Navigating a Potential Rabies Exposure:
Using the “Pink” and “Green” Sheets

Kimberly Signs, DVM
Zoonotic Disease Epidemiologist
Michigan Department of Community Health
Objectives

Describe:

- Michigan Laws and reference documents related to rabies
- ACIP Guidelines for Human Rabies Prevention
- Michigan Epidemiology
- Michigan Rabies Exposure Protocols for people bitten by animals, and mammals which have bitten people or pets
- Scenarios
Rabies is the infectious disease with the highest known case fatality rate.

Rabies remains an important public health problem in developing countries, with 50,000 cases estimated annually around the world (99% due to dog-strain rabies).

Developed countries see indigenous or imported cases sporadically.

The annual costs of preventing rabies in the U.S. are estimated to be over $300 million and rising.
Human Rabies in the U.S.

- Cases have decreased dramatically since the early 20th century
- Of the 47 cases of human rabies reported in the U.S. between 1990-2004, 37 (78.7%) were due to rabies virus variants indigenous to the U.S., and 92% of these were due to bat variants
- 2003 - The first reported human case of rabies in the U.S. due to the raccoon strain (method of exposure remains unknown)
- 2004 – The 1st documented survivor of clinical rabies who did not receive either pre- or post-exposure prophylaxis for rabies
Important Reference Documents
State Laws

- Public Health Code, Communicable Disease Rules
- Michigan’s Dog Law
- Other pertinent laws:
  - Ferrets
  - Dangerous Animals Act
  - Large Carnivore Act
  - Wolf-dog Cross Act
  - BODA (Bodies of Dead Animals Act)
“Animal bites, where rabies is considered, should be reported to the local health jurisdiction where the bite occurred, and if different, the local health jurisdiction where the patient lives or where the service facility is located. The report must be made within 24 hours of the biting incident. The report shall include all of the following information:
Communicable Disease Rules (con’t)

- Animal species inflicting the bite
- Animal owner’s name, address, and telephone number
- Vaccination status of animal
- Date and location of biting incident
- Name, address, and telephone number of the person bitten
- Site of the bite on the body
- Name of the reporter of bite
Compendium of Animal Rabies Prevention and Control, 2006

National Association of State Public Health Veterinarians, Inc. (NASPHV)
Rabies Compendium

- Guidelines for prevention and control of rabies in animals.
  - Domestic animals
  - Wildlife
  - Zoos and exhibits
  - Import and interstate movement
  - Post-exposure management
- Animal vaccination recommendations
- List of licensed rabies biologics for animals
Human Rabies Prevention — United States, 1999

Recommendations of the Advisory Committee on Immunization Practices (ACIP)
ACIP Guidelines

- Biologics
- Pre-exposure vaccination
- Post-exposure prophylaxis
  - Types of exposure: bite, non-bite
  - Epidemiology and evaluation of involved species
  - Treatment of wounds
  - Immunization
- Treatment outside the U.S.
- Serologic testing
- Adverse reactions
- Precautions and contraindications
Pre-exposure Vaccination

- High risk groups
  - Veterinarians
  - Animal handlers
  - Certain laboratory workers
  - Persons whose activities might bring them into contact with rabies virus or vector species
- International travelers
  - Travel to areas where dog rabies is endemic
  - Areas were access to biologics might be limited
Pre-exposure Schedules

- Series of three vaccinations
  - Day 0, 7, and 21/28

- Booster doses:
  - **Continuous risk** (rabies research or vaccine production facilities), titer check every 6 mos
  - **Frequent risk** (rabies diagnostic testing, veterinarians and staff, animal control and wildlife officers in areas where rabies is endemic), titer check every 2 years

- Where can I get rabies pre-exposure vaccinations?
  - Clinics offering travelers immunizations, the cost is approximately $200/dose.
Epidemiology of Rabies in Michigan
Animal Rabies Cases in Michigan: 1995 - 2005

Legend
- 1 Dot = 1 Case
- BAT
- SKUNK
- DOG
- CAT
- HORSE
- COW
- SHEEP
- FOX
- ELK
- RACCOON
-2005-
Rabies Positive Animals in Michigan
as of December 31, 2005

Legend
- Skunk = 7
- Bat = 29
- Fox = 1
- Dog = 6
- Cat = 4
- Sheep = 1
Total = 41

In 2004, 30 bats, 2 skunks, 1 dog, and 1 fox tested positive for rabies.
Michigan Rabies Cases, 2006

-2006-
Rabies Positive Animals in Michigan
as of April 21, 2006

Legend
- Skunk = 0
- Bat = 4
- Fox = 0
- Dog = 0
- Cat = 0
- Horse = 1
- Total = 5

In 2005, 38 bats, 7 skunks, 4 cats, 1 fox, and 1 sheep tested positive for rabies.

Michigan Department of Agriculture
Michigan Department of Community Health
Evaluation of Potential Exposures

Cat bites BY THE NUMBERS

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
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<tbody>
<tr>
<td>3-5 million</td>
<td>Americans bitten by animals annually</td>
</tr>
<tr>
<td>5-15%</td>
<td>Percentage of animal bites attributed to cats</td>
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<tr>
<td>675,000</td>
<td>Cat bite victims who seek medical assistance</td>
</tr>
<tr>
<td>50% (APPROX.)</td>
<td>Percentage of bites that become infected</td>
</tr>
<tr>
<td>50%</td>
<td>Percentage of bite victims who are children</td>
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</tbody>
</table>

Women are more likely than men to be bitten by a cat.


Deseret Morning News graphic
“Pink Sheet”
Risk Assessment

- Species of animal?
  - Wild
  - Rodent
  - Dog, cat, ferret

- Animal available for testing/observation?

- Michigan epidemiology for that species?
  - www.michigan.gov/rabies

- Observed health and behavior of the animal?

- Circumstances of the bite?
Type of Exposure

- Bite?
  - Site
  - Severity
  - Immediate cleansing

- Non-bite?
  - Mucous membrane exposure
  - Non-intact skin

- Bat in room with sleeping person, or witnessed in room with an unattended child, mentally disabled or intoxicated person
Provoked on Non-provoked?

- **Examples of provoked exposures:**
  - Attempting to feed animal
  - Entering animals territory
  - Breaking up a fight between two animals
  - Handling an injured or wild animal
  - Walking, running, or riding a bike past an animal

- **Unprovoked exposure:**
  - Animal crossed neutral territory to initiate contact

- **GET DETAILS!!**
Severity and Site of Bite

- Head and neck?
- Length of time to receive test results on animal?
- 24/7 testing available for emergencies
  - MDCH BOL can generally have results within 24-48 hours, and in most cases, PEP can wait for results
  - If testing is delayed, PEP may need to be started
Animal Tests Negative

- No need to initiate PEP
- PEP can be discontinued if already begun
“Grey” areas

- Situations that do not fit into given protocols
- Require careful assessment of situation
- “Worried well”
- Must assess the risk of exposure verses the potential risk of treatment
- Some people are more risk averse than others
- Want to avoid unnecessary PEP if possible
What Would You Do?

- Person bitten by a stray cat that ran away.
- Bat found in a room with a sleeping pregnant woman. Bat was gently collected and released safely out the back door.
- Neighbors unvaccinated dog bit child in the face.
- Cute orphan baby skunk was being bottle fed by a family. It became ill and died about 4 days after it was found. This happened 2 weeks ago. Family became worried after talking to neighbors.
Bat found dead in kitchen sink with soaking baby bottles. Bat tests positive for rabies.

Child bitten by an African civet, which is part of a traveling animal exhibit that visits schools to educate children about the rainforest.

Adult is bitten when trying to pick up a squirrel that “looked sick”.

Family just purchased a hamster from the local pet store, which bit their child when he picked it up, then was found dead in the cage the next day.
Mammals Which Have Bitten People

- **Wild**
  - Euthanize and test
- **Domestic dogs, cats, ferrets; regardless of vaccination status**
  - Healthy animal
    - Confine 10 days
    - If animal is unwanted, euthanize and test
  - Ill animal
    - Euthanize and test
- **Stray animal**
  - Hold 4 days then euthanize and test
  - Hold 10 days
- **Domestic Livestock:** Consult MDA, MDCH
For Potentially Exposed Dogs, Cats, Ferrets

- Rabies vaccine current: booster and observe 45 days
- Rabies vaccine lapsed:
  - Test bat or wild animal
     - Negative - VACCINATE
     - Positive - Euthanize, or vaccinate and confine for 6 months (or confine 6 months and vaccinate at 5 mos into confinement)
  - Wild animals unavailable - same options as for positive wild animal, depending on assessed risk
What Would You Do?

- Cat found playing with a dead bat. Cat is UTD on vaccines.
- Unvaccinated dog in fight with another dog whose vaccines are not current.
- Cat has sudden behavior change and bites owner. Cat is indoor/outdoor and unvaccinated.
More…

- Dog with lapsed rabies vaccine tangles with a skunk, but the skunk gets away.
- Unvaccinated cat catches bat in house, and eats it.
- Family finds several bats dead on property, has bats roosting in roof of barn that houses unvaccinated goats, horses, and cats.
Post-Exposure Treatment for Previously Vaccinated

Who is previously vaccinated?

- A person who has received either recommended pre-exposure or post-exposure regimens with HDCV, RVA, or PCEC
- A person who has received another regimen, and has a documented rabies antibody titer

- Two dose booster on day 0,3
- No immune globulin needed
Post-Exposure Treatment For Non-vaccinated Persons

- Rabies Immune Globulin
- Series of five vaccinations, day 0, 3, 7, 14, and 28
Contact Information

Michigan Department of Community Health: 517-335-8165

Michigan Department of Agriculture: 517-373-1077
Important Websites

- www.cdc.gov Rabies site
- www.michigan.gov/rabies
- www.nasphv.org “Publications”
Questions?