NC Certified Rabies Vaccinator Training

Topics
- NC Rabies Epidemiology
- Human Rabies Mortality
- State Laboratory Public Health Testing
- Criteria and Public Health Surveillance
- Rabies – reservoirs, high risk vectors; signs of disease in animals
- Incubation and Shedding periods
- Animal Control Responsibilities

Topics (cont’d)
- Rabies Prevention in Humans
  - Exposure and Transmission
  - Bat Variant
  - Pre-exposure prophylaxis
  - Personal Protection and Behavior
  - Wound care and reporting exposures
  - Post-exposure prophylaxis
  - Public Messaging

Learning Objectives
- Describe the Epidemiology of Rabies in North Carolina, United States and the world (Asia and Africa) and the geographical areas where rabid animals are most likely to occur in our state.
- Describe rabies public health surveillance including the location of written criteria, submission criteria of wild and domestic species of mammals to the NC SLPH and public messaging for rabies incidents.

Learning Objectives (cont’d)
- Discuss the characteristics and prevalence of rabies including high risk animals that may be reservoirs, clinical and behavioral symptoms that animals may or may not exhibit, the types of body fluids that are infectious and types of exposures (direct, indirect and bat). Discuss the roles and responsibilities of Animal Control.
- Outline rabies prevention measures.
- Describe what rabies post-exposure prophylaxis (PEP) is used for and who should assess people that are exposed for PEP.

Rabies Epidemiology

Source: JAVMA, Vol 243 No. 6, September 15, 2013
Human Rabies Mortality Worldwide

- Canine Variant overwhelmingly
  - ~60,000 deaths per year worldwide
  - >99% of human cases
  - Asia and Africa mostly
  - >50% children < 15 years
- US - past 25 years, a few cases per year
  - Bat Variant

Source: NC State Laboratory of Public Health
Updated January 2014

ERV = Eastern Raccoon Variant

http://www.who.int/rabies/en/
Vector Control: Rabies, UNC-SPH
Rabies Vaccinations Required by Law
Dogs, Cats and Ferrets

NCGS 130A-185. Vaccination required
(a) Vaccination required. - The owner of an animal listed in this subsection over four months of age shall have the animal vaccinated against rabies.
(1) Cat.
(2) Dog.
(3) Ferret
Animal Control Responsibilities

- Enforce North Carolina Rabies Laws (NCGS 130A-184 to 130A-204.)
- Investigate exposures to domestic animals and humans
- Capture and impound animals
- Implement ten day confinements and six month quarantines
- Submit animal specimens for testing to NC State Laboratory Public Health (SLPH)

What causes rabies?

- RNA virus
- Very tiny, microscopic
- Affinity for Nerves
- Highest Case Fatality Rate

Incubation and Shedding Periods

<table>
<thead>
<tr>
<th>Animal exposed to rabies virus</th>
<th>Incubation period up to 6 months</th>
<th>Onset of signs of disease</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3-7 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Appearance healthy – non infectious</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Excretion of virus from salivary glands</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shedding period</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Death</td>
</tr>
</tbody>
</table>

Incubation:

1. A bite introduces the virus …
2. The virus starts to move from the site of the bite …
3. The virus has reached the CNS …
Incubation

Any mammal can get rabies “Spillover”

High Risk Species
- Raccoons (land reservoir)
- Bats (reservoir)
- Red and Gray Foxes
- Striped and Spotted Skunks
- Bobcats
- Coyotes
- Wild Carnivores
- Beavers
- Groundhogs (Woodchuck)

Animals that CANNOT give you rabies

How do rabid animals behave?
- Lethargy, vomiting, anorexia
- Ataxia, weakness, paralysis, seizures
- Excess salivation, difficulty swallowing, self mutilation
- May be unusually aggressive or friendly or isolate itself.

What is an exposure to rabies?
- Any bite, scratch or other situation in which saliva or Central Nervous System (CNS) tissue or tears* from a potentially rabid or confirmed rabid animal enters an open wound, or comes in contact with a mucous membrane by entering the eye, mouth or nose.

How is rabies transmitted?

- **Bites** – Highest risk, most common
- **Non-bites** – a risk – consult local health dept.
  - *Saliva or Tears* to open wound (scratch)
  - *Saliva or Tears* to mucous membrane
  - *Nervous tissue* to open wound (scratch)
  - *Nervous tissue* to mucous membrane
- **Bats** – any potential direct contact requires a careful risk assessment

Recent Human Rabies Cases - USA

- Most recent human cases over the last 30 years have been caused by
  - *Bats* = bat variant rabies
- Cases average about 1-2 per year

http://phil.cdc.gov/phil/details.asp

Why do Bats Pose Such a Risk?

![Bat Exposure Diagram]

What is a bat exposure?

- Thorough evaluation of all potential exposures
- If more than 1 bat, is there an infestation?
- If a single bat was it captured and tested?
- Direct contact with bat?
- Was bat found in the same room with:
  - a previously sleeping person,
  - a previously unattended child, mentally disabled person, or intoxicated person
- Request help from Veterinary Public Health 919-733-3419

Human Rabies – South Carolina, 2011

**In situations in which bats are physically present and the person(s) cannot exclude the possibility of a bite, postexposure treatment should be considered.**

Unless it was a solitary bat, and prompt testing of the bat has ruled out rabies infection.

http://www.cdc.gov/mmWr/preview/mmwrhtml/mm6232a2.htm
Prevention of Rabies

Knowledge
Caution
Common sense
Personal
Protection
Pre-exposure vaccination
Postexposure management

Who should receive Pre-exposure Vaccination against rabies?

Veterinarians and staff
Laboratory workers
Animal control officers
Shelter workers
Wildlife workers
Travelers to rabies endemic countries; at risk


Pre-exposure Immunization Regimen for People

• 3 doses of Rabies Vaccine
• Days 0, 7, and 21 or 28
• Where? Local Health Department, Physician or Travel Clinic
• RFFIT Titers – every 2 years

Rabies Titers – Every 2 years

• Used to assess response to vaccination only!
• CDC recommendation - Every 2 years
• If low you will need one rabies booster
• *Presence of an adequate titer does not remove the need for PEP if indicated!
• Local Health Department or Private Physician


Postexposure Rabies Vaccination for People - Not Previously Vaccinated

I. Wound Cleansing; Tetanus
   • +/- Antibiotics (HCP)
II. 4 Doses of Vaccine
    (5 if immune compromised)
    • Days 0, 3, 7, 14
    • AND
III. Human Rabies Immune Globulin (HRIG)20 IU/kg body weight, Day 0

Postexposure Rabies Vaccination for People - Previously Vaccinated

I. Wound Cleansing
   15 minutes
II. Tetanus;
    • +/- Antibiotics (HCP)
II. Two Doses of Vaccine
    Days 0, 3

Personal Protection Around Animals and their Body Fluids

- Wash your hands often after handling animals, or wear waterproof gloves, if possible.
- Don’t touch your eyes, nose or mouth while handling animals.
- Do not kiss animals or let them lick you.
- Do not eat around animals.


CDC: Zoonotic Disease: When Humans and Animals Intersect

Personal Protection Around Animals and their Body Fluids

- Get Rabies and Tetanus Pre-exposure prophylaxis.
- Wear waterproof gloves when cleaning up after animals.
- Wear appropriate PPE for animals in quarantine.
- Wear mask and eye goggles when aerosolization may occur.
- If you are bitten, wash the wound for 15 mins under running water & soap; see a doctor (Tetanus, antibiotics, wound care).


Public Messaging Wildlife, Stray and Feral Animals

- Do not approach, feed, handle, or take in wildlife and stray animals.
- If you see an animal acting strange - avoid it; report it to animal control.
- Do not feed pets outside; secure garbage.
- Keep pets currently vaccinated against rabies.
- Supervise pets when outside.

Public Messaging Wildlife, Stray and Feral Animals

- If you are bitten...
  - get to a safe place,
  - report bite to animal control,
  - wash the wound for 15 mins under running water & soap;
  - see a doctor (Tetanus, antibiotics, wound care).

Zoonotic Disease Information

- CDC: Healthy Pets Healthy People
  [http://www.cdc.gov/healthypets/index.htm](http://www.cdc.gov/healthypets/index.htm)

- CDC: Zoonotic Disease: When Humans and Animals Intersect

- CDC: Zoonotic Disease Factsheet

Zoonotic Disease Information

- CDC: National Center for Emerging and Zoonotic Infectious Diseases
  [http://www.cdc.gov/ncezid/](http://www.cdc.gov/ncezid/)

- The Center for Food Security and Public Health
  [http://www.cfsph.iastate.edu/Zoonoses/](http://www.cfsph.iastate.edu/Zoonoses/)

- The Merck Veterinary Manual
Zoonotic Disease Information


http://www.nasphv.org/Documents/ModelInfectionControlPlan.doc

http://www.nasphv.org/Documents/ModelInfectionControlPlan.doc

Zoonotic Disease Tutorial – Wisconsin

http://svmweb.vetmed.wisc.edu/gbs/zoonoses/

http://www.vetinfo.com/zoonose.html

http://www.vet.cornell.edu/ihz/brochures/zoonoticdisease.html

Veterinary Public Health Contact Information

1902 Mail Service Center
Raleigh NC 27699-1900

Phone: (919) 733-3410
FAX: (919) 733-9555

http://epi.publichealth.nc.gov/cd/diseases/vph.html