids. Such a decision does not, however, address the issue of whether wolves or wolf hybrids would have the same incubation periods and viral shedding times as dogs. Until the vaccine issue is resolved or further data on the pathogene-

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sis of rabies in wolves or wolf hybrids become available, the Compendium Committee elected to make no changes in the document relative to these animals. Postexposure management of wolves and wolf hybrids should be decided on a case-by-case basis, as with other animals for which such information is lacking.

Bats

Bats continue to present unique and intriguing questions related to rabies. As we have seen with the majority of recent cases of rabies in humans, the species of bat and the rabies virus variant may be important to our understanding of the problem. Many more states are now attempting to speciate the bats submitted for rabies testing, but more needs to be done. Both negative and positive bats should be identified as to species and experienced persons should confirm the identity of species, especially for the less common bats.

Rodents

Although still an uncommon occurrence, rabies continues to be found in rodents, especially in large rodents like groundhogs/woodchucks in the raccoon rabies areas. In order to better evaluate the potential for

these animals to transmit rabies, the Rabies Unit at the Centers for Disease Control and Prevention (CDC) would like to receive the entire head of rodents that test positive for rabies. Rabies diagnostic laboratories can store the heads until they complete testing on the brain and ship the heads of positive animals to CDC so other tissues can be examined for rabies virus.

Lactating Cattle

The CDC Rabies Unit would also like to evaluate the potential for rabies transmission via milk from lactating animals. When a lactating animal is suspected of rabies, milk and mammary tissue should be collected and stored. If the animal tests positive, milk and mammary tissue should be sent to CDC.

Vaccination Histories

The diagnosis of rabies in a domestic animal should result in a thorough investigation that includes documentation of previous rabies vaccinations. Animals with a history of vaccination or with a clinical history that is not compatible with rabies should have the diagnosis confirmed by a rabies reference laboratory and virus typing performed.

The purpose of the following Compendium is to provide rabies information to veterinarians, public health officials, and others concerned with rabies prevention and control. These recommendations serve as the basis for animal rabies control programs throughout the United States and facilitate standardization of procedures among jurisdictions, thereby contributing to an effective national rabies control program. This document is reviewed annually and revised as necessary. Immunization procedure recommendations are contained in Part I; all animal rabies vaccines licensed by the United States Department of Agriculture (USDA) and marketed in the United States are listed in Part II; Part III details the principles of rabies control.

Part I: Recommendations for Parenteral Immunization Procedures

- A) **VACCINE ADMINISTRATION:** All animal rabies vaccines should be restricted to use by, or under the direct supervision of, a veterinarian.
- B) **VACCINE SELECTION:** Part II lists all vaccines licensed by USDA and marketed in the United States at the time of publication. New vaccine approvals or changes in label specifications made subsequent to publication should be considered as part of this list. Vaccines used in state and local rabies control programs should have a three year duration of immunity. This constitutes the most effective method of increasing the proportion of immunized dogs and cats in any population.
- C) **ROUTE OF INOCULATION:** All vaccines must be administered in accordance with the specifications of the product label or package insert. Adverse reactions and vaccine failures should be reported to USDA, Animal and Plant Health Inspection Service, Center for Veterinary Biologics at (800) 752-6255 or by e-mail at CVB@usda.gov.
- D) **WILDLIFE AND HYBRID ANIMAL VACCINATION:** The efficacy of parenteral rabies vaccination of wildlife and hybrids (the offspring of wild animals crossbred to domestic dogs and cats) has not been established, and no such vaccine is

licensed for these animals. Zoos or research institutions may establish vaccination programs which attempt to protect valuable animals, but these should not replace appropriate public health activities that protect humans.

- E) **ACCIDENTAL HUMAN EXPOSURE TO VACCINE:** Accidental inoculation may occur during administration of animal rabies vaccine. Such exposure to vaccines listed in Part II constitutes no rabies hazard.
- F) **IDENTIFICATION OF VACCINATED ANIMALS:** All agencies and veterinarians should adopt the standard tag system. This practice will aid the administration of local, state, national, and international control procedures. Animal license tags should be distinguishable in shape and color from rabies tags. Anodized aluminum rabies tags should be no less than 0.064 inches in thickness.
 - 1) **RABIES TAGS**

YEAR	COLOR	SHAPE
2000	Red	Heart
2001	Blue	Rosette
2002	Orange	Oval
2003	Green	Bell
 - 2) **RABIES CERTIFICATE:** All agencies and veterinarians should use the NASPHV form #51, "Rabies Vaccination Certificate," which can be obtained from vaccine manufacturers. Computer-generated forms containing the same information are acceptable.

Part II: Rabies Vaccines Licensed and Marketed in the United States, 2000

Product name	Produced by	Marketed by	For use in	Dosage	Age at primary vaccination	Booster recommended	Route of inoculation
A) MONOVALENT (Inactivated)							
TRIMUNE	Fort Dodge Animal Health License No. 112	Fort Dodge Animal Health	Dogs Cats	1 ml 1 ml	3 months 3 months	1 year later & triennially 1 year later & triennially	IM ² IM
ANNUMUNE	Fort Dodge Animal Health License No. 112	Fort Dodge Animal Health	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM IM
DEFENSOR 1	Pfizer, Incorporated License No. 189	Pfizer, Incorporated	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM or SC ³ SC
DEFENSOR 3	Pfizer, Incorporated License No. 189	Pfizer, Incorporated	Dogs Cats Sheep Cattle	1 ml 1 ml 2 ml 2 ml	3 months 3 months 3 months 3 months	1 year later & triennially 1 year later & triennially Annually Annually	IM or SC SC IM IM
RABDOMUN	Pfizer, Incorporated License No. 189	Schering-Plough	Dogs Cats Sheep Cattle	1 ml 1 ml 2 ml 2 ml	3 months 3 months 3 months 3 months	1 year later & triennially 1 year later & triennially Annually Annually	IM or SC SC IM IM
RABDOMUN 1	Pfizer, Incorporated License No. 189	Schering-Plough	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM or SC SC
RABVAC 1	Fort Dodge Animal Health License No. 112	Fort Dodge Animal Health	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM or SC IM or SC
RABVAC 3	Fort Dodge Animal Health License No. 112	Fort Dodge Animal Health	Dogs Cats Horses	1 ml 1 ml 2 ml	3 months 3 months 3 months	1 year later & triennially 1 year later & triennially Annually	IM or SC IM or SC IM
PRORAB-1	Intervet, Incorporated License No. 286	Intervet, Incorporated	Dogs Cats Sheep	1 ml 1 ml 2 ml	3 months 3 months 3 months	Annually Annually Annually	IM or SC IM or SC IM
PRORAB-3F	Intervet, Incorporated License No. 286	Intervet, Incorporated	Cats	1 ml	3 months	1 year later & triennially	IM or SC
IMRAB 3	Merial, Incorporated License No. 298	Merial, Incorporated	Dogs Cats Sheep Cattle Horses Ferrets	1 ml 1 ml 2 ml 2 ml 2 ml 1 ml	3 months 3 months 3 months 3 months 3 months 3 months	1 year later & triennially 1 year later & triennially 1 year later & triennially Annually Annually Annually	IM or SC IM or SC IM or SC IM or SC IM or SC SC
IMRAB BOVINE PLUS	Merial, Incorporated License No. 298	Merial, Incorporated	Cattle Horses Sheep	2 ml 2 ml 2 ml	3 months 3 months 3 months	Annually Annually 1 year later & triennially	IM or SC IM or SC IM or SC
IMRAB 1	Merial, Incorporated License No. 298	Merial, Incorporated	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM or SC IM or SC
B) MONOVALENT (Rabies glycoprotein, live canary pox vector)							
PUREVAX Feline Rabies	Merial, Incorporated License No. 298	Merial, Incorporated	Cats	1 ml	8 weeks	Annually	SC
C) COMBINATION (Inactivated rabies)							
ECLIPSE 3 + FeLV/R	Fort Dodge Animal Health License No. 112	Schering-Plough	Cats	1 ml	3 months	Annually	IM or SC
ECLIPSE 4 + FeLV/R	Fort Dodge Animal Health License No. 112	Schering-Plough	Cats	1 ml	3 months	Annually	IM or SC
Fel-O-Guard 3 + FeLV/R	Fort Dodge Animal Health License No. 112	Fort Dodge Animal Health	Cats	1 ml	3 months	Annually	IM or SC
Fel-O-Guard 4 + FeLV/R	Fort Dodge Animal Health License No. 112	Fort Dodge Animal Health	Cats	1 ml	3 months	Annually	IM or SC
Fel-O-Vax PCT-R	Fort Dodge Animal Health License No. 112	Fort Dodge Animal Health	Cats	1 ml	3 months	1 year later & triennially	IM
Feline 3 + IMRAB	Merial, Incorporated License No. 298	Merial, Incorporated	Cats	1 ml	3 months	1 year later & triennially	SC
Feline 4 + IMRAB	Merial, Incorporated License No. 298	Merial, Incorporated	Cats	1 ml	3 months	1 year later & triennially	SC
IMRAB Booster + C4	Merial, Incorporated License No. 298	Merial, Incorporated	Dogs	1 ml	8 weeks	Annually	SC
IMRAB Booster + C4/CV	Merial, Incorporated License No. 298	Merial, Incorporated	Dogs	1 ml	8 weeks	Annually	SC
IMRAB Booster + C6	Merial, Incorporated License No. 298	Merial, Incorporated	Dogs	1 ml	8 weeks	Annually	SC
IMRAB Booster + C6/CV	Merial, Incorporated License No. 298	Merial, Incorporated	Dogs	1 ml	8 weeks	Annually	SC
MYSTIQUE II POTOMAVAC+	Bayer Corporation License No. 52	Bayer Corporation	Horses	1 ml	3 months	Annually	IM

Part II: Rabies Vaccines Licensed and Marketed in the United States, 2000, continued

Product name	Produced by	Marketed by	For use in	Dosage	Age at primary vaccination ¹	Booster recommended	Route of inoculation
C) COMBINATION (Inactivated rabies) Continued							
EQUINE POTOMAVAC + IMRAB	Merial, Incorporated License No. 298	Merial, Incorporated	Horses	1 ml	3 months	Annually	IM
D) COMBINATION (Rabies glycoprotein, live canary pox vector)							
PUREVAX Feline 3/Rabies	Merial, Incorporated License No. 298	Merial, Incorporated	Cats	1 ml	8 weeks	Annually	SC
PUREVAX Feline 3/Rabies + LEUCAT	Merial, Incorporated License No. 298	Merial, Incorporated	Cats	1 ml	8 weeks	Annually	SC
PUREVAX Feline 4/Rabies	Merial, Incorporated License No. 298	Merial, Incorporated	Cats	1 ml	8 weeks	Annually	SC
PUREVAX Feline 4/Rabies + LEUCAT	Merial, Incorporated License No. 298	Merial, Incorporated	Cats	1 ml	8 weeks	Annually	SC
E) ORAL (Rabies glycoprotein, live vaccinia vector) - RESTRICTED TO USE IN STATE AND FEDERAL RABIES CONTROL PROGRAMS							
RABORAL V-RG	Merial, Incorporated License No. 298	Merial, Incorporated	Raccoons	N/A	N/A	As determined by local authorities	Oral
¹ Minimum age (or older) and revaccinated one year later. ² Intramuscularly. ³ Subcutaneously.							

Part III: Rabies Control

A) PRINCIPLES OF RABIES CONTROL

- 1) **RABIES EXPOSURE:** Rabies is transmitted only when the virus is introduced into bite wounds, open cuts in skin, or onto mucous membranes.
- 2) **HUMAN RABIES PREVENTION:** Rabies in humans can be prevented either by eliminating exposures to rabid animals or by providing exposed persons with prompt local treatment of wounds combined with appropriate passive and active immunization. The rationale for recommending preexposure and postexposure rabies prophylaxis and details of their administration can be found in the current recommendations of the Advisory Committee on Immunization Practices (ACIP).¹ These recommendations, along with information concerning the current local and regional status of animal rabies and the availability of human rabies biologics, are available from state health departments.
- 3) **DOMESTIC ANIMALS:** Local governments should initiate and maintain effective programs to ensure vaccination of all dogs, cats, and ferrets and to remove strays and unwanted animals. Such procedures in the United States have reduced laboratory confirmed cases in dogs from 6,949 in 1947 to 113 in 1998. Since more rabies cases are reported annually involving cats (282 in 1998) than dogs, vaccination of cats should be required. The vaccination procedures and the licensed animal vaccines are specified in Parts I and II of the Compendium.
- 4) **RABIES IN WILDLIFE:** The control of rabies among wildlife reservoirs is difficult. Vaccination of free-ranging wildlife or selective population reduction may be useful in some situations, but the success of such procedures depends on the circumstances surrounding each rabies outbreak. (See Part C. Control Methods in Wildlife.)
- 5) **RABIES SEROLOGY:** Evidence of circulating

rabies virus neutralizing antibodies should not be used as a substitute for current vaccination in managing rabies exposures or determining the need for booster vaccinations.

B) CONTROL METHODS IN DOMESTIC AND CONFINED ANIMALS

1) PREEXPOSURE VACCINATION AND MANAGEMENT

Parenteral animal rabies vaccines should be administered only by, or under the direct supervision of, a veterinarian. This is the only way to ensure that a responsible person can be held accountable to assure the public that the animal has been properly vaccinated. Within 1 month after primary vaccination, a peak rabies antibody titer is reached and the animal can be considered immunized. An animal is currently vaccinated and is considered immunized if the primary vaccination was administered at least 30 days previously and vaccinations have been administered in accordance with this Compendium. Regardless of the age at initial vaccination, a second vaccination should be given one year later. (See Parts I and II for vaccines and procedures.)

a) DOGS, CATS, AND FERRETS

All dogs, cats, and ferrets should be vaccinated against rabies and revaccinated in accordance with Part II of this Compendium. If a previously vaccinated animal is overdue for a booster, it should be revaccinated with a single dose of vaccine and placed on an annual or triennial schedule depending on the type of vaccine used.

b) LIVESTOCK

Vaccinating all livestock is neither economically feasible nor justified from a public health standpoint. However, consideration should be given to vaccination of livestock that are particularly valuable and/or may have frequent contact with humans.

- c) **OTHER ANIMALS**
- 1) **WILD**
 No parenteral rabies vaccine is licensed for use in wild animals. Because of the risk of rabies in wild animals (especially raccoons, skunks, coyotes, foxes, and bats), the AVMA, the NASPHV, and the CSTE strongly recommend the enactment of state laws prohibiting the importation, distribution, relocation, or keeping of wild animals or hybrids as pets.
 - 2) **MAINTAINED IN EXHIBITS AND IN ZOOLOGICAL PARKS**
 Captive animals not completely excluded from all contact with rabies vectors can become infected. Moreover, wild animals may be incubating rabies when initially captured; therefore, wild-caught animals susceptible to rabies should be quarantined for a minimum of 6 months before being exhibited. Employees who work with animals at such facilities should receive preexposure rabies immunization. The use of pre- or postexposure rabies immunizations for employees who work with animals at such facilities may reduce the need for euthanasia of captive animals. Carnivores and bats should be housed in a manner that precludes direct contact with the public.
 - 2) **STRAY ANIMALS**
 Stray dogs, cats, and ferrets should be removed from the community. Local health departments and animal control officials can enforce the removal of strays more effectively if owned animals are confined or kept on leash. Strays should be impounded for at least 3 days to determine if human exposure has occurred and to give owners sufficient time to reclaim animals.
 - 3) **IMPORTATION AND INTERSTATE MOVEMENT OF ANIMALS**
 - a) **INTERNATIONAL**
 The CDC regulates the importation of dogs and cats into the United States, but current Public Health Service regulations (42 CFR No. 71.51) governing the importation of such animals are insufficient to prevent the introduction of rabid animals into the country. All dogs and cats imported from countries with endemic rabies should be currently vaccinated against rabies as recommended in this Compendium. The appropriate public health official of the state of destination should be notified within 72 hours of any unvaccinated dog or cat imported into his or her jurisdiction. The conditional admission of such animals into the United States is subject to state and local laws governing rabies. Failure to comply with these requirements should be promptly reported to the Division of Quarantine, CDC, (404) 639-8107.
 - b) **INTERSTATE**
 Prior to interstate movement, dogs, cats, and ferrets should be currently vaccinated against rabies in accordance with the Compendium's recommendations (See Part III, B.1. Preexposure Vaccination and Management). Animals in transit should be accompanied by a currently valid NASPHV Form #51, Rabies Vaccination Certificate. When an interstate health certificate or certificate of veterinary inspection is required, it should contain the same rabies vaccination information as Form #51.
 - 4) **ADJUNCT PROCEDURES**
 Methods or procedures which enhance rabies control include the following:
 - a) **LICENSURE.** Registration or licensure of all dogs, cats, and ferrets may be used to aid in rabies control. A fee is frequently charged for such licensure and revenues collected are used to maintain rabies or animal control programs. Vaccination is an essential prerequisite to licensure.
 - b) **CANVASSING OF AREA.** House-to-house canvassing by animal control personnel facilitates enforcement of vaccination and licensure requirements.
 - c) **CITATIONS.** Citations are legal summonses issued to owners for violations, including the failure to vaccinate or license their animals. The authority for officers to issue citations should be an integral part of each animal control program.
 - d) **ANIMAL CONTROL.** All communities should incorporate stray animal control, leash laws, and training of personnel in their programs.
 - 5) **POSTEXPOSURE MANAGEMENT**
ANY ANIMAL POTENTIALLY EXPOSED TO RABIES VIRUS (See Part III, A. 1. Rabies Exposure) BY A WILD, CARNIVOROUS MAMMAL OR A BAT THAT IS NOT AVAILABLE FOR TESTING SHOULD BE REGARDED AS HAVING BEEN EXPOSED TO RABIES.
 - a) **DOGS, CATS, AND FERRETS**
 Unvaccinated dogs, cats, and ferrets exposed to a rabid animal should be euthanatized immediately. If the owner is unwilling to have this done, the animal should be placed in strict isolation for 6 months and vaccinated 1 month before being released. Animals with expired vaccinations need to be evaluated on a case-by-case basis. Dogs, cats, and ferrets that are currently vaccinated should be revaccinated immediately, kept under the owner's control, and observed for 45 days.
 - b) **LIVESTOCK**
 All species of livestock are susceptible to rabies; cattle and horses are among the most frequently infected. Livestock exposed to a rabid animal and currently vaccinated with a vaccine approved by USDA for that species should be revaccinated immediately and

observed for 45 days. Unvaccinated livestock should be slaughtered immediately. If the owner is unwilling to have this done, the animal should be kept under close observation for 6 months.

The following are recommendations for owners of unvaccinated livestock exposed to rabid animals:

- 1) If the animal is slaughtered within 7 days of being bitten, its tissues may be eaten without risk of infection, provided liberal portions of the exposed area are discarded. Federal meat inspectors must reject for slaughter any animal known to have been exposed to rabies within 8 months.
- 2) Neither tissues nor milk from a rabid animal should be used for human or animal consumption. Pasteurization temperatures will inactivate rabies virus, therefore, drinking pasteurized milk or eating cooked meat does not constitute a rabies exposure.
- 3) Having more than one rabid animal in a herd or having herbivore-to-herbivore transmission is rare; therefore, restricting the rest of the herd if a single animal has been exposed to or infected by rabies may not be necessary.

c) **OTHER ANIMALS**

Other animals bitten by a rabid animal should be euthanatized immediately. Animals maintained in USDA licensed research facilities or accredited zoological parks should be evaluated on a case-by-case basis.

6) **MANAGEMENT OF ANIMALS THAT BITE HUMANS**

- a) A healthy dog, cat, or ferret that bites a person should be confined and observed daily for 10 days; administration of rabies vaccine is not recommended during the observation period. Such animals should be evaluated by a veterinarian at the first sign of illness during confinement. Any illness in the animal should be reported immediately to the local health department. If signs suggestive of rabies develop, the animal should be euthanatized, its head removed, and the head shipped under refrigeration (not frozen) for examination of the brain by a qualified laboratory designated by the local or state health department. Any stray or unwanted dog, cat, or ferret that bites a person may be euthanatized immediately and the head submitted as described above for rabies examination.
- b) Other biting animals which might have exposed a person to rabies should be reported immediately to the local health department. Prior vaccination of an animal may

not preclude the necessity for euthanasia and testing if the period of virus shedding is unknown for that species. Management of animals other than dogs, cats, and ferrets depends on the species, the circumstances of the bite, the epidemiology of rabies in the area, and the biting animal's history, current health status, and potential for exposure to rabies.

C) **CONTROL METHODS IN WILDLIFE**

The public should be warned not to handle wildlife. Wild mammals and hybrids that bite or otherwise expose persons, pets or livestock should be considered for euthanasia and rabies examination. A person bitten by any wild mammal should immediately report the incident to a physician who can evaluate the need for antirabies treatment (See current rabies prophylaxis recommendations of the ACIP¹). State regulated wildlife rehabilitators may play a role in a comprehensive rabies control program. Minimum standards for persons who rehabilitate wild mammals should include rabies vaccination, appropriate training and continuing education.

1) **TERRESTRIAL MAMMALS**

The use of licensed oral vaccines for the mass immunization of free-ranging wildlife should be considered in selected situations, with the approval of the state agency responsible for animal rabies control. Continuous and persistent government-funded programs for trapping or poisoning wildlife are not cost effective in reducing wildlife rabies reservoirs on a statewide basis. However, limited control in high-contact areas (e.g., picnic grounds, camps, suburban areas) may be indicated for the removal of selected high-risk species of wildlife. The state wildlife agency and state health department should be consulted for coordination of any proposed vaccination or population reduction programs.

2) **BATS**

Indigenous rabid bats have been reported from every state except Hawaii, and have caused rabies in at least 33 humans in the United States. Bats should be excluded from houses and adjacent structures to prevent direct association with humans. Such structures should then be made bat-proof by sealing entrances used by bats. It is neither feasible nor desirable to control rabies in bats by programs to reduce bat populations.

Reference

1. Centers for Disease Control and Prevention. Rabies prevention—United States, 1999. Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Morb Mortal Wkly Rep* 1999;48:1–21.