

## ***Prevention of Rabies in Humans:***

### **Bats in Buildings – Investigation Steps**

Since bat rabies virus variants are responsible for most human rabies in the United States, every potential human exposure to a bat requires thorough evaluation. If possible, a bat involved in a potential human exposure should be **safely collected** and submitted for rabies diagnostic testing without delay (see Action Step II below). Most bats submitted for laboratory testing will not be rabid, but testing is essential to rule out rabies and the need for large investments in risk assessments and unnecessary prophylaxis.

**Careful investigation is essential.** The risk for rabies resulting from an encounter with a bat might be difficult to determine because of the limited injury inflicted by a bat bite (compared with more obvious wounds caused by the bite of terrestrial carnivores); an inaccurate recall of a bat encounter that might have occurred several weeks or months earlier; and evidence that even a very superficial skin inoculation with some bat-related rabies viruses may result in infection, even though the person may not have noticed the encounter.

**The standard for identifying and dealing with any human exposures or potential human exposures to bats** is the published MMWR ACIP guideline document, *Human Rabies Prevention --- United States 2008, Recommendations of the Advisory Committee on Immunization Practices* ([www.cdc.gov/mmwr/preview/mmwrhtml/rr5703a1.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5703a1.htm)).

#### **Action steps:**

##### **I. Conduct a Risk Assessment:**

- **Always** contact the local health department ([www.ncalhd.org/county.htm](http://www.ncalhd.org/county.htm)) and/or Division of Public Health, Veterinary Public Health (919-733-3419) for assistance with rabies risk assessments. The local environmental health agency may be called to inspect buildings for bat guano (droppings), which can cause respiratory illness (histoplasmosis) in humans.
- **Any direct contact or potential direct contact between a human and a bat should be evaluated for an exposure to rabies.** If the person can be reasonably certain a bite, scratch or mucous membrane exposure did not occur, or if the bat is available for testing and is negative for presence of rabies virus, postexposure prophylaxis (PEP) is not necessary.
- **Other situations that might qualify as exposures** include finding a bat in the same room as a person who might be unaware that a bite or direct contact had occurred (e.g., a deeply sleeping person awakens to find a bat in the room, or a bat is found in a room with an unattended child, mentally disabled person, or intoxicated person).

*These situations should not be considered exposures if rabies is ruled out by diagnostic testing of the bat (negative test result), or if circumstances suggest it is unlikely that an exposure took place.*

- ##### **II. Safely capture the bat for rabies diagnostic testing**
- if there were potential human or domestic animal exposures in a living space. **Safely confine any bats to a room**, if possible, and **call local animal control to capture the bat(s)**. Do not risk exposure by attempting to capture bats yourself unless you carefully follow **CDC directions** ([www.cdc.gov/rabies/bats/contact/capture.html](http://www.cdc.gov/rabies/bats/contact/capture.html)). However, if a building is infested with multiple bats, or bats have been flying in and out, testing is not helpful – there is no way to know which of the bats may have come in contact with a person.

In the case of multiple bats, consult with Veterinary Public Health (919-733-3419) to determine the best course of action. **Bat specimens should be submitted to the State Laboratory of Public Health** (see <http://slph.ncpublichealth.com/virology-serology/rabies.asp> or call VPH, 919-733-3419). Do not release bats outside if there was a potential exposure to a human or to a domestic pet.

- III. Determine if there is a bat infestation in the building, even if only one bat is found.**
- a. Recommend that building owner/manager contact a wildlife damage control agent, or WDCA,** experienced in bat exclusions, as soon as possible to inspect for bat infestation (entry/exit pathways, and roosting areas) and guano accumulation in all buildings (see [www.ncwildlife.org/Trapping/WildlifeDamageControlAgent.aspx](http://www.ncwildlife.org/Trapping/WildlifeDamageControlAgent.aspx)).
  - b. Check for indications of bat infestation** and potential access to living areas:
    - Bats flying out of building at dusk;
    - Squeaking and/or scratching noises behind wall(s);
    - Stains or odor from guano (bat droppings) on outside of building (roof, window louvers, vents, etc.), or inside building (attics, rafters, loft areas, etc.); and
    - Entry portals to living areas (e.g., cracks around attic door, cracks or holes in ceiling, lofts, vents, and holes around plumbing or light fixtures).
  - c. Residents should not occupy a bat-infested building until all bats have been excluded from living areas by a professional WDCA.**
- IV. Removal of bat guano (droppings) is important. Guano present in areas where bats roost can cause histoplasmosis, a serious fungus infection, in humans** (see CDC web site, [www.cdc.gov/fungal/histoplasmosis](http://www.cdc.gov/fungal/histoplasmosis)). Guano should be cleaned up by a professional industrial hygienist using personal protective equipment (local Environmental Health should collaborate with the N.C. Division of Public Health Occupational and Environmental Epidemiology Branch).
- a. Contact** N.C. Occupational and Environmental Epidemiology Branch (**919-707-5900**) to assess guano accumulation and potential for histoplasmosis, and for remediation recommendations.
  - b. See the NIOSH booklet, Histoplasmosis: Protecting Workers at Risk,** at [www.cdc.gov/niosh/docs/2005-109/pdfs/2005-109.pdf](http://www.cdc.gov/niosh/docs/2005-109/pdfs/2005-109.pdf) (see Appendix for histoplasmosis fact sheet).
- V. If the building is infested, local health department (LHD) communicable disease (CD) nurses should assess people for exposures to bats according to the following guidelines:**
- a. Algorithm for Human Rabies Exposure Assessment** ([http://epi.publichealth.nc.gov/cd/lhds/manuals/rabies/docs/algorithm\\_human\\_wild.pdf](http://epi.publichealth.nc.gov/cd/lhds/manuals/rabies/docs/algorithm_human_wild.pdf) )
  - b. See also the Bat Exposure Assessments section of this manual.** ([http://epi.publichealth.nc.gov/cd/lhds/manuals/test\\_rabies/docs/bat\\_exp\\_assess.pdf](http://epi.publichealth.nc.gov/cd/lhds/manuals/test_rabies/docs/bat_exp_assess.pdf))

- VI. **LHD CD nurses** should provide potentially exposed and exposed persons with rabies **education, guidance for access to post-exposure prophylaxis/vaccination (PEP), and contact information** for asking questions. **An informational meeting to educate residents of infested buildings** (apartments, assisted living facilities, etc.) about rabies, bats and PEP assessments may be held with the LHD CD nurse, environmental health expert, and building owners or management. Veterinary Public Health (919-733-3419) may be called to assist.
- VII. **LHD CD nurses should develop a line list** of persons potentially exposed to bats, including demographics, address, phone number, type of exposures, PEP recommended (y/n), PEP begun (y/n), Days 0, 3, 7, 14, (and 28 if immune-compromised), PEP completed (y/n), etc.
- VIII. **The local health department should provide daily updates to N.C. Veterinary Public Health (919-733-3419).**

***For more information:***

- **Bats & Rabies** ([www.cdc.gov/rabies/bats](http://www.cdc.gov/rabies/bats)), Centers for Disease Control and Prevention (CDC)
- **Bat Proofing for Camps**, N.C. Division of Public Health
  - Bat-proof camp checklist ([http://epi.publichealth.nc.gov/cd/lhds/manuals/rabies/docs/batproof\\_bldgs.pdf](http://epi.publichealth.nc.gov/cd/lhds/manuals/rabies/docs/batproof_bldgs.pdf))
  - Prevention of Bat Exposure at Summer Camps (2011 memo from State Health Director) ([http://epi.publichealth.nc.gov/cd/rabies/docs/Bat\\_Memo\\_Camp\\_Directors.pdf](http://epi.publichealth.nc.gov/cd/rabies/docs/Bat_Memo_Camp_Directors.pdf))
- **Rabies web site**, N.C. Division of Public Health – Communicable Disease Branch (<http://epi.publichealth.nc.gov/cd/diseases/rabies.html>)
- **Human rabies cases** (United States), CDC ([www.cdc.gov/rabies/location/usa/surveillance/human\\_rabies.html](http://www.cdc.gov/rabies/location/usa/surveillance/human_rabies.html))
- **Bat Conservation International** ([www.batcon.org](http://www.batcon.org))