

# Public Veterinary Medicine: Public Health

## Compendium of Animal Rabies Control, 1996

The purpose of this Compendium is to provide rabies information to veterinarians, public health officials, and others concerned with rabies 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 USDA and marketed in the United States are listed in Part II; Part III details the principles of rabies control.

### Part I: Recommendations for 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:** In comprehensive rabies control programs, only vaccines with a 3-year duration of immunity should be used. This constitutes the most effective method of increasing the proportion of immunized dogs and cats in any population. (See Part II.)
- C) **ROUTE OF INOCULATION:** All vaccines must be administered in accordance with the specifications of the product label or package insert. If adminis-

tered intramuscularly, it must be at one site in the thigh.

- D) **WILDLIFE VACCINATION:** Parenteral vaccination of captive wildlife is not recommended since the efficacy of rabies vaccines in such animals has not been established and no vaccine is licensed for wildlife. For this reason, and because virus shedding periods are unknown, wild or exotic carnivores and bats should not be kept as pets. Zoos or research institutions may establish vaccination programs which attempt to protect valuable animals, but not in lieu of appropriate public health activities that protect humans. The use of licensed oral vaccines for the mass immunization of wildlife should be considered in selected situations, with the approval of the state agency responsible for animal rabies control.
- E) **ACCIDENTAL HUMAN EXPOSURE TO VACCINE:** Accidental inoculation may occur during administration of animal rabies vaccine. Such exposure to inactivated vaccines 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.

---

From the National Association of State Public Health Veterinarians, Inc.

The NASPHV Committee—Suzanne R. Jenkins, VMD, MPH, Chair; Keith A. Clark, DVM, PhD; John G. Debbie, MS, DVM; Russell J. Martin, DVM, MPH; Grayson B. Miller, Jr, MD; F. T. Satalowich, DVM, MSPH; Faye E. Sorhage, VMD, MPH.

Consultants to the committee—James E. Childs, ScD; Centers for Disease Control and Prevention (CDC); David W. Dreesen, DVM, MVP; David Hines, PhD; Veterinary Biologics Section, Animal Health Institute; William L. Ingalls, DVM, MS; AVMA Council on Public Health and Regulatory Veterinary Medicine; Robert B. Miller, DVM, MPH; Animal and Plant Health Inspection Service, USDA; Charles E. Rupprecht, VMD, PhD (CDC); R. Keith Sikes, DVM, MPH.

Endorsed by the American Veterinary Medical Association (AVMA) and the Council of State and Territorial Epidemiologists (CSTE).

Address all correspondence to Suzanne R. Jenkins, VMD, MPH, Virginia Department of Health, Office of Epidemiology, PO Box 2448, Richmond, VA 23218.

#### 1) **RABIES TAGS:**

YEAR	COLOR	SHAPE
1996	Red	Heart
1997	Blue	Rosette
1998	Orange	Oval
1999	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.

**Compendium of Animal Rabies Control, 1996**  
**Part II: Vaccines Marketed in US and NASPHV Recommendations**

Product Name	Produced By	Marketed By	For Use In	Dosage	Age at Primary Vaccination <sup>1</sup>	Booster Recommended	Route of Inoculation
<b>A) INACTIVATED</b>							
TRIMUNE	Fort Dodge License No. 112	Fort Dodge	Dogs Cats	1 ml 1 ml	3 months & 1 year later 3 months & 1 year later	Triennially Triennially	IM <sup>2</sup> IM
ANNAMUNE	Fort Dodge License No. 112	Fort Dodge	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM IM
DURA-RAB 1	ImmunoMed License No. 421	ImmunoMed, Vedco, Inc.	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM IM
DURA-RAB 3	ImmunoMed License No. 421	ImmunoMed, Vedco, Inc.	Dogs Cats	1 ml 1 ml	3 months & 1 year later 3 months & 1 year later	Triennially Triennially	IM IM
RABCINE-3	ImmunoMed License No. 421	Pfizer, Inc.	Dogs Cats	1 ml 1 ml	3 months & 1 year later 3 months & 1 year later	Triennially Triennially	IM IM
ENDURALL-P or DEFENSOR 1	Pfizer, Inc. License No. 189	Pfizer, Inc.	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM or SC <sup>3</sup> SC
RABGUARD-TC	Pfizer, Inc. License No. 189	Pfizer, Inc.	Dogs Cats Sheep Cattle Horses	1 ml 1 ml 1 ml 1 ml 1 ml	3 months & 1 year later 3 months & 1 year later 3 months 3 months 3 months	Triennially Triennially Annually Annually Annually	IM IM IM IM IM
DEFENSOR or DEFENSOR 3	Pfizer, Inc. License No. 189	Pfizer, Inc.	Dogs Cats Sheep Cattle	1 ml 1 ml 2 ml 2 ml	3 months & 1 year later 3 months & 1 year later 3 months 3 months	Triennially Triennially Annually Annually	IM or SC SC IM IM
RABDOMUN	Pfizer, Inc. License No. 189	Mallinckrodt Veterinary, Inc.	Dogs Cats Sheep Cattle	1 ml 1 ml 2 ml 2 ml	3 months & 1 year later 3 months & 1 year later 3 months 3 months	Triennially Triennially Annually Annually	IM or SC SC IM IM
RABDOMUN 1	Pfizer, Inc. License No. 189	Mallinckrodt Veterinary, Inc.	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM or SC SC
SENTRYRAB-1	Pfizer, Inc. License No. 225	Synbiotics Corp.	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM IM
RABVAC 1	Solvay Animal Health, Inc. License No. 195 & 195A	Solvay Animal Health, Inc.	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM or SC IM or SC
RABVAC 3	Solvay Animal Health, Inc. License No. 195 & 195A	Solvay Animal Health, Inc.	Dogs Cats Horses	1 ml 1 ml 2 ml	3 months & 1 year later 3 months & 1 year later 3 months	Triennially Triennially Annually	IM or SC IM or SC IM
PRORAB-1	Intervet, Inc. License No. 286	Intervet, Inc.	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
RM IMRAB 1	Rhone Merieux, Inc. License No. 298	Rhone Merieux, Inc.	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM or SC IM or SC
RM IMRAB BOVINE PLUS	Rhone Merieux, Inc. License No. 298	Rhone Merieux, Inc.	Cattle Horses Sheep	2 ml 2 ml 2 ml	3 months 3 months 3 months & 1 year later	Annually Annually Triennially	IM or SC IM or SC IM or SC
RM IMRAB 3	Rhone Merieux, Inc. License No. 298	Rhone Merieux, Inc.	Dogs Cats Sheep Cattle Horses Ferrets	1 ml 1 ml 2 ml 2 ml 2 ml 1 ml	3 months & 1 year later 3 months & 1 year later 3 months & 1 year later 3 months 3 months 3 months	Triennially Triennially Triennially Annually Annually Annually	IM or SC IM or SC IM or SC IM or SC IM or SC SC
PRORAB-3F	Intervet, Inc. License No. 286	Intervet, Inc.	Cats	1 ml	3 months & 1 year later	Triennially	IM or SC

-Continued-

Product Name	Produced By	Marketed By	For Use In	Dosage	Age at Primary Vaccination <sup>1</sup>	Booster Recommended	Route of Inoculation
<b>B) COMBINATION (inactivated rabies)</b>							
ECLIPSE 3 KP-R	Solvay Animal Health, Inc. License No. 195 & 195A	Solvay Animal Health, Inc.	Cats	1 ml	3 months	Annually	IM <sup>2</sup>
ECLIPSE 4 KP-R	Solvay Animal Health, Inc. License No. 195 & 195A	Solvay Animal Health, Inc.	Cats	1 ml	3 months	Annually	IM
FEL-O-VAX PCT-R	Fort Dodge License No. 112	Fort Dodge	Cats	1 ml	3 months & 1 year later	Triennially	IM
RM FELINE 4 + IMRAB	Rhone Merieux, Inc. License No. 298	Rhone Merieux	Cats	1 ml	3 months & 1 year later	Triennially	SC <sup>3</sup>
RM FELINE 3 + IMRAB	Rhone Merieux, Inc. License No. 298	Rhone Merieux	Cats	1 ml	3 months & 1 year later	Triennially	SC
RM EQUINE POTOMAVAC + IMRAB	Rhone Merieux, Inc. License No. 298	Rhone Merieux	Horses	1 ml	3 months	Annually	IM
ECLIPSE 3 + FeLV/R	Solvay Animal Health, Inc. License No. 195 & 195A	Solvay Animal Health, Inc.	Cats	1 ml	3 months	Annually	IM or SC
ECLIPSE 4 + FeLV/R	Solvay Animal Health, Inc. License No. 195 & 195A	Solvay Animal Health, Inc.	Cats	1 ml	3 months	Annually	IM or SC
MYSTIQUE II	Bayer Corp License No. 52	Bayer Corp	Horses	1 ml	3 months & 3-4 weeks later <sup>4</sup>	Annually	IM

<sup>1</sup> Three months of age (or older) and revaccinated one year later.

<sup>2</sup> Intramuscularly

<sup>3</sup> Subcutaneously

<sup>4</sup> Three months of age (or older) and revaccinated 3 to 4 weeks later.

### Part III: Rabies Control

#### A) PRINCIPLES OF RABIES CONTROL:

- 1) **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 Immunization Practices Advisory Committee (ACIP), of the Public Health Service (PHS). 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.
- 2) **DOMESTIC ANIMALS:** Local governments should initiate and maintain effective programs to ensure vaccination of all dogs and cats and to remove strays and unwanted animals. Such procedures in the United States have reduced laboratory confirmed rabies cases in dogs from 6,949 in 1947 to 153 in 1994. Since more rabies cases are reported annually involving cats than dogs, vaccination of cats should be required. The recommended vaccination procedures and the licensed animal vaccines are specified in Parts I and II of the Compendium.
- 3) **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 C. Control Methods in Wildlife.)

#### B) CONTROL METHODS IN DOMESTIC AND CONFINED ANIMALS:

- 1) **PREEXPOSURE VACCINATION AND MANAGEMENT:** 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 it was vaccinated at least 30 days previously, and all 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 recommended vaccines and procedures.)
  - a) **DOGS AND CATS:** All dogs and cats should be vaccinated against rabies at 3 months of age 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) **FERRETS:** Ferrets may be vaccinated against rabies at 3 months of age and re-vaccinated in accordance with Part II of this Compendium.
- c) **LIVESTOCK:** It is neither economically feasible nor justified from a public health standpoint to vaccinate all livestock against rabies. However, consideration should be given to the vaccination of livestock, especially animals which are particularly valuable and/or may have frequent contact with humans, in areas where rabies is epizootic in terrestrial animals.
- d) **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 and wild animals crossbred to domestic dogs and cats 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 180 days before exhibition. Employees who work with animals at such facilities should receive preexposure rabies immunization. The use of pre- or post-exposure rabies immunizations of employees who work with animals at such facilities may reduce the need for euthanasia of captive animals.
  - 2) **STRAY ANIMALS:** Stray dogs or cats should be removed from the community, especially in areas where rabies is epizootic. 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 give owners sufficient time to reclaim animals and to determine if human exposure has occurred.
  - 3) **QUARANTINE:**
    - a) **INTERNATIONAL:** CDC regulates the importation of dogs and cats into the United States, but present PHS 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 enzootic 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 and cats should be currently vaccinated against rabies in accordance with the Compendium's recommendations (see B.1. Preexposure Vaccination and Management). Animals in transit should be accompanied by a currently valid NASPHV Form #51, Rabies Vaccination Certificate.
    - 4) **ADJUNCT PROCEDURES:** Methods or procedures which enhance rabies control include:
      - a) **LICENSURE:** Registration or licensure of all dogs and cats 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 BITTEN OR SCRATCHED BY A WILD, CARNIVOROUS MAMMAL (OR A BAT) NOT AVAILABLE FOR TESTING SHOULD BE REGARDED AS HAVING BEEN EXPOSED TO RABIES.**
      - a) **DOGS AND CATS:** Unvaccinated dogs and cats exposed to a rabid animal should be euthanized 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 and cats 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 very 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. However, since pasteurization temperatures will inactivate rabies virus, drinking pasteurized milk or eating cooked meat does not constitute a rabies exposure.
  - 3) It is rare to have more than one rabid animal in a herd, or herbivore to herbivore transmission; therefore, it may not be necessary to restrict the rest of the herd if a single animal has been exposed to or infected by rabies.
- c) **OTHER ANIMALS:** Other animals bitten by a rabid animal should be euthanized immediately. Such animals currently vaccinated with a vaccine approved by USDA for that species may be revaccinated immediately and placed in strict isolation for at least 90 days.
- 6) **MANAGEMENT OF ANIMALS THAT BITE HUMANS:** A healthy dog or cat that bites a person should be confined and observed for 10 days; it is recommended that rabies vaccine not be administered during the observation period. Such animals should be evaluated by a veteri-

narian 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 humanely killed, its head removed, and the head shipped under refrigeration for examination by a qualified laboratory designated by the local or state health department. Any stray or unwanted dog or cat that bites a person may be humanely killed immediately and the head submitted as described above for rabies examination. 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 and cats depends on the species, the circumstances of the bite, and the epidemiology of rabies in the area.

- C) **CONTROL METHODS IN WILDLIFE:** The public should be warned not to handle wildlife. Wild mammals (as well as the offspring of wild species crossbred with domestic dogs and cats) that bite or otherwise expose people, 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 ACIP.)

1) **TERRESTRIAL MAMMALS:** 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 (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:**

- a) Indigenous rabid bats have been reported from every state except Alaska and Hawaii, and have caused rabies in at least 22 humans in the United States. It is neither feasible nor desirable, however, to control rabies in bats by programs to reduce bat populations.
- b) Bats should be excluded from houses and surrounding structures to prevent direct association with humans. Such structures should then be made bat-proof by sealing entrances used by bats.