Rabies Prevention

Infectious Disease Prevention and Control
Anne Arundel County Department of Health
The Rabies Virus

- Viral disease of mammals
- Zoonotic disease: can spread from animals to humans
- Infects the central nervous system (brain and spinal cord)

Photo: CDC, Dr. Fred Murphy
Symptoms in Humans

**Initial stage of disease:**

*Similar to other illnesses*

- Fever
- Headache
- General weakness
- Discomfort

As the disease progresses, other symptoms appear.

**Later stage of disease:**

- Pain & tingling at site of bite
- Anxiety
- Insomnia
- Confusion
- Slight or partial paralysis
- Hallucinations
- Agitation
- Hypersalivation
- Difficulty swallowing
- Hydrophobia (fear of water)
Once symptoms appear, RABIES IS ALMOST **ALWAYS FATAL**...
Transmission & Exposure

- Transmitted through infected saliva
- Typically a bite from a rabid animal, "bite exposure"
- Although rare, possible transmission through "non-bite" exposures

**Non-bite exposures:**
- Scratches
- Abrasions
- Open wounds
- Mucous membranes, such as the eyes, nose or mouth
- Organ transplants
- Cornea transplants
Path of the Virus in Animals

- Exposure: Animal bite
- Spreads through the nerves to the spinal cord and brain
- Incubation period: weeks to months
- Disease reaches brain and replicates causing inflammation
- Moves to salivary glands & saliva – infectious
- Exhibits symptoms of rabies
- **Death** of infected animal usually within 7 days of onset of symptoms

Illustration: Centers for Disease Control and Prevention

An animal can transmit the virus several days before the onset of symptoms.
Signs of Rabies in Animals

**Symptoms:**
- Progressive paralysis (throat and facial muscles)
- Inability to swallow, causing excess salivation
- Lower jaw drop due to facial paralysis
- Docile or lethargic
- Restlessness
- Hyperaggressive behavior
- Rapid breathing
- Incoordination
- Convulsions (seizures)

**Highly variable**

- **Behavioral changes**
  - Lose fear of humans (approaching humans)
  - Ignoring the presence of humans
  - Uncharacteristically affectionate
  - Nocturnal animals wandering in daylight

- **Unexplained paralysis**
Common Rabid Animals in Maryland

Feral (wild) or Stray Cats

Raccoons

Bats

Skunks

Foxes

Raccoons and bats are the most common.
Other Rabid Animals

- Rabies can infect **any** mammal (warm-blooded).

- Groundhogs/Woodchucks
- Dogs
- Otters
- Beavers
- Goats
- Deer
- Horses
- Cows

Centers for Disease Control and Prevention, 2010 data
[http://www.cdc.gov/rabies/location/usa/surveillance/wild_animals.html](http://www.cdc.gov/rabies/location/usa/surveillance/wild_animals.html)
Rabies in the United States

Number of Rabies Cases by State, United States—2009

Rabies Case Rate By State

<table>
<thead>
<tr>
<th>Rank</th>
<th>State</th>
<th>Rate per 100,000 people</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Vermont</td>
<td>10.71</td>
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<tr>
<td>2</td>
<td>D.C.</td>
<td>9.47</td>
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<td>4</td>
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<td>5</td>
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<tr>
<td>10</td>
<td>Maine</td>
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</tr>
</tbody>
</table>

**Rate per 100,000 people.**

Centers for Disease Control and Prevention, 2011
http://www.cdc.gov/Features/dsRabies/
Anne Arundel County

Number of positive animals

Year

- 2000: 41
- 2001: 36
- 2002: 28
- 2003: 20
- 2004: 22
- 2005: 26
- 2006: 18
- 2007: 13
- 2008: 10
- 2009: 20
- 2010: 19
- 2011: 7
- 2012: 20

Anne Arundel County Department of Health and Maryland Department of Health and Mental Hygiene
Anne Arundel County

Percent of positive animals

Year

Percent of positive animals

Anne Arundel County Department of Health and Maryland Department of Health and Mental Hygiene
RABIES IS 100% PREVENTABLE
Minimize Risk of Exposure

Pets:

- Direct supervision when outdoors.
- Do not feed your pet outside.
- Maryland law (Article 12, Title 4, Subtitle 6-601) requires that all dogs, cats and ferrets 4 months of age and older be vaccinated against rabies.
- Regular veterinarian visits and keeping rabies vaccination up to date are necessary.
- Anne Arundel County Animal Control Weekly Rabies Clinic:
  - $5.00 Vaccination Cost
  - After first dose, need a 1 year follow-up vaccination, then once every three years
  - Every Thursday (except holidays) 12:00-3:00 P.M.
  - Special clinics (extended hours or Saturdays)

http://www.aacounty.org/AnimalControl/rabiesClinic.cfm
Reducing Your Risk

- Store trash in cans with tight-fitting lids.
- Enjoy wild animals from a distance.
- Do NOT handle or feed wild or stray animals.
- If your pet is exposed, use gloves when handling them and call your vet.
- Prevent bats from entering your home.

Photo: Wikimedia Commons - US Fish and Wildlife Service
Be aware of bats.

- Signs of bat activity
  - Look for guano (bat droppings).
- Inspect the outside of your house.
  - Keep an eye out for any gaps or cracks.
How do bats get into my house?

- Unscreened attic vent
- A hole or crack under rotted eave (edge of roof)
- A crack or separation where the chimney meets the house
- Loose or warped siding
- An open cellar hatch
- Chimney
- Openings where pipes or wiring enter the house
- Rotted window sills or a loose fitting screen
- Unscreened doors or windows left open

Typically bats enter the home through gaps or cracks (¼” to ½”) in length.

“Bats in Houses,” Maryland Department of Natural Resources:
http://dnr.maryland.gov/wildlife/Plants_Wildlife/bats/batsinhome.asp
Inspection & Exclusion

If no potential exposure (human or pet):

✓ Call a Wildlife Cooperator for inspection and exclusion (includes a fee).
✓ Do the exclusion yourself.
  - Dept. of Natural Resources website
  - Nuisance Wildlife Hotline

Bats roosting in the vent of a home.

Photo: Anne Arundel County Department of Health, Bureau of Environmental Health
If bats enter your home...

- **Do not** release the bat.
- Isolate the animal.
- Call Animal Control to remove the bat, **OR** capture the bat safely.

Click here to view the video taken from the New York State Health Department, “Catch a bat safely.”
How to catch a bat safely

1. Close windows and doors.
2. Cover bottom of each door.
3. Use a container, stiff cardboard and heavy gloves.
4. Keep your eyes on the bat.
5. Approach the bat slowly.
6. Place container over the bat and slip cardboard under the container.
7. Tape cardboard to the container.
8. Contact Animal Control to send bat for rabies testing.

Photo: Anne Arundel County Department of Health, Bureau of Environmental Health
Contact with Bats

- Bat bites are not easily visible.
- If a bat is physically present and you cannot rule out having been bitten...
  - Seek medical attention
  - Safely capture the bat
  - Call Animal Control to remove the animal and send for rabies testing

Situation in which, one cannot reasonably rule out being bitten:
- A sleeping individual
- Unattended children
- Mentally impaired or intoxicated person

CDC, Emerging Infectious Diseases, http://wwwnc.cdc.gov/eid/
If Exposed...

- Wash the wound immediately with soap and water.
- Report the bite or exposure to Animal Control or your local health department.
- Seek medical attention and notify your healthcare provider.
Rabies Vaccination

Preexposure Vaccinations
- Given *before* exposure
- Considered for individuals at high risk of exposure to rabies

**At risk:**
- Rabies laboratory workers
- Veterinarians and staff
- Animal control workers
- Wildlife workers

Simplifies postexposure management

Postexposure Vaccinations
- Given *after* suspected exposure to rabies virus
- Highly effective treatment in preventing rabies in humans

Includes:
- Cleaning the wound
- Rabies immune globulin *(postexposure only)*
- 4 to 5 doses of rabies vaccine
Resources

Anne Arundel County Animal Control:
411 Maxwell Frye Road, Millersville, MD 21108
(410) 222-8900

Anne Arundel County Department of Health:
(410) 222-7256

Nuisance Wildlife Hotline:
(877) 463-6497

Maryland Department of Natural Resources:
(410) 260-8540
Monday - Friday 8:30 a.m. – 5:00 p.m.
(410) 260-8888 24 hours

List of Wildlife Nuisance Cooperators by County:
http://webapps02.dnr.state.md.us/WHSNuisance/WCCQuery.aspx
Additional Resources

Anne Arundel County Department of Health
www.aahealth.org

Anne Arundel County Animal Control
http://www.aacounty.org/animalcontrol

Centers for Disease Control and Prevention
www.cdc.gov/rabies/

Maryland Department of Health and Mental Hygiene
http://phpa.dhmh.maryland.gov/OIDEOR/CZVBD/SitePages/rabies.aspx

Maryland Department of Natural Resources
http://www.dnr.state.md.us/

“Bats in Home” (Maryland Dept. of Natural Resources)
http://dnr.maryland.gov/wildlife/Plants_Wildlife/bats/batsinhome.asp
References

Centers for Disease Control and Prevention
http://www.cdc.gov/rabies/
“Bats and Rabies, A public health guide” brochure (2001), CDC

World Health Organization
http://www.who.int/rabies/en/

Maryland Department of Health and Mental Hygiene
http://phpa.dhmh.maryland.gov/OIDEOR/CZVBD/SitePages/rabies.aspx

Anne Arundel County Department of Health

Maryland Department of Natural Resources

Center for Food Security and Public Health & Institute for International Cooperation in Animal Biologics (Iowa State University)
http://www.cfsph.iastate.edu/Factsheets/pdfs/rabies.pdf
Questions?

Anne Arundel County Department of Health
Infectious Disease Prevention and Control
410-222-7256
Thank you!