Providing Public Health Recommendations to Clinicians for Rabies Post-Exposure Prophylaxis

Fall 2014
Which of the following describes how rabies virus is transmitted to people? (pick one)

1. Contact with raccoon feces
2. From petting a feral cat
3. Being bitten by a skunk that runs off
4. Picking up trash after a raccoon knocked over a trash can
5. Discovering bats in your attic
Rabies Transmission

- A very serious disease that is very difficult to transmit
- Virus-laden saliva is introduced through the skin or a mucus membrane (eyes)
- Virus cannot penetrate intact skin
- Incubation period is long and variable: usually onset occurs 1–3 months but may range from 12 days to 6 months; rarely several years
What is the criteria for a patient to receive rabies post exposure prophylaxis (PEP)?

“Rabies is a very serious disease that is difficult to transmit to people”
Which of the following are considered a rabies exposure?

1. Getting saliva into your eye while bottle feeding a healthy infant skunk that is released to the wild the next day

2. You’re bitten by a healthy dog. The owner says the dog has “all his shots” but leaves without leaving information

3. Feeding a goat at a petting zoo and saliva gets into a small cut on your hand. The goat dies 3 days later and is found positive for rabies through lab testing

4. Feeding a friendly and health looking, free-roaming dog in China that accidentally nips your finger and runs away

5. All the above
What Constitutes An Exposure?

• A bite (penetration of the skin teeth) from a potentially rabid animal

• Scratches, abrasions, open wounds (bleeding within 24 hrs.), or mucous membranes (eyes) contaminated with saliva or other potentially infectious material (brain or spinal cord) from a potentially rabid animal (Nonbite)
Which tissue or secretion in a rabid animal does not contain enough virus to infect humans?

1. Blood
2. Saliva
3. Brain tissue
4. Spinal cord
5. Salivary gland
Rabies Infective Tissues and Secretions

- Brain
- Spinal cord
- Saliva
- Salivary glands

Other contact, such as petting an animal and contact with blood, urine or feces does not constitute an exposure.

Aerosol transmission is limited to laboratory situations and specific bat caves.
Rabies Virus Survival

• The rabies virus dies quickly after leaving a rabid animal’s body and does not persist in the environment; the virus is usually inactivated within 10 minutes in the environment.

• If saliva or other material containing the rabies virus is dry to the touch, the virus can be considered noninfectious.

• Rule of thumb: “If it’s DRIED, it’s DIED”
What animal was involved in the exposure?
High Risk Animals

- Raccoons
- Skunks
- Foxes
- Groundhogs
- Feral and free-roaming cats
- Bats
Low Risk Animals

- Indoor pet rodents
- Squirrels
- Rats
- Mice
- Moles and voles
- Wild rabbits
- Opossums
- Vaccinated domestic animals (pets and livestock)
Bat Variant Rabies

- Over 75% of the human rabies case acquired in the U.S. are from bat bites (~1-5 cases per year)

- A history of a definite bat bite was documented in only ~5% of the bat cases; ~60% had bat contact but no known bite or scratch

- Bite wounds from bats are extremely small and may be nearly undetectable within hours

- Persons bitten by bats either did not realize they were bitten or did not consider the bites serious enough to seek medical care

- 2013: 1,188 bats submitted for testing, 66 (5.5%) were positive
Criteria for PEP from Bat Exposures
from a bat that is either positive or cannot be tested

• Known bite

• Any direct contact with a bat when a bite or other exposure cannot be excluded

• Consider PEP when a bat is in the same room as a person who might be unaware or cannot communicate that a bite occurred
  – an adult witnessing a bat in the room with a previously unattended young child or a mentally disabled, intoxicated, or medicated person
  – deeply sleeping person who awakens to find a bat in the room

• The absence of an identifiable bite wound would not negate the decision to treat
Which of these is not a common clinical signs of rabies in wildlife?

1. Circling/ataxia/abnormal gait
2. Difficulty swallowing/anorexia
3. Foaming at the mouth
4. Abnormal vocalizations
5. Paralysis
Clinical Signs Of Rabies in Animals

• Change In Behavior
• High fever
• Anorexia
• Difficulty swallowing
• Abnormal gait
• Strange vocalizations
• Agitation or hyperactivity
• Unprovoked aggression
• Depression → Paralysis
• Coma/death
Rabies PEP Protocol

• **Human Rabies Immune Globulin (HRIG)**
  – Day 0 (when treatment is initiated)
  – HRIG - dosage: 20 IU/KG (0.133 ml/Kg)
  – Infiltrate as much as possible into and around the wound(s)
  – Remaining HRIG administered intramuscularly at an anatomical site distant from the vaccine (gluteal region)

• **Human rabies vaccine** – 4 doses
  – Days 0, 3, 7, and 14
  – 1 ml administered intramuscularly in the upper arm (deltoid)
  – The schedule should be followed exactly and all doses must be given
  – Vaccine should never be given in the gluteal region
  – 5 doses for immunosuppressed persons (Day 28)
Adverse Reactions To Vaccine

“PEP is safe and free of serious side-effects”

• Pain, swelling, redness and itching is reported by 2/3 of recipients of vaccine

• Flu-like systemic reactions, such as headache, nausea, abdominal pain, muscle aches, and dizziness are reported in 1/3 of the recipients

Note: PEP should be continued even if patient has adverse reactions
Who determines if a person will receive rabies prophylaxis

1. The person bitten or exposed
2. The Health Officer or their staff
3. The parent or guardian of the person bitten or exposed
4. The State Veterinarian or other State health Department staff
5. The attending physician
Roles of Public Health Agencies

The LHD receiving the bite report shall provide guidance to the reporting physician on:

• The criteria for administering PEP
• Follow-up investigation of the biting/exposing animal
  – e.g., withhold PEP while biting domestic cat is located and put under 10 day confinement and observation

The LHD shall:

• Provide guidance to the reporting physician on:
  – The criteria for administering PEP
  – Follow-up investigation of the animal involved
• Collaborate with other LHDs as needed to locate, test, or confine animal
• Identify other potentially exposed persons
Role Of NJDOH

• The NJDOH provides:
  – Technical assistance, guidelines, and protocols to LHDs in order to facilitate appropriate PEP administration by physicians
  – NJDOH PHEL also provides laboratory testing for animal specimens to determine if they have rabies
Who determines if PEP will be administered?

- The decision to administer PEP to the patient is made by the attending physician in consultation with the patient or the parent/guardian of the patient
  - Pursuant to N.J.S.A. 26:4-79 & N.J.A.C. 8:57-1.5, physicians shall report all animal bites (exposures) to local health departments (LHDs), which provide technical guidance.
  
  Note - Suspected human rabies cases are immediately reportable to LHDs (N.J.A.C. 8:57-1.5)

- PEP must be administered shortly after exposure to be effective
  - Ideally 1 to 10 days after exposure, depending on the risk of the situation
Is The Animal (Wild or Domestic) Available For Testing or Observation?

- **Raccoons, skunks, fox, groundhogs and other wildlife** may excrete rabies virus while asymptomatic for extended periods and **cannot be observed**. **Testing is always recommended**

- **Domestic animals (dogs, cats, ferrets and livestock)**, whether vaccinated or not, **may be confined and observed for 10 days**

- **Health Officers** have the authority to order an animal tested for rabies that dies or is euthanized within the 10 day period **without permission of the animal owner**
  - i.e., healthy, vaccinated dog is euthanized shortly after biting owner should be tested by HO

**Note:** **Suspect rabid animals that have not exposed people or domestic animals do not need to be submitted for testing**
10 Day Confinement for Dogs and Cats

• The 10 day confinement of dogs and cats that have bitten people has protected bite victims 100% of the time

• Animals that become ill during confinement should be evaluated by a veterinarian and tested if rabies is suspected
Guidance for Bats in Homes

• When a bat is found in a home, it should be captured if at all possible. Usually ACOs will assist residents.

• Captured bats that bit or exposed persons should be captured, euthanized, and submitted to the Rabies Lab for testing.

• Do not smash the skull of the bat (the brain is needed for rabies testing).

• Bats in the home that did not bite or expose people can be released outdoors.

• Residents should be given guidance/referral on bat-proofing the living space to prevent future exposures (NJDOH website).
Case Example

• **Service call**: Andrea at a hospital calls. Husband and wife exposed to a bat. The husband killed the bat.

• **First Steps?**
  – Review rabies exposure materials specific to bat exposures and animal testing guidelines
  – Return call to Andrea

• **Phone conversation with Andrea**: Wife heard a noise early in the morning (around 4 am) and discovered a bat in their bedroom. The husband killed the bat. They called their physician who referred them both to the hospital for rabies PEP. The hospital was calling to find out if they could wait to treat them until after the bat was tested.
Case Example (continued)

What questions do you have/what information do you need to collect?

• Are there any visible bite marks or do they recall bites from the bat?
  – No

• Were they sleeping when the bat was in the room (possibly bit)?
  – Yes, both wife and husband were asleep in the room but do not recall being bitten

• How was the bat killed – was the head crushed?
  – The husband covered the bat with a tarp and hit it with a shoe – possible damage to brain

• How was the bat stored – was it refrigerated?
  – The bat was tossed outside at 4am and left outside until the husband got home from work (around 4-5pm). Note: it was 85 degrees. When the husband arrived home, he refrigerated the bat.

• Obtain patient name, address, and phone #
Case Example (continued)

• How do you respond to Andrea?
  – Low risk of exposure, since couple not aware of bites. Clinical decision whether to treat in this situation, since most people would wake up if bitten. Defer treatment until the bat can be tested.

• Recommendations:
  – Defer PEP until bat is tested
  – Coordinate with getting bat delivered to PHEL the next day
Case Example (continued)

• Rabies lab reports bat specimen is deemed unsatisfactory for testing because it is decomposed. What do you recommend?
  – Contact hospital staff to relay the result to appropriate medical staff
  – High risk animals such as bats that are unsatisfactory for testing should be considered positive
• Recommendations:
  – Physician should be instructed to interview the couple in the room with the bat to determine if the situation meets case definition for a non-bite bat exposure.
NJDOH Guidance Documents

NJDOH Website:
http://www.state.nj.us/health/cd/rabies/techinfo.shtml

• Guide to Post-Exposure Rabies Prophylaxis
  – Decision making algorithms at end of document
  – This document should address most situations

• Packaging and Transport of Rabies Specimens to PHEL
  – Includes maps, directions, and step-by-step packaging information
  – Specimens can be delivered on a 24/7 basis
  – Shipper must notify LHD

• Management of Domestic Animal Rabies exposures
Questions or Comments?

http://www.state.nj.us/health/cd/rabies/index.shtml