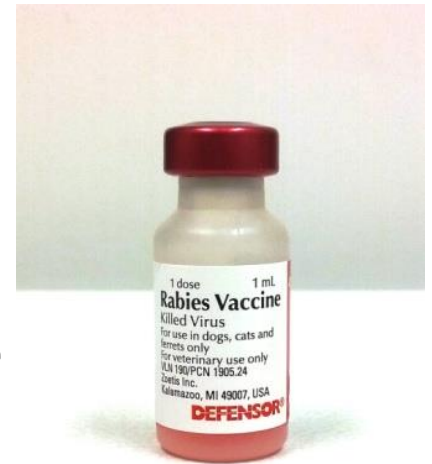


Vaccinating Animals for Rabies— A Practitioner's Perspective

Heidi Sorensen DVM
South Dakota One Health Conference
October 30, 2017



- First, a couple questions...
 - Immunization?
 - Exposure?

- Exposure in practice...
 - Pathology lab at ISU
 - Client dog in MN

Rabies Vaccination in Practice

- Small animal practice
 - Daily use of vaccine in dogs and cats
- Large animal practice
 - Vaccinate the farm dog during herd check
 - Farm cats often unvaccinated unless exhibited
 - Horses? Cows? Sheep?

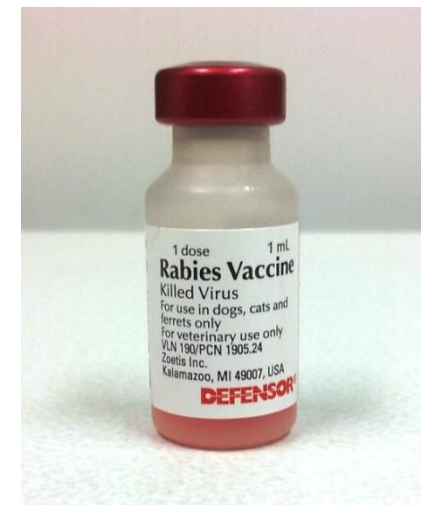
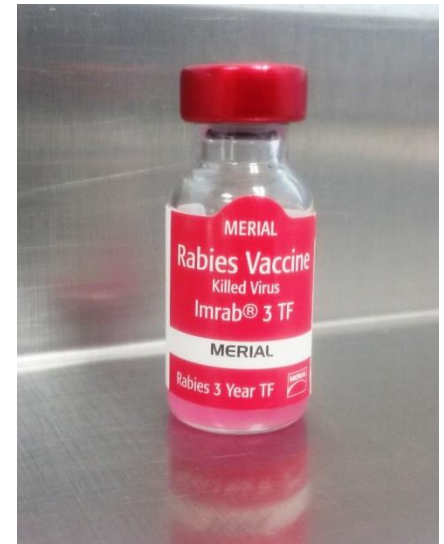


- Rabies is rare in vaccinated animals
- Pre-exposure vaccination protects against recognized and unrecognized rabies exposure



Vaccine Manufacturers

- Merial
 - IMRAB
 - PUREVAX Feline
- Boehringer Ingelheim Vetmedica
 - RABVAC
- Zoetis
 - DEFENSOR
 - NOVIBAC



Rabies Vaccine Information

- Vaccines are produced for
 - Pets (dogs, cats, some in combination for ferrets)
 - Livestock (horses alone or with cattle and sheep)
 - Combinations of both pets and livestock
- Vaccine type
 - Inactivated (killed) vaccine with adjuvants
 - Purevax for cats: unadjuvanted “rabies glycoprotein, live canarypox vector”
 - Modified live rabies virus use ended in 1980’s

Vaccine use

- Age at primary vaccination
 - > 12 weeks of age (3 months)
 - Purvax Feline exception
- Dose
 - 1 ml dogs, cats, ferret
 - 2 ml horses, cattle, sheep



Route of Injection

- Route varies according to manufacturer
 - IM only
 - IM or SQ
 - SQ only (ferrets are SQ)



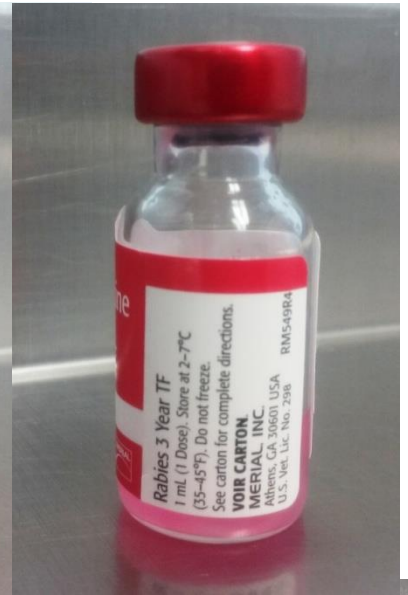
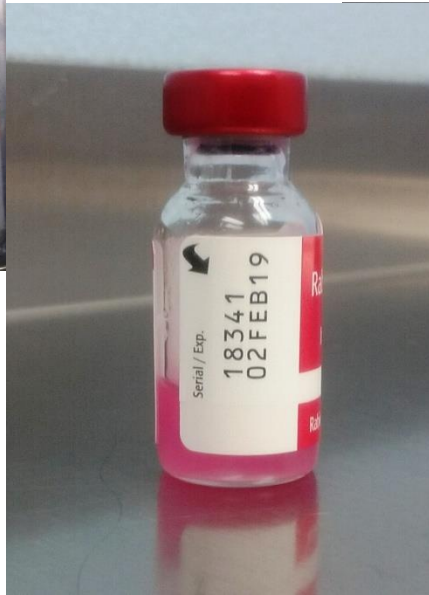
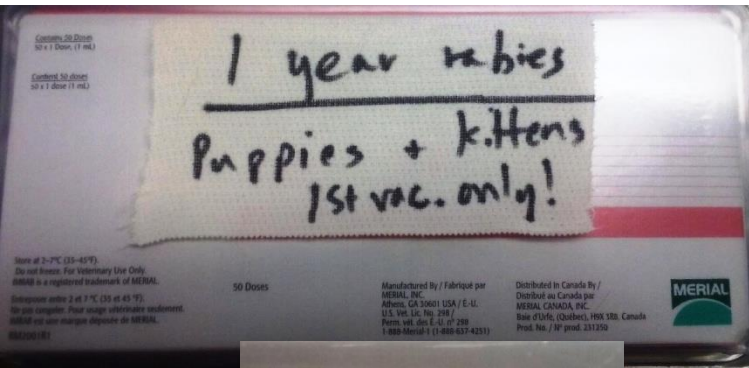
Injection site cats

- Distal right rear leg
 - AAFP
- Feline injection site sarcomas
 - Invasive tumor, difficult surgical excision
 - Linked to vaccination with rabies, FeLV, any injection
 - Less incidence non-adjuvanted vaccines
 - 1 in 10,000 to 1 in 30,000 doses



Vaccination schedule dogs & cats

- Rabies 1 yr vaccine
 - Single dose of “1 yr” not earlier than 12 weeks
 - Single dose of “1 yr” within 1 year of initial dose
 - Single dose of a “1 yr” vaccine annually
- Rabies 3 yr vaccine
 - Single dose of “3 yr” not earlier than 12 weeks
 - Single dose of “3 yr” within 1 year of initial dose
 - Subsequent doses of “3 yr” every 3 years



Contains 50 Doses
50 x 1 Dose (1 mL)

Contient 50 doses
50 x 1 dose (1 mL)

Rabies Vaccine

Killed Virus

Vaccin antirabique

Virus tué

Rabies 3 Year TF / Rage 3 ans TF

Imrab® 3 TF

50 doses

Store at 2-7°C (35-45°F).
Do not freeze. For Veterinary Use Only.
IMRAB is a registered trademark of MERIAL.

Entreposer entre 2 et 7°C (35 et 45°F).
Ne pas congeler. Pour usage vétérinaire seulement.
IMRAB est une marque déposée de MERIAL.

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Baie d'Urle, Qc, H9X 3V1
Prod. No. / N° prod. 2311-80

MERIAL

IMRAB 3

DESCRIPTION: IMRAB® 3 TF contains the same virus strain that is used in the Pasteur Merieux Connaught human vaccine. The virus is grown in a stable cell line, inactivated, and mixed with a safe and potent adjuvant. Safety and immunogenicity of this product have been demonstrated by vaccination and challenge tests in susceptible animals.

INDICATIONS: IMRAB® 3 TF is recommended for the vaccination of healthy cats, dogs, and ferrets 12 weeks of age and older for prevention of disease due to rabies virus.

DOSAGE: Aseptically inject 1 mL (1 dose) subcutaneously or intramuscularly into healthy cats or dogs. Revaccinate 1 year later, then every 3 years. Inject 1 mL (1 dose) subcutaneously in healthy ferrets. Revaccinate ferrets annually.

PRECAUTIONS: Store at 2-7°C (35-45°F). Do not freeze. Shake well before using. Do not use chemicals to sterilize syringes and needles. Contains gentamicin as a preservative. This product does not contain thimerosal. A transient local reaction may occur at the injection site following subcutaneous administration. Some reports suggest that in cats, the administration of certain veterinary biologicals may induce the development of injection site fibrosarcomas. In rare instances, administration of vaccines may cause lethargy, fever, and inflammatory or hypersensitivity types of reactions. Treatment may include antihistamines, anti-inflammatories, and/or epinephrine.

SOLD TO VETERINARIANS ONLY.

RM960R1

Sample Certificate of Vaccination

CERTIFICATE OF VACCINATION

Date of Rabies Vaccination: 05-17-17 Next Rabies Vaccination On: 05-16-20

VETERINARY CLINIC
Westside Animal Clinic, P.C.
Dr. Mei-Yao Louis
Watertown, SD 57201
605-878-7297

OWNER OF ANIMAL
Jessica Geiser
44838 176th Street
Watertown, SD 57201
County:

THIS IS TO CERTIFY THAT I HAVE VACCINATED AGAINST RABIES THE ANIMAL DESCRIBED BELOW.

PATIENT: Eli
SPECIES: Feline
SEX: N
COLOR/MARKINGS: Black and White

TAG NO: 7536
WEIGHT: 10.25
AGE: 4 years

Signed _____
Dr. Mei-Yao Louis License: 1248

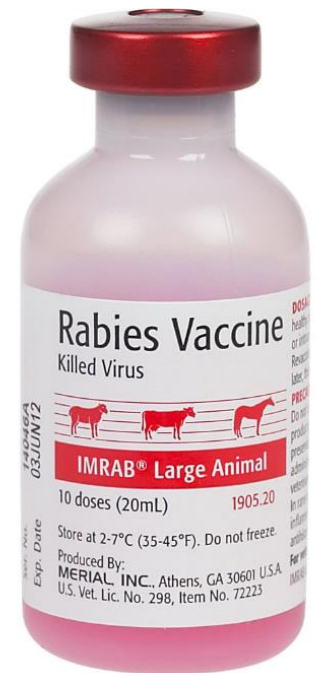
Next Vaccinations/Treatments Due...

05-17-18	268	Exam/Annual Wellness/Fecal Sam
05-17-18	0747	Dewormer
05-17-18	409	Feline Leukemia- 1 Year
05-16-20	411	Feline Rabies- 3 Year
09-02-18	416	Feline FVRCP- 3 Year

Rabies Vaccine Information...
MFG BY: MERIA SER.NO: 18326 LOT EXP: 3-22-18

Vaccination schedule others

- Ferrets, horses, cattle, sheep
 - Single dose not earlier than 12 weeks
 - Single dose of vaccine annually
 - Must be labeled for species
 - BOTH Rabies 1yr or Rabies 3 yr used annually
 - IMRAB 3 boosted every 3 years in sheep



Zoo Animal Vaccination

- Dr. Hennen's schedule Bramble Park Zoo
- Mammals vaccinated with IMRAB
 - Off-label use so not considered protective
 - For benefit of public only
 - Ideally annual revaccination “or when we get them caught up”
 - IM small non-human primates, SQ all others

Wildlife

- No licensed-use injectable vaccines for wildlife
- Oral baits for wildlife used in other areas of country
 - Not done by general practitioners



Wildlife photos courtesy of U.S. Fish and Wildlife Service

State Recommendations

- Maintain current rabies vaccination for dogs, cats, ferrets, horses
- Vaccinate cattle and sheep where feasible



State Requirements

- Exhibitions
 - Health certificate and ID required all species
 - Licensed, accredited veterinarian
 - Proof of rabies vaccination dog and cats
 - Vaccination of “show stock” encouraged
- Imported cats and dogs > 3 months of age
 - Certification of current rabies vaccination

Certificate of Veterinary Inspection

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control numbers for this information collection are 0579-0036 and 0579-0333. The time required to complete this information collection is estimated to average .25 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

No dog, cat, nonhuman primate, or additional kinds or classes of animals designated by USDA regulation shall be delivered to any intermediate handler or carrier for transportation in commerce, unless accompanied by a health certificate executed and issued by a licensed veterinarian (7 U.S.C. 21.43.9, CFR, Subchapter A, Part 2).

OMB APPROVED
0579-0036
0579-0333

**UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE**

**UNITED STATES INTERSTATE AND INTERNATIONAL
CERTIFICATE OF HEALTH EXAMINATION
FOR SMALL ANIMALS**

WARNING: Anyone who makes a false, fictitious, or fraudulent statement on this document, or uses such document knowing it to be false, fictitious, or fraudulent may be subject to a fine of not more than \$10,000 or imprisonment of not more than 5 years or both (18 U.S.C. 1023).

1. TYPE OF ANIMAL SHIPPED (select one only)
 Dog Cat Other _____
 Nonhuman Primate Ferret Rodent

2. CERTIFICATE NUMBER - OFFICIAL USE ONLY

3. TOTAL NUMBER OF ANIMALS _____

4. PAGE _____ **of** _____

5. NAME, ADDRESS, AND TELEPHONE NUMBER OF OWNER (CONSIGNOR)

6. NAME, ADDRESS, AND TELEPHONE NUMBER OF RECIPIENT AT DESTINATION (CONSIGNEE)

USDA License/Registration Number (if applicable) _____

7. ANIMAL IDENTIFICATION					8. PERTINENT VACCINATION, TREATMENT, AND TESTING HISTORY				
NAME, AND/OR TATTOO NUMBER OR OTHER IDENTIFICATION	BREED - COMMON OR SCIENTIFIC NAME	AGE	SEX	COLOR OR DISTINCTIVE MARKS OR MICROCHIP	RABIES VACCINATION			OTHER VACCINATIONS, TREATMENT, AND/OR TESTS AND RESULTS	
					<input type="checkbox"/> 1 YEAR	<input type="checkbox"/> 2 YEARS	<input type="checkbox"/> 3 YEARS	Date	Product Type and/or Results
(1)					Vaccination Date	Product	Date	Product Type and/or Results	
(2)									
(3)									
(4)									
(5)									
(6)									

9. REMARKS OR ADDITIONAL CERTIFICATION STATEMENTS (WHEN REQUIRED)

VETERINARY CERTIFICATION: I certify that the animal(s) described in box 7 have been examined by me this date, that the information provided in box 8 is true and accurate to the best of my knowledge, and that the following findings have been made ("X" applicable statements).

I have verified the presence of the microchip, if a microchip is listed in box 7.

I certify that the animal(s) described above and on continuation sheet(s), if applicable, have been inspected by me on this date and appear to be free of any infectious or contagious diseases and to the best of my knowledge, exposure thereto, which would endanger the animal or other animals or would endanger public health.

To my knowledge, the animal(s) described above and on continuation sheet(s) if applicable, originated from an area not quarantined for rabies and has/have not been exposed to rabies.

ENDORSEMENT FOR INTERNATIONAL EXPORT (IF NEEDED)
PRINTED NAME OF USDA VETERINARIAN _____

NAME, ADDRESS, AND TELEPHONE NUMBER OF ISSUING VETERINARIAN _____

LICENSE NUMBER AND STATE _____

Accredited Yes No
If yes, please complete below
NATIONAL ACCREDITATION NUMBER _____

SIGNATURE OF USDA VETERINARIAN *Apply USDA Seal or Stamp here* _____ **DATE** _____

SIGNATURE OF ISSUING VETERINARIAN _____ **DATE** _____

NOTE: International shipments may require certification by an accredited veterinarian.

Certificate of Veterinary Inspection

COMPLETING THE ECVI

South Dakota Animal Industry Board
411 S Fort St
Pierre, SD 57501
(605) 773-3321
aibmail@state.sd.us

SOUTH DAKOTA CERTIFICATE OF VETERINARY INSPECTION

Contact State of Destination for Movement Requirements and Certificate Validity
FOR FOREIGN SHIPMENTS (Outside United States or Leaving United States) USE FEDERAL FORM

OFFICIAL USE ONLY: The Veterinarian issuing this certificate is accredited and has been authorized to inspect animals and issue certificates.

Certificate Number

(1) 46nullnull

ENTRY PERMIT #: (2)

INSPECTION DATE: (3)		SHIPMENT DATE: (4)		<input type="radio"/> Large Animal (5) <input type="radio"/> Small Animal											
CONSIGNOR - Contact Person at Origin			CONSIGNEE - Contact Person at Destination			CARRIER (Transporter)									
First Name		Last Name	AND/OR		Business Name (6)	First Name		Last Name	AND/OR		Business Name (7)	Business Name (9)			
Physical Address of Animals						Physical Address of Animals						Physical Address (9)			
City		State	Zip Code	County		City		State	Zip Code	County		City	State	Zip Code	Phone Number
Phone Number		Location ID#		Phone Number		Location ID#		Transport Method			Purpose of Movement (10)				
Consignor's Address (if different)						Consignee's Address (if different)						<input type="checkbox"/> Interstate <input type="checkbox"/> Intrastate			
												<input type="checkbox"/> Print <input type="checkbox"/> Reconsigned (8)			

(11)

SPECIES	# OF HEAD	OFFICIAL PERMANENT ID	OTHER ID (REGISTRY NAME, NUMBER OR DESCRIPTION)	AGE	SEX	BREED	TB DATE OBSVD	TB TEST RESULT	BRUC TEST DATE	BRUC TEST RESULT	BRUC VACC TATTOO	EIA TEST DATE	EIA LAB NAME	EIA TEST RESULT	ACCESSION#	OTHER	Copy	Delete	
TOTAL		Add New Row	Delete Last Row																

OWNER/AGENT STATEMENT
"The animals in this shipment are those certified to and listed on this certificate."

(15)

DATE

SIGNATURE

VETERINARY CERTIFICATION - I certify, as an accredited veterinarian that the above described animals have been inspected by me and that they are not showing signs of infectious, contagious and/or communicable disease (except where noted). The vaccinations and results of tests are indicated on the certificate. To the best of my knowledge, the animals listed on this certificate meet the state of destination and federal interstate requirements. No further warranty is made or implied.

Date _____ Printed Name (16) _____ Phone _____ Email _____
Address _____ City _____ State _____ Zip _____
USDA Accreditation # _____ State of License SD License # _____

Signature (17)

NOT OFFICIAL

Save Form (18)

Required fields will remain RED/PINK until completed

Show Stock



Additional *Recommendations*—

Compendium of Animal Rabies Prevention and Control

- Livestock at petting zoos, fairs, etc
 - Mammals vaccinated for rabies (off-label if no licensed vaccines)
- Animal shelters and animal control
 - Adopted animals vaccinated for rabies



Additional *Recommendations*

- Disaster response
 - Administer rabies vaccine all dogs, cats, ferrets
- Local ordinances encouraged
 - Vaccination ordinances for all dogs, cats, and ferrets
 - Remove all stray animals
 - More stringent local rules possible



Local Ordinances-Watertown

3.0202: VACCINATION REQUIRED

1. Every dog or cat held as a domestic pet in the City, six (6) months of age or older, is hereby required to be vaccinated against rabies by a licensed veterinarian or other qualified person. The owner or keeper of a dog or cat may elect to have their animal vaccinated for rabies every year or once every three (3) years. Ord13-15; Rev08-30-13).
2. Any owner acquiring a dog or cat by purchase, gift, birth or otherwise, shall have such animal vaccinated against rabies within one (1) month following acquisition or when the animal reaches the age of six (6) months. (E-259-2)

Exemptions and Reactions

- Forms available for severe reaction exemption
 - Valid VCPR (Veterinary Client Patient Relationship)
 - Animal considered unvaccinated if exposure occurs
- Mild reactions
 - Controlled with pre-vaccine antihistamines
 - Separate out vaccines by a week or two
 - Observe animal at home or in clinic same day

Immune Response

- Twenty-eight (28) days to full immunization after initial vaccine.
- Booster vaccines immediately protective
 - Vaccines from differing manufacturers booster one another
 - Research showing immune response to booster for up to 7 years after initial vaccine
- Not considered immunized if overdue for boosters

Titers

- Titers indicate serological response to vaccine or infection
 - Do not directly correlate with protection
 - Not a substitute for current vaccination
 - Does not represent “legal” immunity
 - Used in some importation requirements
 - Establishes immune system response to vaccine

Client Education

- Educate clients with first rabies vaccine
 - Public health concerns
 - Zoonotic disease
 - Rabies vaccine in pets protects the family
 - Cannot treat when showing signs
 - Isolation of hospitalized pets
 - No live animal testing for rabies
 - Keep pets indoors, leashed, or controlled
 - Keep pets away from wildlife and strays
 - Booster pet with unknown source bite wounds



Bite wounds in clinical practice

- Bite wounds—
 - previously vaccinated
 - Cat bite abscess, provoked attack
 - Clip, clean, antibiotics
 - Rabies vaccination status attacking animal
 - Booster rabies with unknown attacker
 - If high fever, booster in a couple days



Bite wounds in clinical practice

- Bite wounds-previously unvaccinated
 - Known attacker vs. unknown attacker
 - Counsel confinement, possible euthanasia
 - Stress rabies vaccine administered will only protect against future rabies exposure
 - Treatment similar to previously vaccinated pets
 - Clip, clean, antibiotics
 - Initial rabies vaccine if not feverish

- Bite wounds with suspicious circumstances
 - Wildlife
 - Unprovoked attacks
 - Rabies prevalent area

...Contact Animal Industry Board

Domestic animal vaccination protects public

- Rabies reservoirs currently in wildlife
- Domestic animal vaccination creates barrier to human exposure
 - Before 1960's dogs most frequent source of human rabies exposure
 - Eliminated strays, licensed, vaccinated population



Domestic animal vaccination protects public

- Cats now greater source of human exposure
 - Barn cats, semi-feral cats in towns
 - Indoor cats may not return for boosters
 - Bat exposure



Any questions?

