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Compendium of Animal Rabies Control, 1999

National Association of State Public Health Veterinarians, Inc.

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES
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Compendium of Animal Rabies Control, 1999 National Association of State Public Health Veterinarians, Inc.*

The purpose of this Compendium is to provide information on rabies control 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 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

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 administered intramuscularly, the vaccine must be at one site in the thigh.

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D. Vaccination of Wildlife and Hybrid Animals

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 that 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 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 vaccine tags. Anodized aluminum rabies tags should be no less than 0.064 inches in thickness.

1. **Rabies Tags.**

Calendar year	Color	Shape
1999	Green	Bell
2000	Red	Heart
2001	Blue	Rosette
2002	Orange	Oval

2. **Rabies Certificate.** All agencies and veterinarians should use the National Association of State Public Health Veterinarians, Inc. (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 in the United States and NASPHV* Recommendations, 1999

Product name	Produced by	Marketed by	For use in	Dosage (mL)	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 1	3 mos & 1 yr later	Triennially Triennially	IM§ IM
ANNUMUNE	Fort Dodge Animal Health License No. 112	Fort Dodge Animal Health	Dogs Cats	1 1	3 mos 3 mos	Annually Annually	IM IM
DEFENSOR 1	Pfizer, Inc. License No. 189	Pfizer, Inc.	Dogs Cats	1 1	3 mos 3 mos	Annually Annually	IM or SC¶ SC
DEFENSOR 3	Pfizer, Incorporated License No. 189	Pfizer, Incorporated	Dogs Cats Sheep Cattle	1 1 2 2	3 mos & 1 yr later 3 mos & 1 yr later 3 mos 3 mos	Triennally Triennally Annually Annually	IM or SC SC IM IM
RABDOMUN	Pfizer, Inc. License No. 189	Schering-Plough	Dogs Cats Sheep Cattle	1 1 2 2	3 mos & 1 yr later 3 mos 3 mos	Triennially Triennially Annually Annually	IM or SC SC IM IM
RABDOMUN 1	Pfizer, Inc. License No. 189	Schering-Plough	Dogs Cats	1 1	3 mos 3 mos	Annually Annually	IM or SC IM or SC
RABVAC 1	Fort Dodge Animal Health License No. 112	Fort Dodge Animal Health	Dogs Cats	1 1	3 mos 3 mos	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 1 2	3 mos & 1 yr later 3 mos	Triennially Triennially Annually	IM or SC IM or SC IM
PRORAB-1	Intervet, Inc. License No. 286	Intervet, Inc.	Dogs Cats Sheep	1 1 2	3 mos 3 mos 3 mos	Annually Annually Annually	IM or SC IM or SC IM
PRORAB-3F	Intervet, Inc. License No. 286	Intervet, Inc.	Cats	1	3 mos & 1 yr later	Triennially	IM or SC

Part II: Rabies Vaccines Licensed in the United States and NASPHV* Recommendations, 1999 — Continued

Product name	Produced by	Marketed by	For use in	Dosage (mL)	Age at primary vaccination†	Booster recommended	Route of inoculation
IMRAB 3	Merial, Inc.** License No. 298	Merial, Inc.	Dogs	1	3 mos & 1 yr later	Triennially	IM or SC
			Cats	1		Triennially	IM or SC
			Sheep	2		Triennially	IM or SC
			Cattle	2	3 mos	Annually	IM or SC
			Horses	2	3 mos	Annually	IM or SC
			Ferrets	1	3 mos	Annually	SC
IMRAB BOVINE PLUS	Merial, Inc. License No. 298	Merial, Inc.	Cattle	2	3 mos	Annually	IM or SC
			Horses	2	3 mos	Annually	IM or SC
			Sheep	2	3 mos & 1 yr later	Triennially	IM or SC
IMRAB 1	Merial, Inc. License No. 298	Merial, Inc.	Dogs	1	3 mos	Annually	IM or SC
			Cats	1	3 mos	Annually	IM or SC
B) COMBINATION (Inactivated Rabies)							
ECLIPSE 3 + FeLV/R	Fort Dodge Animal Health License No. 112	Schering-Plough	Cats	1	3 mos	Annually	IM or SC
ECLIPSE 4 + FeLV/R	Fort Dodge Animal Health License No. 112	Schering-Plough	Cats	1	3 mos	Annually	IM or SC
Fel-O-Guard 3 + FeLV/R	Fort Dodge Animal Health License No. 112	Fort Dodge Animal Health	Cats	1	3 mos	Annually	IM or SC
Fel-O-Guard 4 + FeLV/R	Fort Dodge Animal Health License No. 112	Fort Dodge Animal Health	Cats	1	3 mos	Annually	IM or SC
FEL-O-Vax PCT-R	Fort Dodge Animal Health License No. 112	Fort Dodge Animal Health	Cats	1	3 mos & 1 yr later	Triennially	IM

Part II: Rabies Vaccines Licensed in the United States and NASPHV* Recommendations, 1999 — Continued

Product name	Produced by	Marketed by	For use in	Dosage (mL)	Age at primary vaccination†	Booster recommended	Route of inoculation
FELINE 4 + IMRAB	Merial Inc.** License No. 298	Merial, Inc.	Cats	1	3 mos & 1 yr later	Triennially	SC
FELINE 3 + IMRAB	Merial, Inc. License No. 298	Merial, Inc.	Cats	1	3 mos & 1 yr later	Triennially	SC
Purevax Feline 4/ Rabies + Leucat	Merial, Inc. License No. 298	Merial, Inc.	Cats	1	8 wks & 1 yr later	Annually	SC
Purevax Feline 4/ Rabies	Merial, Inc. License No. 298	Merial, Inc.	Cats	1	8 wks & 1 yr later	Annually	SC
Purevax Feline 3/ Rabies + Leucat	Merial, Inc. License No. 298	Merial, Inc.	Cats	1	8 wks & 1 yr later	Annually	SC
Purevax Feline 3/ Rabies	Merial, Inc. License No. 298	Merial, Inc.	Cats	1	8 wks & 1 yr later	Annually	SC
Purevax Feline Rabies	Merial, Inc. License No. 298	Merial, Inc.	Cats	1	8 wks & 1 yr later	Annually	SC
EQUINE POTOMAVAC+ IMRAB	Merial, Inc. License No. 298	Merial, Inc.	Horses	1	3 mos	Annually	IM
MYSTIQUE II	Bayer Corp. License No. 52	Bayer Corp.	Horses	1	3 mos	Annually	IM
C) ORAL (Rabies Glycoprotein, Live Vaccinia Vector) — RESTRICTED TO USE IN STATE AND FEDERAL RABIES CONTROL PROGRAMS							
RABORAL V-RG	Merial, Inc. License No. 298	Merial, Inc.	Raccoons	N/A	N/A	Determined by state authorities	Oral

*National Association of State Public Health Veterinarians, Inc.
†≥3 months of age and revaccinated 1 year later.
§Intramuscularly.
¶Subcutaneously.
**Formerly Rhone Mérieux, Inc.

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).* 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 126 in 1997. Because more rabies cases are reported annually involving cats (300 in 1997) 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.
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 III.C. Control Methods in Wildlife).

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 it was vaccinated at least 30 days previously and if all vaccinations have been administered in accordance with this Compendium. Regardless of the age of the animal at initial vaccination, a second vaccination should be given 1 year later (See Parts I and II for recommended vaccines and procedures).
   a. **Dogs, cats, and ferrets.** All dogs, cats, and ferrets 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.

*CDC. Human rabies prevention — United States, 1999: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 1999;48(No. RR-1):1–21.

b. **Livestock.** Vaccinating all livestock against rabies 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 for rabies in wild animals (especially raccoons, skunks, coyotes, foxes, and bats), the NASPHV, the American Veterinary Medical Association (AVMA), and the Council of State and Territorial Epidemiologists (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 180 days 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.

2. **Stray Animals.** Stray dogs, cats, or 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.** 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.

4. **Adjunct Procedures.** Methods or procedures that 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 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, 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 those most frequently infected. Livestock exposed to a rabid animal and currently vaccinated with a vaccine approved by the 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. However, because pasteurization temperatures will inactivate rabies virus, 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 euthanized 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 healthy dog, cat, or ferret that bites a person should be confined and observed for 10 days; not administering rabies vaccine during the observation period is recommended. 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 euthanized, 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 euthanized immediately and the head submitted as described above for rabies examination. Other animals that might have exposed a person to rabies should be reported immediately to the local health department. Prior vaccination of an animal does 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. Postexposure management of persons should follow the recommendations of the ACIP.*

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 ACIP*).

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, or 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 32 humans in the United States. However, controlling rabies in bats by programs to reduce bat populations is neither feasible nor desirable. 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. Persons with frequent bat contact should be immunized against rabies as recommended by the ACIP.*

*CDC. Human rabies prevention — United States, 1999: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 1999;48(No. RR-1):1–21.

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