CONTINUATION SHEET

MINUTES OF THE SENATE COMMITTEE ON PUBLIC HEALTH AND WELFARE, Room 526-S Statehouse, at 10:00 a.m. on March 10, 1994.

Approved: 3-18-94
Date

MINUTES OF THE SENATE COMMITTEE ON PUBLIC HEALTH AND WELFARE

The meeting was called to order by Chair Sandy Praeger at 10:00 a.m. on March 10, 1994 in Room 526-S of the Capitol.

All members were present except:

Committee staff present: Norman Furse, Revisor of Statutes
William Wolff, Legislative Research Department
Emalene Correll, Legislative Research Department
Jo Ann Bunten, Committee Secretary

Conferees appearing before the committee:

Lana Oleen, Kansas State Senator, Manhattan
Troy Lynn Eckart, Ferret Family Services, Manhattan
Mickey Dotson
Dr. Barbara A. Kolde (DVM)
Rita McDowell
Dr. Deborah J. Briggs, K-State University
Dr. Samuel L. Graham, Acting Livestock Commissioner, Animal Health Department
Andrew R. Pelletier, M.D., Acting State Epidemiologist, Bureau of Disease Control, KDHE

Others attending: See attached list

Hearing on SB 815 - Domestic ferrets; rabies detection

Senator Lana Oleen noted **SB 815** was submitted for the Committee's consideration because of concerns expressed by area constituents who have domesticated ferrets as pets, and that research is currently underway concerning rabies vaccines for use in ferrets.

Troy Lynn Eckart, Ferret Family Services, appeared in support of **SB 815** and submitted written testimony. Ms. Eckart noted that statistics provided by KDHE indicate the low incidence of rabies in ferrets, and that ferrets occasionally nip, but rarely break the skin. (Attachment 1). Mickey Dotson, who owns several ferrets as pets, expressed her support for the bill (Attachment 2). Barbara A. Kolde, DVM, noted that extensive research is available pertaining to the safety and efficacy of rabies vaccines now approved for use in ferrets, and that any amendment of state statutes should treat vaccinated domestic ferret bites in the same manner as dog and cat bites, (Attachment 3). She noted a problem does exist when there is no control in overseeing that domestic animals receive rabies vaccination if there is no city or county licensing requirement, and that ferret owners seem to take good care of their animals. Rita McDowell expressed support of the bill and told of her personal story of her pet ferret that had been confiscated by the county health department. (Attachment 4)

Dr. Deborah J. Briggs, K-State University, testified against **SB 815** and noted that the closest relative to the ferret on which rabies natural history data is available is the skunk, and that in laboratory experiments, skunks have been demonstrated to excrete rabies virus in their saliva for up to 18 days before death and 8 days prior to evidence of clinical signs. Limited experimental studies on ferrets infected with rodent and European fox strains of rabies virus have been conducted, however, no viral shedding studies have been conducted on the North American strains of rabies virus. The shedding period of the North American strains of rabies virus in ferrets is unknown, and she believes it would be premature to pass the bill before the scientific data is available. (Attachment 5) Dr. Briggs commented that it will be almost a year before research is finished on the ferret strain of rabies depending on funding for the project, and that the current recommendation of destroying the animal would be followed until findings would indicate otherwise.

Dr. Samuel L. Graham, Acting Livestock Commissioner, appeared in opposition to **SB 815** and noted that the professional community does not have enough information concerning the shedding pattern of the rabies virus in

infected ferrets to safely set isolated periods, and if this bill is passed, someone will be required to make a judgment without sufficient scientific data. (Attachment 6)

Dr. Andrew R. Pelletier, KDHE, addressed the Committee in opposition to the bill and noted that the current CDC recommendations state that ferrets should be killed and tested rather than confined and observed when they bite humans, and that the reason that ferrets are not allowed to be quarantined after biting a human is because the period of rabies virus shedding in these animals is unknown. (Attachment 7) During Committee discussion, Dr. Pelletier noted he was not aware of another method that does not require sacrificing the animal for testing, and that hamsters, who are not routinely known for transmitting rabies, are excluded from the requirement for sacrifice testing as provided under K.S.A. 28-1-13, but the local health officer does have the discretion to require sacrifice. Dr. Pelletier stated there is a distinction between the hamster, which is a rodent, and the ferret, which is from the skunk family, and that both animals should be treated differently in regard to sacrificing for rabies testing. Also if the owner of a ferret had the animal vaccinated for rabies, consistent with the national recommendations, it would not make a difference since vaccinating the animal does not rule out the possibility of rabies. Dr. Briggs noted that the vaccination in ferrets is 89% effective, and depending on the vaccine, 88% for dogs and cats.

Discussion on Substitute for SB 84

Staff briefed the Committee on the draft of the bill. Provisions in the bill relate to (1) notification when bids are going to be let on pharmacy networks, (2) the distance one would have to travel to the pharmacy, and (3) the ability to compete with out-of-state mail order pharmacies. It was pointed out by staff that under the insurance statutes, health insurance and health maintenance organizations are regulated, but such groups as preferred provider organizations or individual practice associations are not defined in the proposed legislation as being regulated in the statutes.

Approval of Minutes

Senator Jones made a motion to approve the minutes of February 21, 22, 23, 24, 28, March 1 and 3 as written, seconded by Senator Salisbury. The motion carried.

The meeting was adjourned at 11:00 a.m.

The next meeting is scheduled for March 14, 1994.

GUEST LIST

COMMITTEE: SENATE PUBLIC HEALTH & WELFARE DATE: 4-10-94

NAME	ADDRESS	COMPANY/ORGANIZATION
Catherine A. Dillon, Exec. Dir.	Ks. Veterinary Medical Assoc.	
Andrew Pelletier	Topeka	KDHE
Deborah J. Briggs	VDI Kansas State Univ. CVM	
Jane Hickman	TOPEKA	KAHO
Kathy Reardon	KAMU KS Assn for Medically Underserved	Topeka Bar Assn
John Peterson	Who Knows	Topeka
GARY Robbins	KS Optometric Assn	Topeka
Russ FREY	Topeka	Ks Vet Med Assoc
Harold Riehm	~~KANSAS~~ TOPEKA	KASB
Donna Hartzler	Manhattan KS	KSU
Pamela Anderson		
Jim McHaffie	Topeka	Kansas AFL-CIO
Jerry Sloan	Topeka	KDHE
KEITH R LANDIS	TOPEKA	CHRISTIAN SCIENCE COMM ON PUBLICATION FOR KS
BILL JARRELL	WICHITA	BOEING
John Ensley	Topeka	Medco
Joe Furjanic	Topeka	KCA
Rich Gattshall	KC	Health Midwest
RJ	Topeka	KPhA
Pamela Anderson	Manhattan	
Rita McDowell	Olathe	
Alan Zarah	TOPEKA	KS-N-I-C 99.3 FM
David Downing	Overland Park	Wycliff Pharmacy

GUEST LIST

COMMITTEE: SENATE PUBLIC HEALTH & WELFARE DATE: 4-10-94

NAME	ADDRESS	COMPANY/ORGANIZATION
Bob Williams	Topeka	Ks. Pharmacists Assn
Tom Hitchcock	Topeka	Bd. of Pharmacy
Steven Potts	4 SOB	KDHE
~~Kevin Robertson~~	~~Topeka~~	

TESTIMONIAL

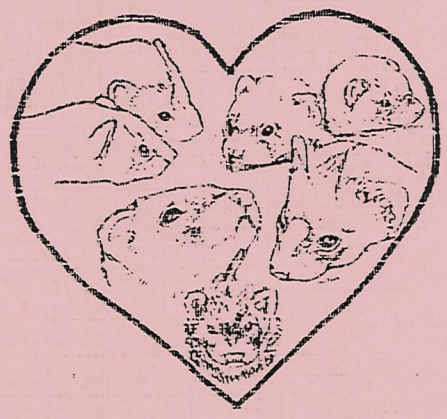
IN SUPPORT OF SENATE BILL 815

Introduced by Committee on Federal and State Affairs
Presented to Committee on Public Health and Welfare

Act Concerning Ferrets; relating to detection of rabies infection
Be it enacted by the legislation of the State of Kansas

Section 1: The European ferret (Mustela putorius furo) is a domestic animal which shall be subject to the same procedures for detection of rabies infection as cats and dogs.

Section 2: This act shall take effect & be enforced from and after its publication in the statute book.



Ms. Troy Lynn Eckart
Ferret Family Services
PO Box 186
Manhattan KS 66502
(913) 494-8415

Senate PH&W
attachment #1
3-10-94

To laugh often and much,

To win the respect of intelligent people

And the affection of children,

To earn the appreciation of honest critics

And endure the betrayal of false friends,

To appreciate beauty,

To find the best in others,

To leave the world a bit better

Whether by a healthy child, a garden patch, or a redeemed social condition,

To know that even one life has breathed easier because you have lived,

This is to have succeeded.

Ralph Waldo Emerson

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Table of Contents

Ferret Family Services
Ferret Information and Education
Post Office Box 186
Manhattan, KS 66502-0002
(913) 494-8415

Testimonial in Support of Senate Bill 815 - March 10, 1994
Ms. Troy Lynn Eckart

I. Ferret Family Services

1. **Research and distribute information regarding every aspect of the domestic ferret**
2. Distribute informational bi-monthly newsletter
3. Networked with national ferret organizations and shelters
4. Telephone helpline
5. Conduct educational presentations to groups, organizations, and individuals
6. Investigate cruelty/welfare complaints (rare)
7. Provide foster homes for lost, found, unwanted ferrets (5 in 1993)
8. Active membership in excess of 75 (Ferret owners are very dedicated to their pets)

II. Domestication of European Ferret

1. Domesticated by Egyptians 500 years before the common housecat
2. **No wild or feral colonies of the European ferret exist in the United States**
3. **Can only survive with the assistance of man, cannot survive in the wild**
4. Bred and raised by man as a companion pet and laboratory animal for hundreds of years
5. Third popular domestic pet, approximately 10,000,000 in the U.S., thousands in Kansas
6. Most dependent and environmentally sensitive of all domestic animals

III. Rabies and Ferrets

1. **There has never been a transmission of rabies from a ferret to a human**
2. Ferrets rarely contract rabies, only 15 cases ever recorded in the United States
3. All ferrets killed and tested in Kansas from 1983 - 1993 (103) proved negative
4. Housepets, less exposure to rabies vectors than dogs and cats
5. Shedding studies performed in Europe indicate ferrets don't secrete virus in their saliva
6. Research shows rabies manifests itself in ferrets in a passive mode (dumb) - they become listless, not aggressive, will not bite even when provoked
7. Research shows ferrets don't contract rabies through ingestion
8. **Two tested, proven effective, USDA approved-licensed rabies vaccines available for use in ferrets, IMRAB3 and PRORAB1**
9. Statistics indicate ferrets are less likely to bite than dogs and cats
10. Although both ferret and horse shedding studies have not been performed in the U.S., horses are routinely quarantined as are unvaccinated dogs and cats

IV. Why Legislation is Needed

1. To prevent unnecessary killing and testing of ferrets
2. To prevent needless infliction of rabies shots to bite victims
3. To prevent unwarranted costly court expenses both to state and ferret owners
4. To rectify the inconsistency of certain state agencies treating ferrets as domestic while others treat as wild
5. To protect ferret owners from unwarranted legal liabilities and vulnerabilities entailed by notion of "harboring a wild animal"
6. To ensure rights of ferret owners are the same as other domestic animal owners
7. To encourage ferret owners to have their ferrets vaccinated against rabies
8. **To "regulate" in a just manner, instead of "kill"**

♥LOVE IS BEING OWNED BY FERRETS!♥

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Troy Lynn Eckart of Ferret Family Services a domestic ferret informational and educational public ser organization. I have been involved with ferrets since 1985 and have lived with them every day since. I have 9 yea. hands on practical experience with ferrets and am considered a ferret expert by others in my field. I research information regarding every aspect of the domestic ferret by utilizing state, local and national agencies, public and vet med library, and veterinarians throughout the U.S. I have hands on experience in behavioral rehabilitation, in particular, bite cases. There is no such thing as a bad ferret, only a scared ferret. I'm also the rabies information coordinator for the nationally known League of Independent Ferret Enthusiasts.

The European ferret was domesticated by Egyptians 500 years before the cat (The Cat and the Ferret), and arrived in the U.S. in the 1600s (A Short Course in Ferrets). Ferrets are in the family Mustelidea which includes their distant cousins the otter, weasel, mink, marten, ermine, badger and skunk, all animals with musk glands. The domestic ferret is the mascot of the Massachusetts Colonial Navy.

There are no wild or feral colonies of the domestic ferret in the U.S. Domestic ferrets cannot survive in the wild or without human assistance. Ferrets have no hunting skills. Ferrets have been bred & raised for companion pets and laboratory animals for hundreds of years. Ferrets are the 3rd most popular domestic pet with an estimate of 10,000,000 in the U.S. Ferrets are the most dependent and environmentally sensitive of all domestic animals. They are very docile, curious and affectionate. They bond closely with their owners and other companion pets. In your booklet you'll find photos depicting the interaction between ferrets and their owners. You will also find testimonials on the domesticity of the ferret from veterinarians and other experts across the U.S.

While some health care professionals voice concerns regarding ferrets and rabies, their concerns are unsupported. There has never been a transmission of rabies from a ferret to a human or as far as my research found, not to any being. Domestic ferrets rarely contract rabies. There have only been 15 cases ever recorded in the U.S. This is partially due to the fact that ferrets are housepets and not allowed to roam like dogs and cats and their lack of survival skills. If a ferret escapes, unless it quickly finds human assistance, it will perish. Unlike cats, ferrets do not have nine lives.

Ferrets, like puppies and kittens, must be taught proper behavior. All baby animals nip when playing and must be gently taught that this is not acceptable. Ferrets occasionally nip but rarely break the skin. If a ferrets bites, the damage is caused by the person jerking their hand away, not from the animal.

Statistics provided by KDHE indicate the low incidence of rabies in ferrets. In an 11 year time span, 103 ferrets were killed and tested for rabies, all proved negative, during that same period, 40 cats and 15 dogs proved positive.

In fact, there is little information available concerning ferrets and rabies while there is more on dogs and cats. Obviously, if rabies was a problem in ferrets there would be more information available. Rabies shedding studies (the time in which an infected animal is able to pass the virus to another) have been performed in Europe (Blancou, 1982 & Forster, 1979) and show that ferrets don't secrete the virus in their saliva. In addition, clinical studies show ferrets don't exhibit the furious signs of rabies, they exhibit the dumb mode, listlessness, not aggression, and would not bite even when provoked. This is typical ferret behavior. When they don't feel well they will curl up and sleep. Research has also shown that ferrets do not contract rabies from ingestion (Bell and Moore, 1971, Am Journal of Epidemiology). Currently there are 2 tested and proven effective, USDA licensed rabies vaccines for use in ferrets (Compendium of Animal Rabies Control, 1994).

Although the U.S. has not performed shedding studies in horses or ferrets, horses and unvaccinated dogs and cats are routinely quarantined while ferrets are killed even if they have not been exposed to rabies vectors. To contract rabies a ferret would have to be bitten by a rabid animal. As ferrets are housepets, the constant supervision and lack of exposure to wildlife prevents this from happening.

In your booklet you will find veterinarians' and other states' recommendations on how to handle ferret bite cases. You will also find the 94 Compendium of Animal Rabies Control listing ferrets in the same category as domestic dogs and cats. There is also a short article on rabies and how the virus is transmitted. While it is possible for a ferret to contract rabies, as it is for any warm blooded mammal, the chance is extremely remote. Through all of my research and from hands on experience, I have not found any reasons for more than nominal concern of rabies in ferrets.

We can not bring them back to life when the testing results prove negative. If testing needs to be done, and under certain circumstances, there is another test that can be used, the Tactile Hair Biopsy Test, which is 80% accurate, where only a whisker is sacrificed.

As a representative of ferret owners and interested parties in Kansas, I feel legislation needs to be enacted to regulate the disposition of bite cases concerning the domestic ferret in a just manner, instead of needlessly killing them.

All Pets Veterinary Hospital, Inc.

Rt. 1, Box 167
Chantilly, Virginia 22021

Local: 327-6666
Metro: 478-0233

James F. Gaines, D.V.M., M.S.

DIPLOMATE, AMERICAN COLLEGE OF LABORATORY ANIMAL MEDICINE

January 5, 1994

Dear Ms. Eckart,
RE: Ferrets classified as domestic pets

The National Association of State Public Health Veterinarians (NASPHV) is the body which promulgates the national guidelines for rabies control. This body also classifies animals as domestic or wild.

The NASPHV now has the common pet ferret (Mustela furo) in the same classification as domestic dogs and cats. The pet ferret is no longer classified as wild or exotic.

I have included a letter from Dr. Suzanne Jenkins, Virginia Assistant State Epidemiologist and a voting member of the NASPHV.

The American Veterinary Medical Association concurs with the NASPHV in putting ferrets (Mustela furo) in ~~the~~ same classification as dogs and cats, ie, domestic animals.

James F. Gaines

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COMMONWEALTH of VIRGINIA

ROBERT B. STROUBE, M.D., M.P.H.
STATE HEALTH COMMISSIONER

Department of Health
P. O. BOX 2448
RICHMOND, VA 23218

December 21, 1992

Dear Virginia Veterinarian:

Enclosed for your information and use is the 1993 version of the Compendium of Animal Rabies Control. Except for updating minor grammatical changes, and slight reorganization, the only changes from 1992 are as indicated below. (New information has been underlined.)

A revised Rabies Certificate, NASPHV Form 51, has been developed (see attachment). Current stocks of NASPHV Form 50 may also be used. Rabies Certificates are available from rabies vaccine distributors.

Part I. Recommendations for Immunization Procedures

F. IDENTIFICATION OF VACCINATED ~~DOGS~~ 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. ~~Dog~~ 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.

Part II: Vaccines Marketed in U.S. and NASPHV Recommendations

New products include two new vaccines from SmithKline Beecham, Endurall-P and Defensor, and two new feline combination vaccines incorporating Imrab 3, from Rhone Merieux, Inc.

Rabvac 3 (Solvay), when used in horses, is now approved only for IM use.

Part III: Rabies Control

B. CONTROL METHODS IN DOMESTIC AND CONFINED ANIMALS

1. PREEXPOSURE VACCINATION AND MANAGEMENT

(a) DOGS AND CATS

(b) FERRETS
Ferrets may be vaccinated against rabies at 3 months of age and revaccinated in accordance with Part II of this compendium.

UNIVERSITY OF
FLORIDA

Animal Resources Department

PO Box 100006
Gainesville, Florida 32610-0006
Tele: (904)392-2977
Fax: (904)392-3766

January 5, 1994

Ms. Troy Lynn Eckart
Ferret Family Services
P.O. Box 186
Manhattan, Kansas 66502
Tel: (913) 532-5776
FAX: (913) 532-6315

Dear Ms. Eckart:

Thank you for the opportunity to assist your organization as it tries to dispel some of the myths regarding the domestic ferret (Mustelo putorius furo). I am a Diplomate of the American College of Laboratory Animals, and I have twenty years experience with ferrets as research animals, privately owned pet ferrets, and my own personal pets at home. I consider myself to be a ferret expert, and I will gladly share my professional opinions with you. These opinions evolved on the basis of almost daily contact with ferrets for the last thirteen years.

Rabies has been rarely reported in Domestic ferrets (Mustelo putorius furo) in the United States. The few confirmed cases were probably induced by use of a modified live vaccine that was not attenuated for ferrets. The current vaccine from Pittman-Moore is a killed vaccine, and has proven effective in preventing clinical rabies in Domestic ferrets (Mustelo putorius furo) after challenge with live virus. Since the disease has been infrequently seen, we do not routinely immunize our research ferrets against rabies.

The likelihood of research ferrets being exposed to rabies in a research facility is rather remote. I am not aware of a single human or animal exposure ever arising out of contact with ferrets in a research laboratory.

Domestic ferrets (Mustelo putorius furo) should be considered a domestic animal in all states of the union. I have had 3 ferrets escape from my private collection, and they were not found at a later date. I believe that domestic ferrets are incapable of surviving in the wild without assistance from man (i.e., they have lost the instincts that they need to survive because of domestication). They seem to be incapable of killing rodents for food, hiding from predators or finding a burrow that enables them to survive in the wild like the Black footed ferrets do. This observation is supported by the total absence of any confirmed reports in the literature that document the establishment of feral colonies of Domestic ferrets (Mustelo putorus furo).

I hope my opinions and observations are useful in the defense of the ferret that is in danger of loosing its life. Please let me know how this court case is resolved. Also, please forward to me copies of your reprints from the French studies of rabies in ferrets.

Sincerely,

Dr. Bobby R. Collins

Bobby R. Collins, DVM, MS
Diplomate, ACLAM
Associate Director, HSCARD
Associate Professor, Small
Animal Clinical Sciences

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WEST END ANIMAL HOSPITAL

Deborah W. Kemmerer BS DVM
Route 2, Box 207-W
Newberry, FL 32669
(904) 332-4357

Jan 5, 1994

To Whom it May Concern:

I am a veterinarian in private practice, and have treated ferrets for seven years. I see approximately a thousand ferrets a year, and I have spoken at AVMA and Eastern States Veterinary Conventions on ferrets and ferret medicine. I also consult with many veterinarians across the country when they need help on problem cases, and believe I am one of a few veterinarians in the U. S. who is generally acknowledged by peers to be an "expert" in ferrets.

Ferrets are, and have been for thousands of years, domesticated animals incapable of living and reproducing in the wild. I must take strong issue with any veterinarian who says otherwise. In my experience public health veterinarians, while very conscientious, know very little about ferrets, and are almost always surprised when presented with the facts on ferret domesticity.

Any criteria ever invented to determine whether an animal is domestic (and there are specific criteria) can be applied far more easily to the ferret than to the housecat.

I will be happy to supply more detailed information on this subject if you wish. Please do not hesitate to contact me.

Sincerely,

Deborah Kemmerer

Deborah W. Kemmerer DVM

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Deborah L. Mangelsdorf DVM
Konza Veterinary Clinic
8080 E. Hwy 24
Manhattan, Ks 66502
(913)-776-9111

To Whom It May Concern,

While it is true that there is a wild counterpart to the modern Domestic Ferret, the pet ferrets as we know them today are indeed Domestic animals. They have gained a very popular status in pet stores, and are often the alternative to tenants of apartments or rental houses or students in dormitories who are forbidden to have a dog or a cat, but may be allowed to have a "caged" pet.

The Domestic Ferret is not a mystery animal anymore. They are generally raised on commercial "ferret ranches", often receive routine vaccinations, and are most generally spayed or neutered, as well as descented before they are sold to brokers or pet stores. I can vouch for their popularity and abundance, as our veterinary clinic has over 250 individual ferrets on record.

Sincerely,

Deborah L. Mangelsdorf

Deborah L. Mangelsdorf, DVM

United States Department of the Interior

NATIONAL BIOLOGICAL SURVEY
National Museum of Natural History
MRC 111 RM 378
Washington, DC 20560

Phone 202:357-1930

FAX 202:357-1932

February 16, 1994

Ms. Troy Lynn Eckart
Ferret Family Services
P.O. Box 186
Manhattan, KS 66502-0002

Dear Ms. Eckart:

This is in response to your letter of January 4 requesting information on the domestication status of Mustela furo. This animal is the domesticated European polecat (Mustela putorius) and not a separate species. Domesticated European ferrets are sometimes given the subspecies name Mustela putorius furo to distinguish them from wild populations. Whereas the black-footed ferret (Mustela nigripes) is native to North America, the European ferret is not. Black-footed ferrets have been extirpated from Kansas, the last animal reported for the State was taken in 1944.

Some people claim that the domestication of ferrets has been longer than the domestication of the house cat. Although I do not have a name, I believe that there is a national organization of ferret fanciers. I suggest that you contact one of the major ferret breeders for this and other information on the status and history of ferret domestication.

Yours truly,

Alfred L. Gardner

1-13

NEW YORK ZOOLOGICAL SOCIETY

Mr. William Adams

New York, NY

Dear Mr. Adams,

In your recent letter to me, you asked: "Could you tell me if the ferrets you buy in pet shops are classified as wild or domestic animals? The answer is dorestic.

All domestic animals originated from wild species. After the wild animals were taken into captivity, their keepers "selectively bred" them so as to cause the expression of traits that were deemed beneficial to man (e.g. calmness, milk production, coat color, hair quality, etc.) The important point is that man chose the evolutionary direction of the species, rather than nature with its method of "natural selection." After a significant amount of change in characteristics occurred, biologist considered the species "domesticated." Domestic animals are assigned different scientific names from their original wild species.

The domestic ferret (Mustela putorius furo) has been selectively bred for many years from the original wild species of European ferret (Mustela putorius putorius). In the USA alone, this process has been going on since about 1875. The original European ferrets were captured --- and the motivation for domesticating the species --- was to produce an efficient and manageable "ratter" (i.e. to catch rats!).

I hope this information is of help to you. I have been Curator of Mammalogy at the New York Zoological Park for the last eight years.

Sincerely,

Fred W. Koontz

Fred W. Koontz, Ph.D.
Curator of Mammalogy

BRONX, NEW YORK 10460 TELEPHONE 212·220·5100 TELEX 428279 NYZWCI

NEW YORK ZOOLOGICAL PARK/BRONX ZOO • NEW YORK AQUARIUM • WILDLIFE CONSERVATION INTERNATIONAL
CENTRAL PARK ZOO • OSBORN LABORATORIES OF MARINE SCIENCES • ST. CATHERINES ISLAND WILDLIFE SURVIVAL CENTER

CONSERVATION EDUCATION RESEARCH

1-14

FFICE HOURS:
A. M. — 5:30 P. M.
MON. THRU SAT.
SAT.: 7:30 A. M. — 12 NOON

SATURDAY AFTEF
SUNDAY AND HOL.
EMERGENCIES
ONLY

Howard Veterinary Hospital, Inc.

DR. JAMES P. HOWARD
VETERINARIAN
610 DIX ROAD PHONE 314-636-4626
JEFFERSON CITY, MISSOURI 65101

January 5, 1993
Troy Lynn Eckart
Ferret Family Services
P.O. Box 186
Manhattan, KS 66502

Dear Ms Eckart:

In response to our telephone conversation today concerning the issue of domestication of the ferret, I would consider the ferret we see in veterinary practice today as domesticated. They are common pets, although not as main line as dogs or cats. Vaccines are availible for distemper and rabies. Current Veterinary Therapy by Kirk a standard text of veterinary practice refers to the ferret as a domestic species.

The question of rabies has very little to do with the arbitrary classification as to an animal's domestication or non-domestication. Each bite case from a warm blooded animal should be individually assesed by the health care professionals involved as to risk and post exposure prophylaxis as per the "Compendium of Animal Rabies Control, 1993". The ferret is not a high risk rabies carrier as is the skunk, bat, fox, and raccoon, but rabies has been reported to occur in the ferret. Caution is always advised, and a ten day confinement and observation period is recommended regardless of the vaccination status of the animal. Again I would refer you to the "Compendium of Animal Rabies Control, 1993" for more detail.

I hope this information may be of some use to you and the parties involved in this dispute. I am enclosing photocopies of Kirk's article by Dr. Randolph and a copy of the 1993 Animal Rabies Compendium.

Sincerely,

James P. Howard, D.V.M.

JPH
encl.

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PREVENTIVE MEDICAL CARE FOR THE PET FERRET

R. WAYNE RANDOLPH, V.M.D.
Flemington, New Jersey

The domestic ferret (*Mustela putorius furo)* is a fun-loving, gregarious member of the family Mustelidae that has become increasingly popular as a household pet. For some time it has been commonly employed as an important laboratory animal. In some states the keeping of ferrets is prohibited, whereas in others there are laws regulating the possession of these animals. It is prudent to review state statutes before obtaining such a pet.

Female ferrets (called jills) are seasonally polyestrus and induced ovulators. Males (called hobs) are not sexually active year-round, but vary in their sexual activity according to the photoperiod. The domestic ferret exists only in captivity and is not a wild animal. Two color varieties are recognized: the fitch ferret is buff with a black mask, tail, and limbs; the albino ferret is white with pink eyes.

This article describes some medical, surgical, and husbandry practices that will help to keep the ferret both well and a good pet.

VACCINATIONS

Canine Distemper

Ferrets are highly susceptible to canine distemper; virtually 100 per cent of positive cases die. Protection against this disease is afforded by vaccination with a modified live virus of chicken embryo origin. Vaccines developed from ferret cell cultures are to be rigidly avoided, as incomplete attenuation can lead to clinical disease with canine distemper. A killed virus vaccine of high antigenicity, developed by new techniques, might be preferred over the modified live virus product, but it is not currently available.

First vaccination is administered at 6 to 10 weeks of age or at first presentation, which, in clinical practice, tends to be about 10 to 14 weeks of age (Table 1). A second dose is administered 3 to 4 weeks later; yearly boosters are given thereafter.

Panleukopenia

To date panleukopenia has not been reported to occur in the ferret. For this reason most clinicians choose not to vaccinate against this disease.

Another group, however, chooses to vaccinate against this disease for the following reasons: (1) it seems phylogenetically peculiar that the ferret is the only mustelid unsusceptible to panleukopenia, and (2) vaccination against panleukopenia may provide immunity against infection with parvovirus (if this disease occurs in the ferret). For those opting to vaccinate, a killed vaccine of feline cell origin is used according to the same regimen as for canine distemper vaccination (Table 1).

Rabies

Although rare, rabies has been reported to occur in the ferret. The use of rabies vaccine in ferrets

Table 1. Schedule for Vaccination and Examination of Ferrets

Age	Procedure
6 to 10 weeks (or first presentation)	First CDV*
	First PV† (optional)
	Fecal exam
	Physical exam
	Husbandry consultation
10 to 14 weeks (3 to 4 weeks after first presentation)	Second CDV
	Second PV (optional)
	Physical exam
	Husbandry review
4½ to 6 months	Spaying or castration
	Descenting
	Rabies vaccine‡ (optional)
	Fecal exam
15 months (1 year after second CDV)	CDV (annual)
	PV (annual, optional)
	Rabies vaccine (annual; optional)
	Fecal exam
	Physical exam

*Canine distemper vaccine; modified live virus of chicken embryo cell origin; administered subcutaneously

†Panleukopenia vaccine; killed virus of feline cell origin; delivered subcutaneously

‡Killed vaccine of murine origin; delivered intramuscularly

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WESTSIDE ANIMAL HOSPITAL
1795 16th AVENUE
VERO BEACH, FL 32960

January 5, 1994

To Whom It May Concern:

According to the text Biology and Diseases of the Ferret by James Fox published in 1988, ferrets have been domesticated for over 2000 years. References to ferrets as domesticated animals can be traced to early Greek civilizations. In addition the American Veterinary Medical Association recognizes the ferret as a domestic animal.

The current rabies surveillance report published in the Journal of the American Veterinary Medical Association December 15, 1993 lists ferrets in the category of other domestic animals. All domestic animals accounted for 8.5% of confirmed rabies cases. The ferret accounted for 0.4% of these confirmed domestic species cases. Wild species were responsible for 91.5% of confirmed rabies cases.

The FDA has made available for several years a rabies vaccine for use in the ferret. This vaccine in effective in preventing rabies in this species. There are currently no approved rabies vaccines for any wild species. The product is marketed as Imrab 3 by Rhone Merieux.

The protocol for post-bite exposure for the ferret is the same as for any vaccinated dog, cat, or other domesticated species. Post- bite protocols for an unvaccinated ferret should adhere to the same guidelines as for any other domestic species.

I have enclosed a copy of the current rabies report for your interest.

Sincerely,

Brenda J. Ernest, DVM

Brenda J. Ernest, D.V.M.

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Table 1—Cases of rabies, by state and category, in the United States during 1992

State (City)	All animals	Domestic animals									Wild animals						Human beings	1991	Change (%)
		Domestic	Wild	Dogs	Cats	Cattle	Horses/ mules	Sheep/ goats	Swine	Other domestic*	Skunks	Foxes	Bats	Raccoons	Rodents and lagomorphs†	Other wild‡			
Total	8,645	732	7,912	182	290	184	49	23	1	3	2,334	397	647	4,311	57	166	1	6,975	23.94
Ala	91	11	80	5	4	2					3	11	17	49				79	15.19
Alaska	25	1	24	1								22				2[n]		12	108.33
Ariz	74	0	74								41		31			2[p]		56	32.14
Ark	47	5	42	1	1	2	1				32		9	1				49	−4.08
Calif	469	17	451	5	3	6	1	2			308	35	104	1		3[q]	1	510	−8.04
Colo	25	0	25								1		24					28	−10.71
Conn	838	14	824	1	11			2			88	3	7	720	6[d]			200	319.00
DC	18	0	18									2		16				24	−25.00
Del	213	6	207	1	4		1				36	6		162	2[e]	1[r]		197	8.12
Fla	124	16	108	2	14						2	5	16	82		3[s]		78	58.97
Ga	367	18	349	4	14						21	34	9	279		6[t]		256	43.36
Hawaii	0	0	0															1	—
Idaho	7	1	6		1								6					6	16.67
Ill	40	4	36	2		2					9		27					36	11.11
Ind	19	0	19										19					29	−34.48
Iowa	175	61	114	15	19	22	5				109		3		2[f]			156	12.18
Kan	374	25	349	7	6	9	2	1			335	7	5	1		1[u]		63	493.65
Ky	62	13	49	11		2					42	2	5					50	24.00
La	8	1	7				1				3		4					7	14.29
Me	1	0	1										1					5	−80.00
Md	553	25	528	2	22			1			65	27	17	413	6[g]			579	−4.49
Mass	57	1	56		1						1		15	39	1[h]			14	307.14
Mich	15	4	11	1		1	1	1			1		10					36	−58.33
Minn	173	57	116	12	17	22	5	1			112	1	3					310	−44.19
Miss	1	0	1										1					4	−75.00
Mo	37	3	34	2	1						6		28					28	32.14
Mont	24	0	24								17		7					41	−41.46
Neb	13	5	8		2	3					4		4					17	−23.53
Nev	20	3	17	2	1								16			1[v]		11	81.82
NH	10	0	10										6	4				4	150.00
NJ	726	29	697	1	27			1			80	8	14	579	16[i]			994	−26.96
NM	9	0	9								4		5					6	50.00
NY	1,720	69	1,651	7	36	20	4	1	1		105	102	59	1,355	21[j]	9[w]		1,030	66.99
(NYC)	41	0	41								1		2	37		1[x]		0	—
NC	49	1	48		1						1	5	13	29				24	104.17
ND	144	26	118	3	3	18	2				115	2		1				106	35.85
Ohio	14	0	14								3		10	1				20	−30.00
Okla	219	35	184	5	5	17	7	1			178		5			1[y]		173	26.59
Ore	2	0	2										2					7	−71.43
Pa	361	49	312		32	13	2	2			75	19	6	208	2[k]	2[z]		363	−0.55
Puerto Rico	55	4	51	3				1								51[aa]		62	−11.29
RI	1	0	1										1					0	—
SC	165	20	144	5	15					1[a]	9	26	10	99				117	41.03
SD	126	29	97	7	7	14	1				94		1	1		1[bb]		181	−30.39
Tenn	53	6	47	6							39	2	6					45	17.78
Tex	471	99	372	56	16	11	6	9		1[b]	182	33	69	7		81[cc]		448	5.13
Utah	6	0	6										6					18	−66.67
Vt	24	3	21		1	1	1				1	18	1	1				1	2,300.00
Va	362	44	317	7	21	11	2	3		1[c]	77	23	12	203	1[m]	1[dd]		253	43.08
Wash	7	1	6				1						6					9	−22.22
WVa	54	6	48	3	2	1					17	2	6	23				47	14.89
Wis	74	17	57	5	3	7	2				44	2	11					75	−1.33
Wyo	82	1	81				1				73		8					110	−25.45
% 1992§ Total	100.00	8.47	91.52	2.11	3.35	2.13	0.57	0.27	0.01	0.03	27.00	4.59	7.48	49.87	0.66	1.92	0.01		
1991‖	6,975	618	6,354	155	189	217	44	10	1	2	2,073	318	690	3,079	63	131	3		
% change¶	23.94	18.45	24.52	17.42	53.44	−15.21	11.36	130.00	0.00	50.00	12.59	24.84	−6.23	40.01	−9.52	26.72	−66.67		

*Other domestic includes: (a) 1 ferret; (b) 1 llama; (c) 1 ferret. †Rodents and lagomorphs include: (d) 6 groundhogs; (e) 2 groundhogs; (f) 1 groundhog, 1 squirrel; (g) 6 groundhogs; (h) 1 groundhog; (i) 14 groundhogs, 2 rabbits; (j) 1 beaver, 1 muskrat, 18 groundhogs, 1 rabbit; (k) 2 groundhogs; (m) 1 groundhog. ‡Other wild includes: (n) 2 otters; (p) 2 bobcats; (q) 2 coyotes, 1 opossum; (r) 1 otter; (s) 1 bobcat, 2 otters; (t) 5 bobcats, 1 deer; (u) 1 bobcat; (v) 1 ringtail; (w) 2 coyotes, 5 deer, 2 opossums; (x) 1 opossum; (y) 1 coyote; (z) 1 bobcat, 1 otter; (aa) 51 mongooses; (bb) 1 badger; (cc) 10 bobcats, 70 coyotes, 1 ringtail; (dd) 1 groundhog. §Percentage of all rabid animals in 1992. ‖1991 total by species. ¶Percent change from 1991.

NOTE: Inclusion of species under "Other domestic" does not imply knowledge of virus shedding nor does this suggest that such species are to be promoted as pets.

1-18

CAMELWEST
ANIMAL HOSPITAL

5502 W. Camelback Rd., Ste. 1 • Glendale, Arizona 85301 • (602) 934-1272

TO WHOM IT MAY CONCERN:

As a veterinarian who administers to many ferret patients, I have been asked to express my views on the ferret as a domestic animal.

The European Ferret, Mustela furo, has been raised as a domestic animal for hundreds of years. In my opinion, today's pet ferrets should be considered in the same light as pet dogs and cats -- being centuries away from any connection to their wild forebearers. Possibility of infectious disease such as rabies whould be based on possible exposure, clinical signs and epidemiology -- NOT on species.

Sincerely,

Kate McCullough, DVM

Kate McCullough, DVM

Midwest Bird & Exotic Animal Hospital

1923 So. Mannheim Road
Westchester, Illinois 60154
708/344-8166
FAX 708/344-8194

To whom it may concern,

The European ferret, the ferret commonly kept as a household pet, has been domesticated for over 2,000 years. Therefore, a 10 day rabies observation period should apply to the ferret as it does for any dog or cat that has bitten a person. To prevent such an incident in the future we recommend vaccinating ferrets for rabies.

Sincerely,

Dr. Alicia Duffield

Susan A. Brown, D.V.M.
Scott E. McDonald, D.V.M.
Richard R. Nye, D.V.M.

BRAD A. POPE, D.V.M.
~~635 East Harbor Drive~~ 135 S. Hiway 101
Warrenton, OR 97146

Telephone: (503) 861-1621

To whom it may concern:

The State of Oregon recognizes ferrets as domestic animals and are subject to regulations afforded to dogs and cats. Vaccination with approved rabies vaccine is recommended.

Oregon's position on bites by ferrets is that it is up to the person bit as to what should be done to the ferret. If that person is not concerned then no action is taken. It is widely recognized that people who handle ferrets will probably get bit from time to time. If a person bit by a ferret does present a complaint the State would have to take action.

There have only been a handful of cases of rabies in ferrets in the U.S. These have all occurred in areas with skunk, fox, and raccoon rabies populations.

As a veterinarian, I feel ferrets are great pets. I provide care to them at the same level as for dogs and cats. The State of Oregon also recognizes them as pets and administers their rabies regulations accordingly.

Sincerely,

Brad A. Pope, D.V.M.

1-21

May 1, 1992

DISEASE BULLETIN

published bi-weekly

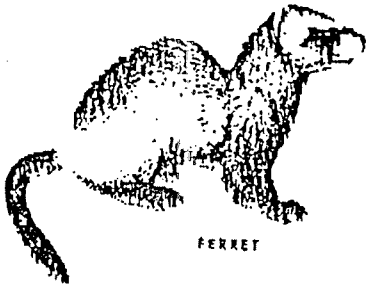
VOLUME NO: XI
ISSUE NO: 8

CONTENTS:

RECOMMENDATIONS FOR FERRETS REGARDING VACCINATION, BITE FOLLOW-UP AND EXPOSURE TO RABIES

The domesticated European ferret (Mustela putorius) has been extensively promoted as a pet in the U.S. In certain circumstances ferrets may make suitable pets. However, the animal's propensity for biting and numerous well-documented attacks have demonstrated the danger of keeping ferrets in households with small children and infants.[1-3] The Colorado Department of Health strongly recommends that ferrets NOT be maintained as pets by families with children under 5 years-old, especially infants.

Ferrets are members of the Family Mustelidae (skunks and weasels) and must be considered highly susceptible to the rabies virus. Rabies infection in ferrets is rarely reported, although it has been described in ferrets that had contact with wild rabies hosts.[4] In 1990, an inactivated rabies vaccine was licensed for use in ferrets (IMRAB, marketed by Pitman-Moore).[5,6] Vaccination consists of a 1 ml dose given intramuscularly at three months of age, one year of age, then annually thereafter.[6] The Colorado Department of Health recommends all ferrets receive an annual rabies immunization and that local rabies control laws mandate vaccination of ferrets.



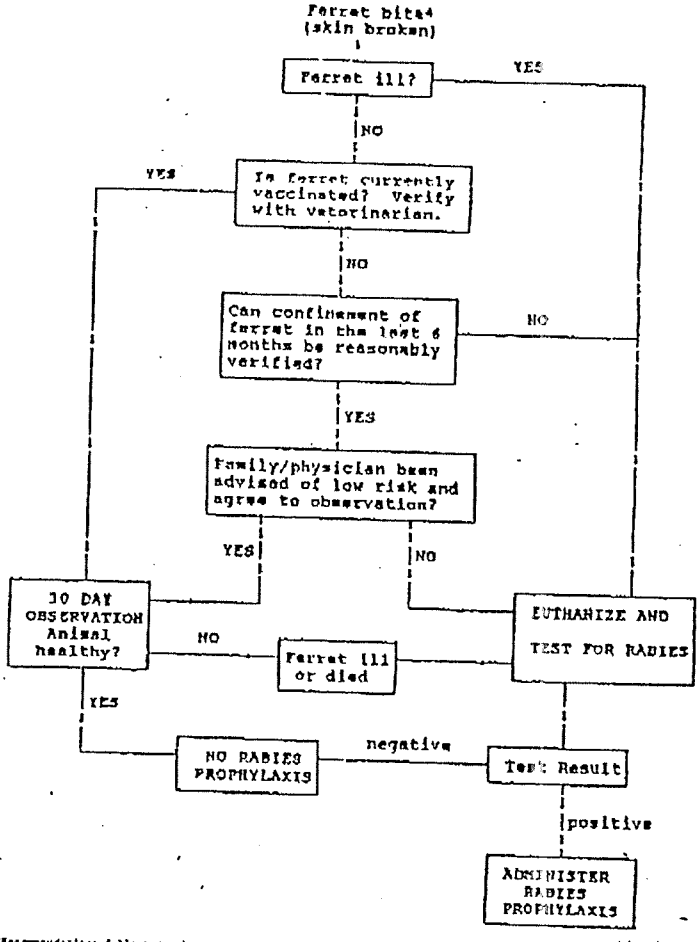
FERRET

Studies to license a rabies vaccine for ferrets demonstrated that vaccination does provide protection for the animal when challenged with rabies virus. However, no research has been conducted on the viral shedding period in infected ferrets. Thus, no observation period for ferrets involved in human bites is recognized.[6]

The risk of rabies in a ferret raised and maintained in captivity is remote. A healthy, captive ferret involved in a human bite could be held for a extended observation period, arbitrarily 30 days, to eliminate the risk of rabies. Quarantine authority is provided under Colorado's Rabies Control Statute (C.R.S. 25-4-604). In every case, the bite victim's family and physician must be informed that while the rabies risk is extremely low there is no absolute guarantee of safety. If the bite victim does not agree to observation, the ferret should be sacrificed and examined. Ferrets that are ill or die within 30 days, that have had contact with wild carnivores, or were strays should be euthanized and tested for rabies (following the algorithm shown in Figure 1).

Ferrets exposed to a known or suspected rabid animal, if currently vaccinated, can be revaccinated and observed for signs of illness for 90 days. Exposed ferrets that have not been vaccinated must be euthanized or, if the owner refuses, confined for 6 months. Confinement must be at an animal shelter, kennel or veterinary clinic and is at the owner's expense.

This policy was developed with input from Colorado State University, Colorado Department of Agriculture, the Colorado Veterinary Medical Association, the Colorado Association of Animal Control Officers, and numerous local health departments and animal control officers. For further information, contact John Pape at 303-331-8330.



*Recommendations following a bite in which the biting animal is unrecovered are evaluated on a case-by-case basis. Contact the local or state health department for consultation.

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1-22

CAMBRIDGE-GUERNSEY COUNTY HEALTH DEPARTMENT
A Combined General Health District
ESTABLISHED - 1950

John R. Bennett, M.Sc., R.S.
Health Commissioner

326 Highland Avenue
Cambridge, Ohio 43725
614/439-3577

April 16, 1990

Ms. Linda Harrah
Box 161
Buckeye Lake, Ohio 43008

Dear Ms. Harrah:

We were unaware of the new IMRAB vaccine you mentioned in your letter of April 5. The last time we discussed this matter with local veterinaians, they were unaware of it also.

Factors which would determine if an animal which bite a human would be sacrificed include:

1. Health and general condition of the animal.
2. Circumstance of bite-was it provoked?
3. Animal's chance of expossure to a rabies source.
4. Incidence of Rabies in the area.

Our position regarding domestic ferrets is that, in most cases, they would not have to be sacrificed. Because most of them are caged nearly all the time, their chance of exposure is much less than that of a normal cat or dog. Secondly, the incidence of rabies in Guernsey County is very low.

As long as the ferret appears reasonably healthy, is available for quarantine, and there are no unusual factors surrounding the incident, we see no reason for destroying the animal.

I hope this answers your question. Feel free to call me if I can provide any more information to you.

Sincerely,

Rick Van Fleet

Rick Van Fleet, R.S.
Sanitarian

John R. Bennett, M. Sc., R.S.
Health Commissioner

1-B

GREENE COUNTY COMBINED HEALTH DISTRIC

W.P. McCullough, M.S.P.H., *Health Commissioner*
Charles E. Russell, M.D., *Medical Director*

April 9, 1990

Linda Harrah
Box 61
Buckeye Lake, Ohio 43008

Re: Rabies vaccination for ferrets

Dear Ms. Harrah:

This letter is written in response to your inquiry of April 5, 1990, concerning rabies-vaccinated ferrets.

It is the position of this health district that a ferret that receives an approved-type rabies vaccine would be acceptable.

Also, our position on ferrets is that they rarely have to be destroyed. Wild animals kept as pets nearly always must be sacrificed if they bite a human. However, ferrets usually have been bred in captivity for several generations, and have no exposure to wild animal rabies. Ferrets that escape captivity usually perish within a few days, since they have lost many of their survival instincts.

Sincerely,

James A. Luken

James A. Luken, R.S.
Director of Environmental Health

JAL/vl

360 Wilson Drive • P.O. Box 250 • Xenia, Ohio 45385 • (513) 376-9411 or (513) 426-6351

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State of Kansas
Joan Finney, *Governor*

Department of Health and Environment
Robert C. Harder, *Secretary*

January 28, 1994

Troy Lynn Eckart
Post Office Box 186
Manhattan, Kansas 66502-0002

Dear Ms. Eckart:

I am writing in response to your letter of January 26 requesting information about ferrets tested for rabies in Kansas from 1983-1993. The numbers are as follows:

Year	Ferrets Tested	Number Rabid
1983	4	0
1984	4	0
1985	4	0
1986	13	0
1987	4	0
1988	16	0
1989	13	0
1990	7	0
1991	8	0
1992	16	0
1993	14	0

I do not have information on how many of these ferrets were owned or "misplaced". I also do not know the circumstances that resulted in the animals being submitted for testing.

If I can provide additional information, please contact me at (913) 296-5586.

Sincerely,

Andrew R. Pelletier, M.D.
Acting State Epidemiologist

State of Kansas
Joan Finney, *Governor*

Department of Health and Environment
Robert C. Harder, *Secretary*

February 11, 1994

Troy Lynn Eckart
Post Office Box 186
Manhattan, Kansas 66502-0002

Dear Ms. Eckart:

I am writing in response to your letter of February 10 requesting information about dogs and cats tested for rabies in Kansas from 1983-1993. The numbers are as follows:

Year	Dogs Tested	Number Rabid
1983	491	1
1984	502	0
1985	401	0
1986	462	2
1987	442	2
1988	402	1
1989	397	0
1990	412	0
1991	462	0
1992	818	7
1993	623	2

Year	Cats Tested	Number Rabid
1983	657	5
1984	667	5
1985	579	3
1986	554	5
1987	601	1
1988	497	1
1989	485	6
1990	566	1
1991	479	2
1992	1112	6
1993	701	5

If I can provide additional information, please contact me at (913) 296-5586.

Sincerely,

Andrew Pelletier

Andrew R. Pelletier, M.D.
Acting State Epidemiologist

Compendium of Animals Rabies Control, 1994

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 182 in 1992. 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. 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 Wild Animals.)

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.

   (b) FERRETS
   Ferrets may be vaccinated against rabies at 3 months of age and revaccinated 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 rabies vaccine is licensed for use in wild animals. Because of the risk of rabies in wild animals (especially raccoons, skunks, coyotes, and foxes), 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 director of the respective quarantine center.

   (b) INTERSTATE
   Dogs and cats should be vaccinated against rabies according to the Compendium's recommendations at least 30 days prior to interstate movement. Animals in transit should be accompanied by a currently valid NASPHV Form #50 or #51, Rabies Vaccination Certificate.

Compendium of Animal Rabies Control, 1994
Part II: Vaccines Marketed in U.S. and NASPHV Recommendations

Product Name	Produced By	Marketed By	For Use In	Dosage	Age at Primary Vaccination[1]	Booster Recommended	Route of Inoculation
A) INACTIVATED							
TRIMUNE	Fort Dodge License No. 112	Fort Dodge	Dogs Cats	1 ml 1 ml	3 months & 1 year later	Triennially Triennially	IM[2] IM
ANNUMUNE	Fort Dodge License No. 112	Fort Dodge	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM IM
DURA-RAB 1	ImmunoVet License No. 302-A	ImmunoVet, Vedco, Inc.	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM IM
DURA-RAB 3	ImmunoVet License No. 302-A	ImmunoVet, Vedco, Inc.	Dogs Cats	1 ml 1 ml	3 months & 1 year later	Triennially Triennially	IM IM
RABCINE 3	ImmunoVet License No. 302-A	SmithKline Beecham Animal Health	Dogs Cats	1 ml 1 ml	3 months & 1 year later	Triennially Triennially	IM IM
ENDURALL-K	SmithKline Beecham License No. 189	SmithKline Beecham Animal Health	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM IM
ENDURALL-P	SmithKline Beecham License No. 189	SmithKline Beecham Animal Health	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM or SQ[3] SQ
RABGUARD-TC	SmithKline Beecham License No. 189	SmithKline Beecham Animal Health	Dogs Cats Sheep Cattle Horses	1 ml 1 ml 1 ml 1 ml 1 ml	3 months & 1 year later 3 months 3 months 3 months	Triennially Triennially Annually Annually Annually	IM IM IM IM IM
DEFENSOR	SmithKline Beecham License No. 189	SmithKline Beecham Animal Health	Dogs Cats Sheep Cattle	1 ml 1 ml 2 ml 2 ml	3 months & 1 year later 3 months 3 months	Triennially Triennially Annually Annually	IM or SQ SQ IM IM
RABDOMUN	SmithKline Beecham License No. 189	Pitman-Moore, Inc.	Dogs Cats Sheep Cattle	1 ml 1 ml 2 ml 2 ml	3 months & 1 year later 3 months 3 months	Triennially Triennially Annually Annually	IM or SQ SQ IM IM
RABDOMUN-1	SmithKline Beecham License No. 189	Pitman-Moore, Inc.	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM or SQ SQ
SENTRYRAB 1	SmithKline Beecham Animal Health License No. 225	Synbiotics Corp.	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM IM
CYTORAB	Coopers Animal Health, Inc. License No. 107	Coopers Animal Health, Inc.	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM IM
TRIRAB	Coopers Animal Health, Inc. License No. 107	Coopers Animal Health, Inc.	Dogs Cats	1 ml 1 ml	3 months & 1 year later 3 months	Triennially Annually	IM IM
EPIRAB	Coopers Animal Health, Inc. License No. 107	Coopers Animal Health, Inc.	Dogs Cats	1 ml 1 ml	3 months & 1 year later	Triennially Triennially	IM IM
RABVAC 1	Solvay Animal Health, Inc. License No. 195-A	Solvay Animal Health, Inc.	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM or SQ IM or SQ
RABVAC 3	Solvay Animal Health, Inc. License No. 195-A	Solvay Animal Health, Inc.	Dogs Cats Horses	1 ml 1 ml 2 ml	3 months & 1 year later 3 months	Triennially Triennially Annually	IM or SQ IM or SQ IM
PRORAB 1	Intervet, Inc. License No. 286	Intervet, Inc.	Dogs Cats Ferrets Sheep	1 ml 1 ml 1 ml 2 ml	3 months 3 months 3 months 3 months	Annually Annually Annually Annually	IM or SQ IM or SQ SQ 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 SQ IM or SQ
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 3 months 3 months	Triennially Triennially Triennially Annually Annually Annually	IM or SQ IM or SQ IM or SQ IM or SQ IM or SQ SQ
B) COMBINATION (inactivated rabies) ECLIPSE 3 KP-R	Solvay Animal Health, Inc. License No. 195-A	Solvay Animal Health, Inc.	Cats	1 ml	3 months	Annually	IM
ECLIPSE 4 KP-R	Solvay Animal Health, Inc. License No. 195-A	Solvay Animal Health, Inc.	Cats	1 ml	3 months	Annually	IM
ECLIPSE 4-R	Solvay Animal Health, Inc. License No. 195-A	Solvay Animal Health, Inc.	Cats	1 ml	3 months	Annually	IM
CYTORAB RCP	Coopers Animal Health, Inc. License No. 107	Coopers 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 3	Rhone Merieux, Inc. License No. 298	Rhone Merieux, Inc.	Cats	1 ml	3 months & 1 year later	Triennially	SQ
RM FELINE 3 + IMRAB 3	Rhone Merieux, Inc. License No. 298	Rhone Merieux, Inc.	Cats	1 ml	3 months & 1 year later	Triennially	SQ

[1] Three months of age (or older) and revaccinated one year later.
[2] Intramuscularly
[3] Subcutaneously

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by Aoko Shiroshima, M.S.

Rabies in both humans and in animals has been known for many centuries. The thorough and conscientious student will find first mention of it (and its association with dogs) in the notes of Democritus in 500 B.C.E; it has been mentioned by every major writer on diseases of classical times.

Rabies appears to have first been noted either in India or northern Africa. We do not know whether it had reached Greece by the time Democritus wrote about it. However, it had certainly reached Rome by 100 C.E; and it is from the Romans that we get the name "rabies," which is derived from the low Latin *ravere*, meaning "to rave."

Considering the rate of spread of other epidemics such as the Black Plague of 1348, rabies spread quite slowly, and for the most part erratically, throughout Europe. B. Bésseru tells us that it was first reported in France in 900, and Britain in 1026. It remained, for the most part, confined to wolves until 1708, when the first epidemic among *Canis familiaris* was noted. This was in Italy, but within two decades the disease was epidemic throughout central Europe, and had reached Scandinavia. Canine rabies was unknown in either North or South America until colonists brought it with them. In all parts of the world where rabies is found, with the partial exception of Africa, the major means of control, and in many cases, elimination, of the disease has been the elimination of stray dogs.

Just as ancient as the disease are cures for it, some of which had a remarkably high rate of success. In classical times, a fresh wound was bled and cauterized, either with a hot iron or with coals. G. B. Grinnel gives us this account from the Blackfoot tribe:

"When anyone acted [like a mad wolf, after having been bitten] his relations tied him hand and foot with ropes, and, having killed a buffalo, they rolled him up in the green hide, and then built a fire on and around him, leaving him in the fire until the hide began to dry and burn. Then they pulled him out and removed the buffalo hide, and he was cured. When in the fire, the great heat caused him to sweat so profusely, so much water coming out of his body that none was left in it, and with the water the disease went out, too. All the old people tell me that they have seen individuals cured in this manner of a mad wolf's bite."

It is more likely that the heat did the virus in, and the sweating simply flushed it out; although you can see that the cure was at least as risky as the disease!

So what is rabies, and why would what a person of today consider such outlandish cures work? Rabies is one of the *rhabdoviri*, or rod- or bullet-shaped viri. In fact, the rabies virus is exactly bullet-shaped. The outside of the bullet, including the tip but excluding the base, is covered with filaments of glycoprotein, and Crick and Brown note that in the past it has been shown that experimental animals will manufacture rabies antibodies in response to this glycoprotein alone.

Like many viri, rabies relies on a liquid medium for transmission from host to host. An infection of rabies uses an animal as a "factory" for making its next generation and spreading it safely (as the infection sees it) to a host with a new factory once the current infection has used the present factory up. In this way, the "lineage" of rabies prospers and thrives.

When a rabid animal bites another warm-blooded creature, particles of the virus are deposited under the skin, where they can be kept moist. Particles deposited on the skin generally die of dehydration, unless there is an open wound into which they might be flushed or over which they have been laid. Those under the skin begin a slow replication in muscle tissue, or, if available and preferentially, in nerve tissue, to which the virus is adapted. It multiplies in the cell body of the neuron, and new particles travel from neuron to neuron via the normal fluid motion in the axon. It replicates by taking over the neuron's own mechanism for reproduction and subverting it into making new virus particles. The result of this is the red-staining Negri body (named, as usual, after its discoverer, who thought erroneously that they were parasites) in the cells of infected animals. This 'body' is

of infected animals. This 'body' is actually the site of construction of new virions or virus particles, which then exit through the cell membrane.

Eventually, the virus, unless overcome, will use up all the material in the nervous system of its present host, so it becomes important to find a new host for future generations. Since it relies on a fluid media for transport, it must adapt the host to introduce it into other hosts in such a way that it will not dry out. The virus spreads throughout the body by following the nerves wherever they go. They go particularly to the salivary glands, very close and very wet, for the same reason one would go to the train station. The virus in the salivary glands then becomes the colonists who carry on in a new world; the virus left behind must now make sure that transport is completed.

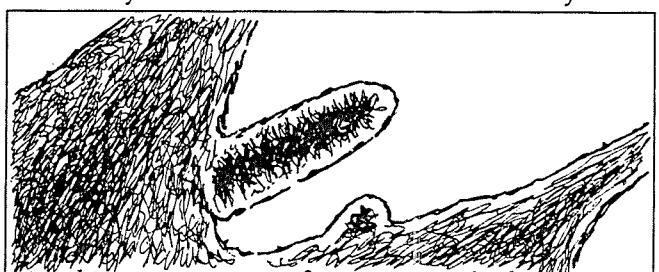
The 'easiest' way for a virus already inhabiting the nervous system to assure this transport is to simply trigger aggression in the present host. Since all animals with teeth bite when frightened or angry (ask anyone with a teething child!), by triggering aggression and fear in a host, the virus is assured of safe passage. The fear in the rabid animal comes from the paralysis caused by the replicating virus destroying nerve cells as it goes. The rage is caused by the effect of not only the animal's fear feeding on itself, but the pain of the disease and the virus' effect on the brain directly. (And so, hopefully, you now understand that the attack of a rabid animal is *not* 'unprovoked.' There is always a provocation for an attack; you simply may not realize what it is.)

When the current host is "used up," it dies of paralysis and resulting dehydration and respiratory failure.

Throughout its cycle, except when the host is actively dying, the virus does *not* typically cause fever. As deadly as it is, the virus is delicate, and its intolerance of extreme temperatures is no doubt responsible for the Blackfoot cure. (However, anyone who has ever experienced total dehydration may tell you that, given a choice, they might prefer rabies!)

Galen's cure probably worked only when the wound was extremely fresh, as experimental work has shown that rabies can reach the spinal cord within 24 hours when conditions are favorable: i.e., the bite was directly on a major nerve, or was to the neck, face or shoulders. The incubation period of the virus is obviously related to the distance the virus must travel to reach the brain. (Other factors include the specie's resistance to the disease, and how much virus was deposited in the wound.)

Rabies in ferrets is exceptionally rare, partially due to the fact that ferrets are almost never exposed to rabies vectors, (or animals with the infection), and partially due to a fair amount of immunity to the disease which is shared by their close relatives, the polecats. It takes an enormous dose of virus to experimentally infect a ferret; Blancou *et al.* noted that the ferret is approximately 50,000 times less susceptible to at least European fox derived street rabies than is the fox, perhaps the most susceptible of animals, and 300 times less susceptible to the virus than the hare, which is typically considered fairly resistant.


A rabies virion erupts from a Negri body.

These researchers also noted that even in the animals which died of rabies in their work, there was no virus excreted in the saliva, although Dr. Rupprecht of the Wistar Institute notes that some North American rabies virus strains are in fact able to set up shop in the salivary glands and excrete the virus.

So far, the numbers of rabid ferrets in the United States have never risen above on in three million ferrets. Of the dozen or so cases found since 1933 (see Page 14), two have been the result of improper vaccination; a third is listed by the CDC as "possible error in diagnosis" because the "standard" test for *antibodies* was positive, but the actual test for the *virus* was negative.

As of 1987, Dr. Lee Ann Sawyer, then of the CDC, reported that there were no records of anyone in the United States ever having contracted rabies after having been bitten by a ferret. Unfortunately, requests made by the *WHM* editorial office to the current CDC Viral Diseases group have not been answered, so we cannot make an absolute statement that no one has contracted the disease from a ferret since that time; however, with all the negative publicity currently being generated by the public health community regarding ferrets, it is doubtless that if such a case had arisen, we would surely have heard about it.

SUSAN C. NELSON, DVM
WESTSIDE VETERINARY CLINIC
3130 ANDERSON AVE.
MANHATTAN, KS 66502

To whom it may concern:

This letter is being written on behalf of Inez Lynn Eckert, ferret owner and founder of Ferret Family Services (FFS) in Manhattan, KS.

I personally have had the opportunity to work with Inez Lynn and several of her ferrets. I have found her to be very knowledgable on the behavior of pet ferrets and to her work with her own ferrets and those rescued through FFS. She has also been invaluable in helping to obtain medical information from several veterinarians throughout the U.S. who treat primarily ferrets. This is important as much of the medical data on ferrets has yet to be published.

I feel Inez Lynn can give sound advice as to what to expect from owning ferrets as pets and their general behavioral characteristics. She also can be considered an "expert" in her own rights when it comes to pointing out any information that is relevant on the care and treatment of ferrets.

Respectfully,

Susan C. Nelson, DVM

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L.I.F.E

Atlanta
Georgia

Baltimore
Maryland

Chambersburg
Pennsylvania

Carteret
New Jersey

Chicago
Illinois

Fort Worth
Texas

Germantown
Maryland

Harrisburg
Pennsylvania

Leesburg
Virginia

Levittown
Pennsylvania

Liverpool
New York

Manhattan
Kansas

Milwaukee
Wisconson

Orlando
Florida

Phoenix
Arazona

Rochester
New York

St. Petersburg
Florida

Vero Beach
Florida

March 6, 1994

Ann Davis
National Coordinator

To: The Committee On Public Health And Welfare, State Of Kansas

Ms. Troy Lynn Eckart is the National Rabies Information Coordinator for the League of Independent Ferret Enthusiasts. In her capacity as coordinator, she has assembled one of the most comprehensive rabies reference handbooks in the welfare community.

In 1990 she founded Ferret Family Services, a not for profit service organization in Manhattan Kansas which provides educational materials, foster homes for strays, telephone support for ferret owners and in emergency situations cruelty/welfare investigations. Ferret Family Services also sponsors public educational and awareness presentations on the domestic ferret at local events.

Active in ferret welfare since 1985, Ms. Eckart is a nationally respected ferret expert and a valuable asset to the ferret owning community.

Ann Davis
National Coordinator, LIFE

9330 Old Burke Lk. Rd., Burke Virginia 22105, (703) 503-7313

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Shelters That Adopt & Rescue Ferrets (S.T.A.R.*)
P.O. Box 1714 Springfield Virginia 22151-0714 703-354-5073

c/o Ferret Family Services
Troy Lynn Eckart
PO Box 186
Manhattan, KS 66502

March 7, 1994

To Whom it May Concern,

This letter serves to inform the reader that Ms. Eckart is a member in good standing of our organization, Shelters That Adopt & Rescue Ferrets (STAR*).

STAR* Ferrets, a network established in 1991, was conceived to assist shelters that work with ferrets. This applies to private individuals who operate shelters from their homes and humane associations or county facilities which come across the occasional ferret.

STAR* has several goals. First, is to educate ferret owners and prospective owners about ferrets. An educated person is not going to take ownership lightly and reduces the need for shelter services. Second, STAR* would like to establish shelters for ferrets in every state. This takes the burden off local humane and animal groups and helps fulfill our first goal. STAR* supports shelters in several ways:

The directors will answer phone calls from any individual or group regarding ferrets, their care, or adoption.

STAR* provides statistical data on shelter ferrets and letters encouraging organizations to release ferrets to local ferret shelters/clubs (STAR* members or not) if that facility does not wish to adopt ferrets out themselves.

STAR* provides free literature for Pet Expos, ferret shows and other animal related functions.

STAR* provides speakers and/or demonstrations for various animal related functions.

STAR* Ferrets provides information based on the experiences of established ferret shelters. STAR* believes in providing guidance to people working with ferrets, whether they own one ferret or handle a hundred a year. Membership includes the book *Ferret Care and Rescue*, which is updated on a regular basis, blank forms for lost/found ferrets, adoptions, releases, and ferret related services. These forms can be used as-is or modified to fit regional and/or personal preferences, a quarterly newsletter containing ferret specific information dealing with people, personalities, rescues, adoptions, health, legislation, etc. and inserts on new products, literature, and any other ferret related information.

Sincerely,

Pamela T. Grant
Director

March 9, 1994

As the owner of six ferrets I guess you could say I'm the expert on ferrets as pets. I have had them for four years; three females and three males. My two daughters and countless friends and family members have had hours of fun and enjoyment interacting and just watching these delightful creatures.

I also have three cats and a small dog. Everyone gets along fine.

I have taken my ferrets to the school on numerous occasions so the children could see them first hand. I believe they were studying the black footed ferret at the time. My ferrets and I have also been to the St. Marys Manor at their annual pet day. The residents love to hold and pet the little darlings.

It saddens me to know I can no longer do these things for fear that my babies could be killed if they were per chance to scratch or possibly nip someone. (which has never happened).

All my ferrets are current and up to date on their vaccines.

My ferrets; Cookie, Lovey, Chloe, Hobo, Snoopy and J.B. (short for Jelly Belly, he's the fat one) are not wild animals so please seriously consider bill #815 for all the ferret lovers in Kansas.

Sincerely,
Mickey Dotson

Senate PHHC
Attachment #2
3-10-94

March 10, 1994

From the office of:
Dr. Barbara A. Kolde
12155 Elm Slough Rd.
St. George, Kansas 66535
(913) 494-8328

To whom it may concern,

Extensive research is available pertaining to the safety and efficacy of rabies vaccines now approved for use in ferrets. These "killed" virus vaccines have been subject to the same rigorous experimental protocol as required of any biological, and do protect ferrets from contracting rabies. The Center for Disease Control's (CDC) Compendium on rabies both recognizes and lists the vaccine's efficacy and safety in ferrets as conforming to their standards. I believe the Kansas Department of Health and Environment uses this Compendium in determining their standards. Therefore, any amendment of State statutes should treat vaccinated domestic ferret bites in the same manner as dog and cat bites.

There is no question as to the quantity or validity of the research conducted in order to federally license the two existing "killed" vaccines. I find no reason not to update our State statutes to include ferrets vaccinated via CDC approved methods. I have consulted with Deborah Briggs PHD, employed by Kansas State University. She feels that research grant money is necessary concerning the "shedding" period of the rabies virus in non-vaccinated ferrets, in order to determine the quarantine period. If this is the rationale behind not up-dating our State statutes to include pet ferrets in the same category as dogs and cats, the bill should be amended in a manner to classify vaccinated ferrets in the same category as vaccinated dogs and cats, until such "shedding" studies are completed.

Respectively yours,

BARBARA A. KOLDE DVM

Senate P H & W
Attachment #3
3-10-94

On December 11, at 9:00 p.m. while my husband was working as a deputy sheriff and I was working as a fast food restaurant manager, two Western Resources workers came to our house to relight our furnace since there was a break in the main gas line.

My 13 year old daughter opened the door and they entered. They petted our cat, picked up my dog and one of them asked what was asleep in the cage, and then wanted to see it. It was one of our pet ferrets that we bought from Marten's Pet Center in Topeka, along with their mother when they were 3 days old.

My daughter cradled the ferret against her chest and one of the workers reached towards the ferret's face. It immediately clamped down on his finger and upon a tap on his head from my daughter, he opened his mouth and the man removed his hand.

The man laughed and said that he was going to sue us and showed my daughter his hand. At that time she saw no blood,nor open wound, or any kind of marks.

His co-worker examined his hand and laughed and offered to take him to our local hospital. They continued working at other residences until approximately 4:00 a.m.

On December 15, 1993, we received a call from the Pottawatomie Health Department to take our pet to them, to be killed and then checked for rabies.

Senate P&A&W
Attachment #4
3-10-94

KDHE called me at my place of employment and I explained that my pet was free of rabies, it never was allowed outside (except while being transported), and we all had been nipped in the last two years and were all healthy. KDHE said that my pet was technically categorized with animals such as wolves, and "until someone got of their butts and passed a bill, it was a wild animal."

On December 17, 1993, KDHE called my husband and told him that they were taking us to court to have a court order issued for the surrendering of our pet.

I called Western Resources to discuss this problem and they assured me that they knew that there was no chance of rabies being transmitted to their employee and that the state (KDHE) was pressuring them to have the employee start the rabies vaccine. The worker at that time, was refusing the shots.

We were told that KDHE used their power to expedite the trial, because they felt that a contagious disease was the issue.

We did previously offer numerous times to quarantine the ferret for up to thirty days and to have other tests done such as the tactile skin and hair test, to look for rabies. Tests, I might add, that are a substantial degree more accurate that the brain

tissue test, which requires the death of our pet.

We offered in court, health records of December 18, 1993, from a veterinarian who examined the ferret which concluded that it was disease free.

We were ordered to find and turn over our ferret within twenty-four hours by the court for testing. At that time, we had no longer possession of the animal.

Since we did not have the ferret or know of its whereabouts, we were unable to turn the ferret over to the court.

My husband was then immediately suspended without pay, consequently, three days before Christmas.

On December 29, 1993, we were served with contempt of court papers.

On January 3, 1994, we first appeared in court for contempt charges, and again on the seventh.

I was found in contempt, but my husband was not. I was ordered to pay for the shots which began December 21, 1993.

My husband was fired on January 19, 1994, basically because of the ferret issue. His personnel file was immaculate.

My family has been ridiculed publicly and in the papers, over an incident that should not have ever happened.

We have incurred well over ten-thousand dollars in lawyer fees, by doing no wrong, just by being a victim of animal classification.

Our lives will never be the same. My 13 year old daughter is traumatized, feeling that she is to blame for this entire incident. My family and myself feel like we no longer can live safely in our county, or even the state, for fear of further repercussions.

I am trying to support a family of five on four-ninety an hour, which is not easy to do.

All of this has come about because of a hand raised, three pound, domesticated pet, bought and sold as such, being misidentified by a state department.

No family should be forced to go through what we have been, and still are facing.

Until the ferret is officially classified as domesticated as it should be, the door remains open for more innocent families to fall prey. I hope to use my own tragedy as a cornerstone in the foundation for better understanding for our furry friend, the ferret

With Respect,

Rita McDowell

Rita McDowell

Testimony presented to the

State Committee on Public Health and Welfare

by

Dr. Deborah J. Briggs

Senate Bill 815

Rabies is a virus that infects most if not all warm-blooded animals, and if infection is not circumvented, death will ensue. Exposure and infection occur when rabies-infected saliva enters an open cut, wound, or mucous membrane.

The National Association of State Public Health Veterinarians Committee (NASPHV) and Consultants from the Centers for Disease Control (CDC) meet annually to review procedural recommendations for animals that have bitten humans or have been exposed to a known rabid animal. These yearly recommendations are adhered to by all State Departments of Public Health because members of the Committee are experts in the field of rabies and are acutely aware of any and all new developments in the area of rabies research. The NASPHV Committee recommends a 10 day confinement and observation period for dogs and cats that bite a human because if the dog or cat is shedding virus at the time of the bite, it will be demonstrating clinical signs or die within 10 days and the bitten person can receive timely treatment if the animal is confirmed rabid.

The closest relative to the ferret on which rabies natural history data is available is the skunk, both are members of the family Mustelidae. In laboratory experiments, skunks have been demonstrated to excrete rabies virus in their saliva for up to 18 days before death and at least 8 days prior to evidence of clinical signs. Limited experimental studies on ferrets infected with rodent and European fox strains of rabies virus have been conducted. However, no viral shedding studies have been conducted on the North American strains of rabies virus. Therefore the shedding period of the North American strains of rabies virus in ferrets is unknown. On February 23, 1994 the NASPHV, members of the rabies department at the CDC and myself held a conference call to discuss the experimental protocol and identify which strains of rabies virus need to be scientifically investigated in order to determine the shedding period of North American strains of rabies virus in ferrets. Both the NASPHV and the CDC are supportive of the shedding studies of North American strains of rabies virus being investigated at KSU in collaboration with the CDC. At the present time, various isolates of North American strains of rabies virus are being collected and tested in order to obtain suitable isolates to conduct the shedding period experiments.

Due to these facts, I believe it would be premature to pass Bill 815 before the scientific data is available. When the experimental data from the study investigating the shedding period of rabies in ferrets is available, the NASPHV and CDC will have the information necessary to make appropriate recommendations for evaluating ferrets that bite humans.

Senate PH&W
Attachment #5
3-10-94

STATE OF KANSAS
Animal Health Department

TO: Senate Public Health and Welfare Committee
FROM: Samuel L Graham, Acting Livestock Commissioner
RE: SB 815
DATE: March 10, 1994

Classifying ferrets as domestic animals is not the questions as they have been domesticated for several thousand years. However, redefining this species as domestic does affect KSA 28-1-13 in three significant ways.

1. The law states that when investigating the biting of a human or other animal, the biting animal is to be isolated for observation for an appropriate time (10 days for dogs and cats).

   The professional community does not have enough information concerning the shedding pattern of the rabies virus in infected ferrets to safely set isolation periods. If this bill is passed someone will be required to make a judgment without sufficient scientific data. Subjecting ferrets to the same standards as dogs and cats in rabies diagnosis in my opinion would be dangerous.

2. The law makes provision for not sacrificing wild animals in certain circumstances. Ferrets might lose this protection if this bill is passed.

3. When quarantining animals known to have been bitten by suspected rabid animals, wild animals are sacrificed immediately. Dogs and cats, if they have been properly immunized against rabies, may be re-immunized and quarantined for 90 days. If this bill is passed we would have to assume that the 90 day quarantine for ferrets is adequate.

Dr. Lyle P Vogel of the American Veterinary Medical Association states, "It is important for ferret owners to understand that the shedding period for the rabies virus in ferrets is unknown."

For these reasons I oppose the passage of this bill.

SLG:es
legis/sb815

Senate PH&W
Attachment #6

712 Kansas Ave., Suite 4B Topeka, Kansas 66603 Phone 913\296\2326 Fax 913\296\1765

3-10-94

implementing K.S.A. 1981 Supp. 65-101; effective May 1, 1982.)

Editor's Note:

Former regulation 28-1-12 was revoked May 1, 1982, and the number reassigned.

28-1-13. Rabies control; isolation of biting animals for observation and examination; quarantine of bitten animals. (a) In conjunction with investigation of the biting of a human or an animal by another animal, the isolation of the biting animal shall be as follows:

(1) An owned domestic animal shall be isolated for an appropriate period (10 days for dogs and cats) under conditions satisfactory to the local health officer.

(2) Stray, unclaimed, or unwanted domestic animals shall be sacrificed immediately and the head submitted for laboratory examination for evidence of rabies infection.

(3) Wild animals, including skunks, foxes, raccoons, coyotes, indigenous bats, and other species ordinarily known to be involved in the transmission of rabies, whether owned or unowned, shall be sacrificed immediately and the head submitted for laboratory examination for evidence of rabies infection.

(4) Wild animals, including rabbits, gerbils, hamsters, mice, rats, squirrels, and other species not ordinarily known to be involved in the transmission of rabies, need not be sacrificed and submitted for laboratory examination for evidence of rabies infection, unless the circumstances of the biting incident, in the judgement of the local health officer, indicate otherwise.

(5) The disposition of animals which are not ordinarily known to be involved in the transmission of rabies, and which are maintained in zoological parks, shall be in accordance with the judgment of the local health officer.

(b) Quarantine of animals bitten by a known or suspected rabid animal shall be as follows:

(1) Stray, unclaimed, or unwanted domestic animals shall be sacrificed immediately.

(2) Wild animals, whether owned or unowned, shall be sacrificed immediately.

(3) Owned, wanted dogs and cats which are not immunized against rabies shall be quarantined for six months under conditions satisfactory to the local health officer. These animals shall be immunized against rabies one month before release from quarantine.

(4) Owned, wanted dogs and cats which, in the judgement of the local health officer, are properly immunized against rabies, shall be immediately re-immunized and quarantined for 90 days. (Authorized by K.S.A. 65-128, K.S.A. 1984 Supp. 65-101; implementing K.S.A. 1984 Supp. 65-101; effective May 1, 1982; amended May 1, 1986.)

Editor's Note:

Former regulation 28-1-13 was revoked May 1,1982, and the number reassigned.

28-1-14. Rabies control in wildlife animals. (a) The possession or sale of striped or spotted skunks, civit cats, raccoons, foxes and coyotes for keeping of these animals as pets shall be prohibited.

(b) Removal of musk glands of skunks and civit cats for purposes of attempted domestication shall be prohibited.

(c) Attempts to immunize skunks, coyotes, raccoons, foxes, and other wildlife animals known to be involved in the transmission of rabies shall be prohibited.

(d) Sections (a) and (b) above shall not apply to bonafide zoological parks or research institutions. (Authorized by and implementing K.S.A. 1982 Supp. 65-101; effective May 1, 1982; amended May 1, 1983.)

Editor's Note:

Former regulation 28-1-14 was revoked May 1,1982, and the number reassigned.

23-1-15. Psittacosis control; records of purchase and sale. Breeders, wholesalers, distributors and retailers of psittacine birds shall maintain a record of the date of purchase and the source of each psittacine bird, and the name and address of the person to whom each psittacine bird is sold. These records shall be kept for one (1) year. (Authorized by and implementing K.S.A. 1981 Supp. 65-101; effective May 1, 1982.)

Editor's Note:

Former regulation 28-1-15 was revoked May 1, 1982, and the number reassigned.

23-1-16. (Authorized by K.S.A. 65-128; effective Jan. 1, 1966; revoked May 1, 1982.)

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CENTERS FOR DISEASE CONTROL

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MMWR

Recommendations and Reports

MORBIDITY AND MORTALITY WEEKLY REPORT

Rabies Prevention — United States, 1991

Recommendations of the Immunization Practices Advisory Committee (ACIP)

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control
Center for Infectious Diseases
Division of Viral and Rickettsial Diseases
Atlanta, Georgia 30333

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Rabies Prevention—United States, 1991

Recommendations of the Immunization Practices Advisory Committee (ACIP)

*These revised recommendations of the Immunization Practices Advisory Committee (ACIP) on rabies prevention update the previous recommendations (*MMWR *1984;33:393-402,407-8) to reflect the current status of rabies and antirabies biologics in the United States.**

INTRODUCTION

Following the marked decrease of rabies cases among domestic animals in the United States in the 1940s and 1950s, indigenously acquired rabies among humans decreased to fewer than two cases per year in the 1960s and 1970s and fewer than one case per year during the 1980s (*1*). In 1950, for example, 4,979 cases of rabies were reported among dogs and 18 were reported among human populations; in 1989, 160 cases were reported among dogs and one was reported among humans. Thus, the likelihood of human exposure to a rabid domestic animal has decreased greatly; however, the many possible exposures that result from frequent contact between domestic dogs and humans continue to be the basis of most antirabies treatments (*2*).

Rabies among wild animals—especially skunks, raccoons, and bats—has become more prevalent since the 1950s, accounting for >85% of all reported cases of animal rabies every year since 1976 (*1*). Rabies among animals occurs throughout the continental United States; only Hawaii remains consistently rabies-free. Wild animals now constitute the most important potential source of infection for both humans and domestic animals in the United States. In much of the rest of the world, including most of Asia, Africa, and Latin America, the dog remains the major species with rabies and the major source of rabies among humans. Nine of the 13 human rabies deaths reported to CDC from 1980 through 1990 appear to have been related to exposure to rabid animals outside of the United States (*3-9*).

Although rabies among humans is rare in the United States, every year approximately 18,000 persons receive rabies preexposure prophylaxis and an additional 10,000 receive postexposure prophylaxis. Appropriate management of persons possibly exposed to rabies depends on the interpretation of the risk of infection. Decisions about management must be made immediately. All available methods of systemic prophylactic treatment are complicated by occasional adverse reactions, but these are rarely severe (*10-14*).

Data on the efficacy of active and passive rabies immunization have come from both human and animal studies. Evidence from laboratory and field experience in many areas of the world indicates that postexposure prophylaxis combining local

*For assistance with problems or questions about rabies prophylaxis, contact your local or state health department. If local or state health department personnel are unavailable, call the Division of Viral and Rickettsial Diseases, Center for Infectious Diseases, CDC ([404] 639-1075 during working hours or [404] 639-2888 nights, weekends, and holidays).

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wound treatment, passive immunization, and vaccination is uniformly effective when appropriately applied (*15-20*). However, rabies has occasionally developed among humans when key elements of the rabies postexposure prophylaxis treatment regimens were omitted or incorrectly administered (see Postexposure Treatment Outside the United States).

RABIES IMMUNIZING PRODUCTS

There are two types of rabies immunizing products.

1) Rabies vaccines induce an active immune response that includes the production of neutralizing antibodies. This antibody response requires approximately 7-10 days to develop and usually persists for ≥2 years.
2) Rabies immune globulins (RIG) provide rapid, passive immune protection that persists for only a short time (half-life of approximately 21 days) (*21,22*).

In almost all postexposure prophylaxis regimens, both products should be used concurrently.

Rabies Immunizing Products, United States, 1991

Human Rabies Vaccine	
Rabies Vaccine, Human Diploid Cell (HDCV)	
Intramuscular	Imovax® Rabies
Intradermal	Imovax® Rabies I.D.
Rabies Vaccine Adsorbed (RVA)	
Rabies Immune Globulin (RIG)	
Rabies Immune Globulin, Human (HRIG):	Hyperab®
	Imogam® Rabies

Vaccines Licensed for Use in the United States

Two inactivated rabies vaccines are currently licensed for preexposure and postexposure prophylaxis in the United States.

Rabies Vaccine, Human Diploid Cell (HDCV)

HDCV is prepared from the Pitman-Moore strain of rabies virus grown in MRC-5 human diploid cell culture and concentrated by ultrafiltration (*23*). The vaccine is inactivated with betapropiolactone (*18*) and is supplied in forms for:

1) Intramuscular (IM) administration, a single-dose vial containing lyophilized vaccine (Pasteur-Merieux Sérum et Vaccins, Imovax® Rabies, distributed by Connaught Laboratories, Inc., Phone: 800-VACCINE) that is reconstituted in the vial with the accompanying diluent to a final volume of 1.0 ml just before administration.
2) Intradermal (ID) administration, a single-dose syringe containing lyophilized vaccine (Pasteur-Merieux Sérum et Vaccins, Imovax® Rabies I.D., distributed by Connaught Laboratories, Inc.) that is reconstituted in the syringe to a volume of 0.1 ml just before administration (*24*).

A human diploid cell-derived rabies vaccine developed in the United States (Wyeth Laboratories, Wyvac®) was recalled by the manufacturer from the market in 1985 and is no longer available (*25*).

Rabies Vaccine, Adsorbed (RVA)

RVA (Michigan Department of Public Health) was licensed on March 19, 1988; it was developed and is currently distributed by the Biologics Products Program, Michigan Department of Public Health. The vaccine is prepared from the Kissling strain of Challenge Virus Standard (CVS) rabies virus adapted to fetal rhesus lung diploid cell culture (*26-32*). The vaccine virus is inactivated with betapropiolactone and concentrated by adsorption to aluminum phosphate. Because RVA is adsorbed to aluminum phosphate, it is liquid rather than lyophilized. RVA is currently available only from the Biologics Products Program, Michigan Department of Public Health. Phone: (517) 335-8050

Both types of rabies vaccines are considered equally efficacious and safe when used as indicated. The full 1.0-ml dose of either product can be used for both preexposure and postexposure prophylaxis. Only the Imovax® Rabies I.D. vaccine (HDCV) has been evaluated by the ID dose/route for preexposure vaccination (*33-36*); the antibody response and side effects after ID administration of RVA have not been studied (*24*). *Therefore, RVA should not be used intradermally.*

Rabies Immune Globulins Licensed for Use in the United States

HRIG (Cutter Biological [a division of Miles Inc.], Hyperab®; and Pasteur-Merieux Sérum et Vaccins, Imogam® Rabies, distributed by Connaught Laboratories, Inc.) is an antirabies gamma globulin concentrated by cold ethanol fractionation from plasma of hyperimmunized human donors. Rabies neutralizing antibody content, standardized to contain 150 international units (IU) per ml, is supplied in 2-ml (300 IU) and 10-ml (1,500 IU) vials for pediatric and adult use, respectively.

Both HRIG preparations are considered equally efficacious and safe when used as described in this document.

POSTEXPOSURE PROPHYLAXIS: RATIONALE FOR TREATMENT

Physicians should evaluate each possible exposure to rabies and if necessary consult with local or state public health officials regarding the need for rabies prophylaxis (Table 1). In the United States, the following factors should be considered before specific antirabies treatment is initiated.

Type of Exposure

Rabies is transmitted only when the virus is introduced into open cuts or wounds in skin or mucous membranes. If there has been no exposure (as described in this

section), postexposure treatment is not necessary. The likelihood of rabies infection varies with the nature and extent of exposure. Two categories of exposure (bite and nonbite) should be considered.

Bite

Any penetration of the skin by teeth constitutes a bite exposure. Bites to the face and hands carry the highest risk, but the site of the bite should not influence the decision to begin treatment (*17*).

Nonbite

Scratches, abrasions, open wounds, or mucous membranes contaminated with saliva or other potentially infectious material (such as brain tissue) from a rabid animal constitute nonbite exposures. If the material containing the virus is dry, the virus can be considered noninfectious.

Other contact by itself, such as petting a rabid animal and contact with the blood, urine, or feces (e.g., guano) of a rabid animal, does not constitute an exposure and is not an indication for prophylaxis.

Although occasional reports of transmission by nonbite exposure suggest that such exposures constitute sufficient reason to initiate postexposure prophylaxis under some circumstances, nonbite exposures rarely cause rabies (*37*). The nonbite exposures of highest risk appear to be exposures to large amounts of aerosolized rabies virus, organs (i.e., corneas) transplanted from patients who died of rabies, and scratches by rabid animals. Two cases of rabies have been attributed to airborne

Table 1. Rabies postexposure prophylaxis guide, United States, 1991

Animal type	Evaluation and disposition of animal	Postexposure prophylaxis recommendations
Dogs and cats	Healthy and available for 10 days observation	Should not begin prophylaxis unless animal develops symptoms of rabies*
	Rabid or suspected rabid	Immediate vaccination
	Unknown (escaped)	Consult public health officials
Skunks, raccoons, bats, foxes, and most other carnivores; woodchucks	Regarded as rabid unless geographic area is known to be free of rabies or until animal proven negative by laboratory tests†	Immediate vaccination
Livestock, rodents, and lagomorphs (rabbits and hares)	Consider individually	Consult public health officials. Bites of squirrels, hamsters, guinea pigs, gerbils, chipmunks, rats, mice, other rodents, rabbits, and hares almost never require antirabies treatment

*During the 10-day holding period, begin treatment with HRIG and HDCV or RVA at first sign of rabies in a dog or cat that has bitten someone. The symptomatic animal should be killed immediately and tested.

†The animal should be killed and tested as soon as possible. Holding for observation is not recommended. Discontinue vaccine if immunofluorescence test results of the animal are negative.

exposures in laboratories, and two cases of rabies have been attributed to probable airborne exposures in a bat-infested cave in Texas (*38,39*).

The only documented cases of rabies caused by human-to-human transmission occurred among six recipients of transplanted corneas. Investigations revealed each of the donors had died of an illness compatible with or proven to be rabies (*40-43*). The six cases occurred in four countries: Thailand (two cases), India (two cases), the United States (one case), and France (one case). Stringent guidelines for acceptance of donor corneas have reduced this risk.

Apart from corneal transplants, bite and nonbite exposures inflicted by infected humans could theoretically transmit rabies, but no such cases have been documented (*44*). Adherence to respiratory precautions will minimize the risk of airborne exposure (*45*).

Animal Rabies Epidemiology and Evaluation of Involved Species

Wild Animals

Carnivorous wild animals (especially skunks, raccoons, and foxes) and bats are the animals most often infected with rabies and the cause of most indigenous cases of human rabies in the United States since 1960 (*1*). All bites by wild carnivores and bats must be considered possible exposures to the disease. Postexposure prophylaxis should be initiated when patients are exposed to wild carnivores unless 1) the exposure occurred in a part of the continental United States known to be free of terrestrial rabies and the results of immunofluorescence antibody testing will be available within 48 hours or 2) the animal has already been tested and shown not to be rabid. If treatment has been initiated and subsequent immunofluorescence testing shows that the exposing animal was not rabid, treatment can be discontinued.

Signs of rabies among carnivorous wild animals cannot be interpreted reliably; therefore, any such animal that bites or scratches a person should be killed at once (without unnecessary damage to the head) and the brain submitted for rabies testing. If the results of testing are negative by immunofluorescence, the saliva can be assumed to contain no virus, and the person bitten does not require treatment.

If the biting animal is a particularly rare or valuable specimen and the risk of rabies small, public health authorities may choose to administer postexposure treatment to the bite victim in lieu of killing the animal for rabies testing (*46*). Such animals should be quarantined for 30 days.

Rodents (such as squirrels, hamsters, guinea pigs, gerbils, chipmunks, rats, and mice) and lagomorphs (including rabbits and hares) are almost never found to be infected with rabies and have not been known to cause rabies among humans in the United States. However, from 1971 through 1988, woodchucks accounted for 70% of the 179 cases of rabies among rodents reported to CDC (*47*). In all cases involving rodents, the state or local health department should be consulted before a decision is made to initiate postexposure antirabies prophylaxis.

Exotic pets (including ferrets) and domestic animals crossbred with wild animals are considered wild animals by the National Association of State Public Health Veterinarians (NASPHV) and the Conference of State and Territorial Epidemiologists (CSTE) because they may be highly susceptible to rabies and could transmit the disease. Because the period of rabies virus shedding in these animals is unknown, these animals should be killed and tested rather than confined and observed when

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they bite humans (*46*). Wild animals (skunks, raccoons, and bats) and wild animals crossbred with dogs should not be kept as pets (*46*).

Domestic Animals

The likelihood that a domestic animal is infected with rabies varies by region; hence, the need for postexposure prophylaxis also varies. In the continental United States, rabies among dogs is reported most commonly along the U.S.-Mexico border and sporadically from the areas of the United States with enzootic wildlife rabies, especially the Midwest. During most of the 1980s in the United States, more cats than dogs were reported rabid; the majority of these cases were associated with the mid-Atlantic epizootic of rabies among raccoons. The large number of rabies-infected cats may be attributed to fewer cat vaccination laws, fewer leash laws, and the roaming habits of cats. Cattle tend to be most often exposed to rabies via rabid skunks.

In areas where canine rabies is not enzootic (including virtually all of the United States and its territories), a healthy domestic dog or cat that bites a person should be confined and observed for 10 days. Any illness in the animal during confinement or before release should be evaluated by a veterinarian and reported immediately to the local health department. If signs suggestive of rabies develop, the animal should be humanely killed and its head removed and shipped, under refrigeration, for examination by a qualified laboratory. Any stray or unwanted dog or cat that bites a person should be killed immediately and the head submitted as described for rabies examination (*46*).

In most developing countries of Asia, Africa, and Central and South America, dogs are the major vector of rabies; exposures to dogs in such countries represent a special threat. Travelers to these countries should be aware that >50% of the rabies cases among humans in the United States result from exposure to dogs outside the United States. Although dogs are the main reservoir of rabies in these countries, the epizootiology of the disease among animals differs sufficiently by region or country to warrant the evaluation of all animal bites.

Exposures to dogs in canine rabies-enzootic areas outside the United States carry a high risk; some authorities therefore recommend that postexposure rabies treatment be initiated immediately after such exposures. Treatment can be discontinued if the dog or cat remains healthy during the 10-day observation period.

Circumstances of Biting Incident and Vaccination Status of Exposing Animal

An unprovoked attack by a domestic animal is more likely than a provoked attack to indicate that the animal is rabid. Bites inflicted on a person attempting to feed or handle an apparently healthy animal should generally be regarded as provoked.

A fully vaccinated dog or cat is unlikely to become infected with rabies, although rare cases have been reported (*48*). In a nationwide study of rabies among dogs and cats in 1988, only one dog and two cats that were vaccinated contracted rabies (*49*). All three of these animals had received only single doses of vaccine; no documented vaccine failures occurred among dogs or cats that had received two vaccinations.

POSTEXPOSURE PROPHYLAXIS: LOCAL TREATMENT OF WOUNDS AND VACCINATION

The essential components of rabies postexposure prophylaxis are local wound treatment and the administration, in most instances, of both HRIG and vaccine (Table 2). Persons who have been bitten by animals suspected or proven rabid should begin treatment within 24 hours. However, there have been instances when the decision to begin treatment was not made until many months after the exposure because of a delay in recognition that an exposure had occurred and awareness that incubation periods of >1 year have been reported.

In 1977, the World Health Organization (WHO) recommended a regimen of RIG and six doses of HDCV over a 90-day period. This recommendation was based on studies in Germany and Iran (*16,20*). When used this way, the vaccine was found to be safe and effective in protecting persons bitten by proven rabid animals and induced an excellent antibody response in all recipients (*16*). Studies conducted in the United States by CDC have shown that a regimen of one dose of HRIG and five doses of HDCV over a 28-day period was safe and induced an excellent antibody response in all recipients (*15*).

Table 2. Rabies postexposure prophylaxis schedule, United States, 1991

Vaccination status	Treatment	Regimen*
Not previously vaccinated	Local wound cleansing	All postexposure treatment should begin with immediate thorough cleansing of all wounds with soap and water.
	HRIG	20 IU/kg body weight. If anatomically feasible, up to one-half the dose should be infiltrated around the wound(s) and the rest should be administered IM in the gluteal area. HRIG should not be administered in the same syringe or into the same anatomical site as vaccine. Because HRIG may partially suppress active production of antibody, no more than the recommended dose should be given.
	Vaccine	HDCV or RVA, 1.0 ml, IM (deltoid area†), one each on days 0, 3, 7, 14 and 28.
Previously vaccinated§	Local wound cleansing	All postexposure treatment should begin with immediate thorough cleansing of all wounds with soap and water.
	HRIG	HRIG should not be administered.
	Vaccine	HDCV or RVA, 1.0 ml, IM (deltoid area†), one each on days 0 and 3.

*These regimens are applicable for all age groups, including children.
†The deltoid area is the only acceptable site of vaccination for adults and older children. For younger children, the outer aspect of the thigh may be used. Vaccine should never be administered in the gluteal area.
§Any person with a history of preexposure vaccination with HDCV or RVA; prior postexposure prophylaxis with HDCV or RVA; or previous vaccination with any other type of rabies vaccine and a documented history of antibody response to the prior vaccination.

Local Treatment of Wounds

Immediate and thorough washing of all bite wounds and scratches with soap and water is an important measure for preventing rabies. In studies of animals, simple local wound cleansing has been shown to reduce markedly the likelihood of rabies (*50,51*). Tetanus prophylaxis and measures to control bacterial infection should be given as indicated. The decision to suture large wounds should take into account cosmetic factors and the potential for bacterial infections.

Immunization

Vaccine Usage

Two rabies vaccines are currently available in the United States; either is administered in conjunction with HRIG at the beginning of postexposure therapy. A regimen of five 1-ml doses of HDCV or RVA should be given intramuscularly. The first dose of the five-dose course should be given as soon as possible after exposure. Additional doses should be given on days 3, 7, 14, and 28 after the first vaccination. For adults, the vaccine should always be administered IM in the deltoid area. For children, the anterolateral aspect of the thigh is also acceptable. The gluteal area should never be used for HDCV or RVA injections, since administration in this area results in lower neutralizing antibody titers (*52*).

Postexposure antirabies vaccination should always include administration of both passive antibody and vaccine, with the exception of persons who have previously received complete vaccination regimens (preexposure or postexposure) with a cell culture vaccine, or persons who have been vaccinated with other types of vaccines and have had documented rabies antibody titers. These persons should receive only vaccine (see Postexposure Therapy of Previously Vaccinated Persons). The combination of HRIG (local and systemic) and vaccine is recommended for both bite and nonbite exposures (see Postexposure Prophylaxis: Rationale for Treatment), regardless of the interval between exposure and initiation of treatment.

Because the antibody response after the recommended postexposure vaccination regimen with HDCV or RVA has been satisfactory, routine postvaccination serologic testing is not recommended. Serologic testing is only indicated in unusual instances, as when the patient is known to be immunosuppressed. The state health department may be contacted for recommendations on this matter.

HRIG Usage

HRIG is administered only once (i.e., at the beginning of antirabies prophylaxis) to provide immediate antibodies until the patient responds to HDCV or RVA by actively producing antibodies. If HRIG was not given when vaccination was begun, it can be given through the seventh day after administration of the first dose of vaccine. Beyond the seventh day, HRIG is not indicated since an antibody response to cell culture vaccine is presumed to have occurred. The recommended dose of HRIG is 20 IU/kg. This formula is applicable for all age groups, including children. If anatomically feasible, up to one-half the dose of HRIG should be thoroughly infiltrated in the area around the wound and the rest should be administered intramuscularly in the gluteal area. *HRIG should never be administered in the same syringe or into the same anatomical site as vaccine.* Because HRIG may partially suppress active production of antibody, no more than the recommended dose should be given (*53*).

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VACCINATION AND SEROLOGIC TESTING

The effectiveness of rabies vaccines is primarily measured by their ability to protect persons exposed to rabies. HDCV has been used effectively with HRIG or equine antirabies serum (ARS) worldwide to treat persons bitten by various rabid animals (*15,16*). An estimated one million people worldwide have received rabies postexposure prophylaxis with HDCV since its introduction 12 years ago (*54*).

In studies of animals, antibody titers have been shown to be markers of protection. Antibody titers will vary with time since the last vaccination. Differences among laboratories that test blood samples may also influence the results.

Serologic Response Shortly After Vaccination

All persons tested at CDC 2-4 weeks after completion of preexposure and postexposure rabies prophylaxis according to ACIP guidelines have demonstrated an antibody response to rabies (*15,55,56*). Therefore, it is not necessary to test serum samples from patients completing preexposure or postexposure prophylaxis to document seroconversion unless the person is immunosuppressed (see Precautions and Contraindications). If titers are obtained, specimens collected 2-4 weeks after preexposure or postexposure prophylaxis should completely neutralize challenge virus at a 1:25 serum dilution by the rapid fluorescent focus inhibition test (RFFIT). (This dilution is approximately equivalent to the minimum titer of 0.5 IU recommended by the WHO.)

Serologic Response and Preexposure Booster Doses of Vaccine

Two years after primary preexposure vaccination, a 1:5 serum dilution will fail to neutralize challenge virus completely (by RFFIT) among 2%-7% of persons who received the three-dose preexposure series intramuscularly and 5%-17% of persons who received the three-dose series intradermally (*57*). If the titer falls below 1:5, a preexposure booster dose of vaccine is recommended for a person at continuous or frequent risk (Table 3) of exposure to rabies. The following guidelines are recommended for determining when serum testing should be performed after primary preexposure vaccination:

1. A person in the continuous risk category (Table 3) should have a serum sample tested for rabies antibody every 6 months (*58*).
2. A person in the frequent risk category (Table 3) should have a serum sample tested for rabies antibody every 2 years.

State or local health departments may provide the names and addresses of laboratories performing rabies serologic testing.

POSTEXPOSURE TREATMENT OUTSIDE THE UNITED STATES

U.S. citizens and residents who are exposed to rabies while traveling outside the United States in countries where rabies is endemic may sometimes receive postexposure therapy with regimens or biologics that are not used in the United States. The following information is provided to familiarize physicians with some of the regimens

used more widely abroad. These schedules have not been submitted for approval by the Food and Drug Administration (FDA) for use in the United States. If postexposure treatment is begun outside the United States using one of these regimens or biologics of nerve tissue origin, it may be necessary to provide additional treatment when the patient reaches the United States. State or local health departments should be contacted for specific advice in such cases.

Modifications to the postexposure vaccine regimen approved for use in the United States have been made to reduce the cost of postexposure prophylaxis and hasten the development of active immunity (*59*). Costs are reduced primarily by substituting various schedules of ID injections (0.1 ml each) of HDCV (or newer tissue culture-derived rabies vaccines for humans) for IM injection of HDCV. Two such regimens are efficacious among persons bitten by rabid animals (*60*). One of these regimens consists of 0.1-ml ID doses of HDCV given at eight different sites (deltoid, suprascapular, thigh, and abdominal wall) on day 0; four ID 0.1-ml doses given at four sites on day 7 (deltoid, thigh); and one ID 0.1-ml dose given in the deltoid on both day 28 and 91. Another ID regimen shown to be efficacious and now widely used in Thailand

Table 3. Rabies preexposure prophylaxis guide, United States, 1991

Risk category	Nature of risk	Typical populations	Preexposure recommendations
Continuous	Virus present continuously, often in high concentrations. Aerosol, mucous membrane, bite, or nonbite exposure. Specific exposures may go unrecognized.	Rabies research lab worker;* rabies biologics production workers.	Primary course. Serologic testing every 6 months; booster vaccination when antibody level falls below acceptable level.†
Frequent	Exposure usually episodic, with source recognized, but exposure may also be unrecognized. Aerosol, mucous membrane, bite, or nonbite exposure.	Rabies diagnostic lab workers,* spelunkers, veterinarians and staff, and animal-control and wildlife workers in rabies enzootic areas. Travelers visiting foreign areas of enzootic rabies for more than 30 days.	Primary course. Serologic testing or booster vaccination every 2 years.†
Infrequent (greater than population at large)	Exposure nearly always episodic with source recognized. Mucous membrane, bite, or nonbite exposure.	Veterinarians and animal-control and wildlife workers in areas of low rabies enzooticity. Veterinary students.	Primary course; no serologic testing or booster vaccination.
Rare (population at large)	Exposures always episodic. Mucous membrane, or bite with source unrecognized.	U.S. population at large, including persons in rabies epizootic areas.	No vaccination necessary.

*Judgment of relative risk and extra monitoring of vaccination status of laboratory workers is the responsibility of the laboratory supervisor (*58*).
†Minimum acceptable antibody level is complete virus neutralization at a 1:5 serum dilution by RFFIT. Booster dose should be administered if the titer falls below this level.

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employs Purified VERO Cell Rabies Vaccine (Pasteur-Merieux), with 0.1-ml doses given at two different sites on days 0, 3, and 7, followed by one 0.1-ml booster on days 30 and 90 (*61*).

Strategies designed to hasten the development of active immunity have concentrated on administering more IM or ID doses at the time postexposure prophylaxis is initiated with fewer doses thereafter (*62*). The most extensively evaluated regimen in this category, developed in Yugoslavia, has been the 2-1-1 regimen (two 1.0-ml IM doses on day 0, and one each on days 7 and 21) (*63-65*). However, when using HRIG in conjunction with this schedule, there may be some suppression of the neutralizing antibody response (*65*).

Purified antirabies sera of equine origin (Sclavo; Pasteur-Merieux; Swiss Serum and Vaccine Institute, Bern) have been used effectively in developing countries where HRIG may not be available. The incidence of adverse reactions has been low (0.8%-6.0%) and most of those that occurred were minor (*66-68*).

Although no postexposure vaccine failures have occurred in the United States during the 10 years that HDCV has been licensed, seven persons have contracted rabies after receiving postexposure treatment with both HRIG and HDCV outside the United States. An additional six persons have contracted the disease after receiving postexposure prophylaxis with other cell culture-derived vaccines and HRIG or ARS. However, in each of these cases, there was some deviation from the recommended postexposure treatment protocol (*69-71*). Specifically, patients who contracted rabies after postexposure prophylaxis did not have their wounds cleansed with soap and water or other antiviral agents, did not receive their rabies vaccine injections in the deltoid area (i.e., vaccine was administered in the gluteal area), or did not receive passive vaccination around the wound site.

PREEXPOSURE VACCINATION AND POSTEXPOSURE THERAPY OF PREVIOUSLY VACCINATED PERSONS

Preexposure vaccination should be offered to persons among high-risk groups, such as veterinarians, animal handlers, certain laboratory workers, and persons spending time (e.g., 1 month) in foreign countries where canine rabies is endemic. Other persons whose activities bring them into frequent contact with rabies virus or potentially rabid dogs, cats, skunks, raccoons, bats, or other species at risk of having rabies should also be considered for preexposure prophylaxis.

Preexposure prophylaxis is given for several reasons. First, it may provide protection to persons with inapparent exposures to rabies. Second, it may protect persons whose postexposure therapy might be delayed. Finally, although preexposure vaccination does not eliminate the need for additional therapy after a rabies exposure, it simplifies therapy by eliminating the need for HRIG and decreasing the number of doses of vaccine needed—a point of particular importance for persons at high risk of being exposed to rabies in areas where immunizing products may not be available or where they may carry a high risk of adverse reactions.

Primary Preexposure Vaccination

Intramuscular Primary Vaccination

Three 1.0-ml injections of HDCV or RVA should be given intramuscularly (deltoid area), one each on days 0, 7, and 21 or 28 (Table 4). In a study in the United States,

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>1,000 persons received HDCV according to this regimen. Antibody was demonstrated in serum samples of all subjects when tested by the RFFIT. Other studies have produced comparable results (*33,56,72,73*).

Intradermal Primary Vaccination

A regimen of three 0.1-ml doses of HDCV, one each on days 0, 7, and 21 or 28 (*10,33,34,36,72,73*), is also used for preexposure vaccination (Table 4). The ID dose/route has been recommended previously by the ACIP as an alternative to the 1.0-ml IM dose/route for rabies preexposure prophylaxis with HDCV (*24,74*).

Pasteur-Merieux developed a syringe containing a single dose of lyophilized HDCV (Imovax® Rabies I.D.) that is reconstituted in the syringe just before administration. The syringe is designed to deliver 0.1 ml of HDCV reliably and was approved by the FDA in 1986 (*24*). The 0.1-ml ID doses, given in the area over the deltoid (lateral aspect of the upper arm) on days 0, 7, and 21 or 28, are used for primary preexposure vaccination. One 0.1-ml ID dose is used for booster vaccination (see Table 3). The 1.0-ml vial is not approved for multi-dose ID use. *RVA should not be given by the ID dose/route* (*26*).

Chloroquine phosphate (administered for malaria chemoprophylaxis) interferes with the antibody response to HDCV (*75*). Accordingly, HDCV should not be administered by the ID dose/route to persons traveling to malaria-endemic countries while the person is receiving chloroquine (*76*). The IM dose/route of preexposure prophylaxis provides a sufficient margin of safety in this situation (*76*). For persons who will be receiving both rabies preexposure prophylaxis and chloroquine in preparation for travel to a rabies-enzootic area, the ID dose/route should be initiated at least 1 month before travel to allow for completion of the full three-dose vaccine series before antimalarial prophylaxis begins. If this schedule is not possible, the IM dose/route should be used. Although interference with the immune response to rabies vaccine by other antimalarials structurally related to chloroquine (e.g., mefloquine) has not been evaluated, it would seem prudent to follow similar precautions for persons receiving these drugs.

Booster Vaccination

Preexposure Booster Doses of Vaccine

Persons who work with live rabies virus in research laboratories or vaccine production facilities (continuous risk category; see Table 3) are at the highest risk of inapparent exposures. Such persons should have a serum sample tested for rabies

Table 4. Rabies preexposure prophylaxis schedule, United States, 1991

Type of vaccination	Route	Regimen
Primary	IM	HDCV or RVA, 1.0 ml (deltoid area), one each on days 0, 7, and 21 or 28
	ID	HDCV, 0.1 ml, one each on days 0, 7, and 21 or 28
Booster*	IM	HDCV or RVA, 1.0 ml (deltoid area), day 0 only
	ID	HDCV, 0.1 ml, day 0 only

*Administration of routine booster dose of vaccine depends on exposure risk category as noted in Table 3.

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antibody every 6 months (Table 4). Booster doses (IM or ID) of vaccine should be given to maintain a serum titer corresponding to at least complete neutralization at a 1:5 serum dilution by the RFFIT. The frequent risk category includes other laboratory workers, such as those doing rabies diagnostic testing, spelunkers, veterinarians and staff, animal-control and wildlife officers in areas where animal rabies is epizootic, and international travelers living or visiting (for >30 days) in areas where canine rabies is endemic. Persons among this group should have a serum sample tested for rabies antibody every 2 years and, if the titer is less than complete neutralization at a 1:5 serum dilution by the RFFIT, should have a booster dose of vaccine. Alternatively, a booster can be administered in lieu of a titer determination. Veterinarians and animal control and wildlife officers working in areas of low rabies enzooticity (infrequent exposure group) do not require routine preexposure booster doses of HDCV or RVA after completion of primary preexposure vaccination (Table 3).

Postexposure Therapy of Previously Vaccinated Persons

If exposed to rabies, persons previously vaccinated should receive two IM doses (1.0 ml each) of vaccine, one immediately and one 3 days later. Previously vaccinated refers to persons who have received one of the recommended preexposure or postexposure regimens of HDCV or RVA, or those who received another vaccine and had a documented rabies antibody titer. HRIG is unnecessary and should not be given in these cases because an anamnestic antibody response will follow the administration of a booster regardless of the prebooster antibody titer (*77*).

Preexposure Vaccination and Serologic Testing

Because the antibody response after these recommended preexposure prophylaxis vaccine regimens has been satisfactory, serologic testing is not necessary except for persons suspected of being immunosuppressed. Patients who are immunosuppressed by disease or medications should postpone preexposure vaccinations. Immunosuppressed persons who are at risk of rabies exposure should be vaccinated and their antibody titers checked.

UNINTENTIONAL INOCULATION WITH MODIFIED LIVE RABIES VIRUS

Veterinary personnel may be inadvertently exposed to attenuated rabies virus while administering modified live rabies virus (MLV) vaccines to animals. Although there have been no reported rabies cases among humans resulting from exposure to needle sticks or sprays with licensed MLV vaccines, vaccine-induced rabies has occurred among animals given these vaccines. Absolute assurance of a lack of risk for humans, therefore, cannot be given. The best evidence for low risk is the absence of recognized cases of vaccine-associated disease among humans despite frequent inadvertent exposures.

MLV animal vaccines that are currently available are made with one attenuated strain of rabies virus: high egg passage (HEP) Flury strain. The HEP Flury strain has been used in animal vaccines for more than 25 years without evidence of associated disease among humans; therefore, postexposure treatment is not recommended following exposure to this type of vaccine by needle sticks or sprays.

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Because the data are insufficient to assess the true risk associated with any of the MLV vaccines, preexposure vaccination and periodic boosters are recommended for all persons whose activities either bring them into contact with potentially rabid animals or who frequently handle attenuated animal rabies vaccine.

ADVERSE REACTIONS

Human Diploid Cell Rabies Vaccine and Rabies Vaccine Adsorbed

Reactions after vaccination with HDCV and RVA are less serious and common than with previously available vaccines (*78,79*). In studies using a three-dose postexposure regimen of HDCV, local reactions, such as pain, erythema, and swelling or itching at the injection site, have been reported among 30%-74% of recipients. Systemic reactions, such as headache, nausea, abdominal pain, muscle aches, and dizziness have been reported among 5%-40% of recipients. Three cases of neurologic illness resembling Guillain-Barré syndrome that resolved without sequelae in 12 weeks have been reported (*10,80,81*). In addition, a few other subacute central and peripheral nervous system disorders have been temporally associated with HDCV vaccine, but a causal relationship has not been established (*82*).

An immune complex-like reaction occurs among approximately 6% of persons receiving booster doses of HDCV (*11,12*) 2-21 days after administration of the booster dose. These patients develop a generalized urticaria, sometimes accompanied by arthralgia, arthritis, angioedema, nausea, vomiting, fever, and malaise. In no cases have the illnesses been life-threatening. This reaction occurs much less frequently among persons receiving primary vaccination.

The reaction has been associated with the presence of betapropiolactone-altered human serum albumin in the HDCV and the development of immunoglobulin E (IgE) antibodies to this allergen (*83,84*). Among persons who have received their primary vaccination series with HDCV, administration of boosters with a purified HDCV produced in Canada (Connaught Laboratories Ltd., Rabies Vaccine Inactivated [Diploid Cell Origin]-Dried) does not appear to be associated with this reaction (*57*). This vaccine is not yet licensed in the United States.

Vaccines and Immune Globulins Used in Other Countries

Many developing countries use inactivated nerve tissue vaccines made from the brains of adult animals or suckling mice. Nerve tissue vaccine (NTV) is reported to induce neuroparalytic reactions among approximately 1 per 200 to 1 per 2,000 vaccinees; suckling mouse brain vaccine (SMBV) causes reactions in among approximately 1 per 8,000 (*17*).

Human Rabies Immune Globulins

Local pain and low-grade fever may follow receipt of HRIG. Although not reported specifically for HRIG, angioneurotic edema, nephrotic syndrome, and anaphylaxis have been reported after injection of immune globulin (IG). These reactions occur so rarely that a causal relationship between IG and these reactions is not clear.

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There is no evidence that hepatitis B virus (HBV), human immunodeficiency virus (HIV, the causative agent of Acquired Immunodeficiency Syndrome [AIDS]), or other viruses have ever been transmitted by commercially available HRIG in the United States.

Management of Adverse Reactions

Once initiated, rabies prophylaxis should not be interrupted or discontinued because of local or mild systemic adverse reactions to rabies vaccine. Usually such reactions can be successfully managed with anti-inflammatory and antipyretic agents (e.g., aspirin).

When a person with a history of serious hypersensitivity to rabies vaccine must be revaccinated, antihistamines may be given. Epinephrine should be readily available to counteract anaphylactic reactions, and the person should be observed carefully immediately after vaccination.

Although serious systemic, anaphylactic, or neuroparalytic reactions are rare during and after the administration of rabies vaccines, such reactions pose a serious dilemma for the attending physician (*11*). A patient's risk of acquiring rabies must be carefully considered before deciding to discontinue vaccination. Advice and assistance on the management of serious adverse reactions for persons receiving rabies vaccines may be sought from the state health department or CDC.

All serious systemic, neuroparalytic, or anaphylactic reactions to HDCV should be reported immediately to Connaught Laboratories, Inc., Swiftwater, PA 18370. Phone: (800) VACCINE or (717) 839-7187. Serious reactions after the administration of RVA should be reported immediately to Coordinating Physicians, Bureau of Laboratories and Epidemiological Services, Michigan Department of Public Health, P. O. Box 30035, 3500 N. Logan, Lansing, MI 48909. Phone: (517) 335-8050.

PRECAUTIONS AND CONTRAINDICATIONS

Immunosuppression

Corticosteroids, other immunosuppressive agents, antimalarials, and immunosuppressive illnesses can interfere with the development of active immunity after vaccination and may predispose the patient to rabies (*75,85*). Preexposure prophylaxis should be administered to such persons with the awareness that the immune response may be inadequate (see Intradermal Primary Vaccination). Immunosuppressive agents should not be administered during postexposure therapy unless essential for the treatment of other conditions. When rabies postexposure prophylaxis is administered to persons receiving steroids or other immunosuppressive therapy, it is especially important that a serum sample be tested for rabies antibody to ensure that an acceptable antibody response has developed (see Vaccination and Serologic Testing).

Pregnancy

Because of the potential consequences of inadequately treated rabies exposure, and because there is no indication that fetal abnormalities have been associated with

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rabies vaccination, pregnancy is not considered a contraindication to postexposure prophylaxis (*86*). If there is substantial risk of exposure to rabies, preexposure prophylaxis may also be indicated during pregnancy.

Allergies

Persons who have a history of serious hypersensitivity to rabies vaccine should be revaccinated with caution (see Management of Adverse Reactions).

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State of Kansas
Joan Finney, *Governor*

Department of Health and Environment
Robert C. Harder, *Secretary*

Testimony presented to the

Senate Committee on Public Health and Welfare

by

The Kansas Department of Health and Environment

Senate Bill 815

Senate Bill 815 proposes to classify ferrets as domestic animals that would be subject to the same procedures for the detection of rabies as dogs and cats. The Department of Health and Environment opposes this bill.

Public health departments in Kansas, along with those in the rest of the country, follow the national recommendations for rabies control by the federal Centers for Disease Control and Prevention (CDC). The current CDC recommendations state that ferrets should be "killed and tested rather than confined and observed when they bite humans". K.A.R. 28-1-13 is the state regulation which deals with rabies control. This regulation is consistent with the current CDC recommendations.

The reason that ferrets are not allowed to be quarantined after biting a human is because the period of rabies virus shedding in these animals is unknown. In other words, ferrets potentially could appear well and yet shed rabies virus for prolonged periods. Until the period of virus shedding is known, it is impossible to establish a quarantine period for this species. In contrast, with dogs and cats there is good scientific evidence that the animals cannot shed virus for more than 10 days. Therefore a 10 day quarantine period is an acceptable method to eliminate the possibility of rabies in these two species of animal.

Even though there have been 870 rabid animals reported in Kansas during the last 10 years, the last human case of rabies occurred in 1968. Public health officials take pride in the fact that there has not been a single human case of this uniformly fatal disease in the state in over 25 years. Although no one likes to see a pet sacrificed, this is often the best method available to identify infected animals. When there is sufficient scientific evidence for CDC to change its national recommendations, KDHE will revise its existing regulations.

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March 10, 1994

Senate PH&W
Attachment # 7
3-10-94