



Fight the Bite

By **Connie Austin, D.V.M., M.P.H., Ph.D.**

Animal bites are a very common public health problem. Because an animal bite carries with it the possibility of infection with the rabies virus, which is considered universally fatal, it poses a challenge to the health care provider who must make a recommendation about rabies post-exposure prophylaxis (PEP). Keeping up-to-date on rabies activity in a region and state often can be difficult. Therefore, health care providers should rely on their local health departments for advice when providing animal bite consultations to clients.

In addition to wound care, what should health care providers do when seeing an animal bite victim?

- Make sure the animal bite is reported to local animal control.
- Obtain needed information from the bite victim.
 - What species of animal bit the person? If a domestic animal is involved, who is the owner of the animal and what is the animal's description? This can help to identify the animal that needs to be confined by animal control.
 - If the bite was from a dog, cat or ferret, what were the circumstances of the bite (what were the person and animal doing when the bite occurred)?
 - Determine if the animal is available for confinement or testing.
- Contact the local public health department if a consultation is needed on rabies PEP.

It is important to report the animal bite to animal control to be sure aggressive dogs are managed appropriately by their owners. Animal control also can ensure that the dog, cat or ferret is properly confined during the observation period of 10 days following the bite.

Identifying the species that bit a patient is important because some animals are considered to have a higher risk of rabies. Rodents and rabbits are at extremely low risk for rabies and bites involving these species rarely, if ever, result in the need for rabies

PEP. If the person was bitten by a wild animal (not including rodents or rabbits), rabies PEP will probably be needed unless the animal can be tested negative for rabies. Testing of an animal for rabies requires that the brain of the animal be submitted to the Illinois Department of Public Health (IDPH) laboratory. There is no ante-mortem test for this purpose. An ideal response to a dog, cat or ferret bite is for the animal to be confined and observed by a professional for a 10-day period after a bite. If the biting animal was infective at the time of the bite, signs of rabies will usually follow in four to seven days. If the animal is a stray or the owner is not known, it may not be possible to have the dog, cat or ferret undergo a 10-day observation period. Because the level of terrestrial animal rabies is so low in Illinois at this time, there still may be no recommendation for rabies PEP if someone is bitten by a dog, cat or ferret that cannot be confined for 10 days unless the animal was ill, acting abnormally or was extremely aggressive.

The circumstances of the bite are important with dog and cat bites. If an animal has signs that may indicate rabies or if it attacks in an unprovoked manner, the animal may need to be euthanized and tested for rabies immediately. The decision about rabies PEP can usually await the testing result. Please keep in mind that rabies testing requires a one-day turnaround time by the IDPH and the Illinois Department of Agriculture (IDA) laboratories; emergency rabies testing is available after consultation with public health authorities. Rabies prophylaxis is not a medical emergency, but is of medical urgency. Rabies immune globulin and a series of rabies vaccinations over 28 days are used for rabies PEP and should be given as soon after a bite as possible (although this can wait a few days until testing is complete or a search for the animal has been done). A provoked bite is one that is understandable given the situation. Examples would include someone trying to pick up or feed an unfamiliar or stray animal, assisting an animal in pain, handling an animal's young or trying to enter someone's property. Sometimes a person bicycling past a dog may provoke a bite. An example of an unprovoked bite would be a person walking along a country

road and an animal comes out of the woods and bites the person. Unprovoked bites are more likely to indicate behavior consistent with rabies.

The amount of rabies circulating in wild terrestrial mammals (such as skunks, raccoons, foxes or coyotes) is an important factor in determining whether to administer PEP following a bite from a domestic animal. If terrestrial animal rabies should appear in the state, the criteria for rabies PEP recommendations would change also. Currently, there have been no terrestrial animals reported with rabies in the last five years in Illinois. However, there have been 20 to 30 cases of bat rabies reported each year in the state. Approximately 5 percent to 10 percent of bats tested in Illinois are rabies positive. Potential rabies exposures involving bats are handled differently than those involving terrestrial mammals. There are several important points about bat exposures:

1. Bat rabies strains are the most common type found in human rabies cases in the United States.
2. Transmission of rabies virus can occur from minor, unrecognized bites from bats (i.e., the bite may not be visible on clinical examination).
3. Rabies PEP is recommended for all persons with bite, scratch or mucous membrane exposure to a bat, unless the bat tests negative for rabies.
4. When a bat is found in living quarters and a strong possibility exists that an exposure might have occurred, rabies PEP should be recommended unless the bat can be tested and found negative for rabies. Specific examples can be found in the ACIP document listed below.

Bats may enter homes through holes in attics, especially in old homes. These exposures are difficult to evaluate for rabies risk. In all instances of potential human exposure involving bats, the bat should be safely collected and submitted for rabies testing. The exposed person can contact the local public health agency or animal control for instructions on safe collection of bats for testing. Personnel from some local jurisdictions will assist with the collection of bats for testing.

The document containing the official recommendations on rabies control in humans (Human Rabies Prevention-United States, 1999 MMWR 1999;48(RR-1):1-21) is issued by the Advisory Committee on Immunization Practices (ACIP), and can be obtained at (www.cdc.gov/nip/publications/ACIP-list.htm).

County Corner

Local Health Department Reports of Outbreaks, Studies or Prevention Efforts

An outbreak of *Cyclospora* from catered food, DuPage County

By Sue Kowalczyk, M.P.H., L.E.P.H., DuPage County Health Department; and Connie Austin, D.V.M., M.P.H., Ph.D., Illinois Department of Public Health

Cyclospora outbreaks in the United States are often caused by the consumption of contaminated produce items, such as raspberries, mesclun lettuce or fresh basil. The average incubation period for illness from this parasite is one week. If not treated with trimethoprim-sulfamethoxazole, the duration of illness can be long. *Cyclospora* became reportable in Illinois on April 1, 2001, due to the national increase in outbreaks due to this pathogen.

On March 25, 2004, the DuPage County Health Department notified the Illinois Department of Public Health (IDPH) of an outbreak of prolonged diarrheal illness in two groups who ate food provided by a single caterer on February 25, 2004. The relatively long incubation period of the ill persons provided evidence that the causative agent might be parasitic (*Cyclospora*, *Giardia* or *Cryptosporidia*). The IDPH laboratory identified *Cyclospora* in stool from ill persons. This finding was confirmed at the U.S. Centers for Disease Control and Prevention (CDC). An investigation was initiated.

A total of 56 probable or confirmed cases were identified among persons who ate food from the caterer between February 24 and 26: 53 cases were members of one of four groups eating at catered events, one case was a person who ate at a the restaurant operated by a caterer and two were food handlers at the establishment. No special food handler restrictions were included among the outbreak control measures because the oocysts are not infective upon excretion. Food handlers are not thought to play a role in transmission of the agent. Food handlers are probably infected by eating food at the establishment where they work. Various food items were implicated by epidemiologic analysis. These foods contained either mesclun lettuce or fresh basil. This information was provided to both CDC and to the U.S. Food and Drug Administration (FDA) for traceback purposes. An out-

break of *Cyclospora* also had been investigated in Texas during the same time frame. During the FDA's investigation, overlapping traceback information was identified for fresh basil between the Illinois and Texas outbreaks. It is hoped, the FDA can identify problems that led to the contamination of the basil thereby helping to prevent future outbreaks.

One factor that made the outbreak investigation in Illinois challenging was the long incubation period, which resulted in late notification of the local health department about the outbreak. This made both food history recall in ill persons and finding invoices relating to produce items more difficult. Many ill persons had visited health care providers who did not consider *Cyclospora* as the causative agent because it is uncommon. Testing for this parasite needs to be specially requested at most laboratories and recognition is often delayed because the incubation period cannot be determined until multiple cases are linked to a common source. The incubation period is a key factor in identifying *Cyclospora* as a possible etiologic agent. Because *Cyclospora* can be treated, it is important to identify outbreaks quickly. Some ill persons in this outbreak had up to 30 or more days of diarrheal illness that affected their daily home and work life. Other challenges in investigating this outbreak were combining very different datasets from a Web-based survey and from telephone surveys into one dataset for analysis. A single source of data collection is best if the many hours of labor involved in combining disparate datasets for analysis are to be avoided.

If health care providers identify persons with prolonged diarrhea who report knowing other persons with similar illness or if they see multiple cases of prolonged diarrhea suspected to be due to an infectious cause, it is important that this information be reported promptly to the local health department. IDPH provides free stool testing for various pathogens in outbreak situations.

Kane County Experiences a Boil Order

By Cindy Gross, M.T., S.M. (ASCP), C.I.C.; Michael Isaacson, M.P.H.; and Claire Dobbins, M.S.C., Kane County Health Department

During the afternoon, February 6, 2004, the Illinois Department of Public Health (IDPH) informed the Kane County Health Department (KCHD) that, according to the Illinois Environmental Protection

Agency (IEPA), the Aurora city water supply had tested positive for fecal contamination. As with any investigation, clarification and confirmation of the facts surrounding the incident were crucial in determining the next steps to take. Several phone calls were made to gather additional information and to ascertain the seriousness of the situation. It was determined that several routine water samples had tested positive for total coliforms and additional follow-up tests revealed the presence of *E.coli*. In accordance with the United States Environmental Protection Agency (EPA) total coliform rule (54 FR27544-27568, June 29, 1989), detection of *E.coli* in a public water supply constitutes an acute maximum contaminant level (ACL) violation and requires notification of the public within 72 hours and issuance of a boil order. The city of Aurora complied with this requirement and issued a boil order that evening that remained in effect until February 15.

Initially, KCHD's primary responsibility was the notification of licensed food establishments. The general public was notified by the city of Aurora. Because it is the governing and licensing agency, IDPH contacted the medical community. The following is a synopsis of the KCHD response and experience.

Food Establishments

KCHD initially responded by assembling all available staff members willing to assist in the boil order response. The Environmental Health (EH) Division's internal licensing database (K-PASS) identified approximately 350 food establishments that would be affected by the boil order. A staff briefing was held in the KCHD conference room and the mechanism for notification and the content of the message to be delivered was established. At approximately 5 p.m. the staff began to notify the food establishments verbally via phone and, subsequently, in written format via fax. The communication consisted of the protocols that were required of the food establishments to remain open during a boil order. Both phone calls and faxes were delivered in English and Spanish as indicated. This process was completed by 8 p.m. Following notification of the food establishments, it was determined by the EH Division that random inspections would take place to assure compliance. These inspections were conducted throughout the length of the boil order.

Additionally, to ensure uniform distribution of information, the protocol also was disseminated to the city

of Aurora, the County Office of Emergency Preparedness, IDPH and DuPage, Kendall and Will county health departments (the city of Aurora supplies water to residents in these counties, too). The same information was released to the press and posted on the KCHD Web site, which enabled KCHD to utilize the public as an additional watchdog for food establishment compliance.

Medical Community

Although notified by IDPH, KCHD felt it necessary to make direct contact with the two hospitals located in Aurora and to offer guidance and assistance. Many issues, from dialysis procedures to instrument disinfection and sterilization procedures, were identified and reviewed with the hospitals throughout the duration of the boil order. The IDPH duty officer on call, David Culp, was instrumental in providing KCHD with the expertise needed to answer many of the technical questions posed.

KCHD requested that the Aurora hospitals initiate active surveillance for patients presenting to their emergency departments with gastrointestinal illness. Throughout the duration of the boil order, daily calls were made to the hospitals' infection control practitioners for a daily report of the previous 24 hours of emergency department activity. In addition, the required reportable enteric diseases being reported to KCHD were monitored and compared to the previous year's statistics to assist in identifying an increased incidence that may have indicated disease related to contaminated water. The surrounding local health departments as well as the other three hospitals in Kane County were also notified so that they, too, could monitor incoming reportable enteric diseases and adjust their epidemiological investigation of such cases to include questions about consumption of Aurora city water.

Other Community Partners

The overarching goal of the KCHD was to provide the community with a credible and consistent message. To achieve this, the guidelines for *Residential Water Usage During a Boil Order* (http://www.kane-health.com/boil_order.htm) as well as fact sheets in English and Spanish were prepared and distributed via the media and on the KCHD Web site. The city of Aurora established a call center and referred all medically related questions to the KCHD. This resulted in assignment of staff to field calls from the public throughout the duration of the boil order.

When it became apparent that the boil order was not going to be resolved over the weekend, KCHD reached out to the two affected Kane County school districts, providing them with a memo titled *Guidelines for Schools During Boil Order*. This document was prepared to assist the schools in providing a level of protection to the students while in the school environment that was comparable to that in the community.

Throughout the boil order, the city of Aurora and KCHD briefed and updated one another. KCHD was invited and participated in the city's briefings and press conferences. The open communication between the city and KCHD was essential to a coordinated response.

Boil Order Liff

The boil order was lifted on Sunday, February 15, after consecutive water samples were tested and found to be negative for total coliform as well as *E. coli*. The order lifted was one day late for the food establishments to capitalize on their second busiest day of the year, Valentines Day. The exact cause of the contamination is still under investigation. The city of Aurora has implemented preventive measures to address a similar event. No increase in reportable enteric diseases was noted and the overall incidence of gastrointestinal illness did not increase based on hospital emergency department surveillance. No health effects have been identified to date relating to the contaminated water supply. However, this incident provided an important real world exercise of active surveillance, preparation for a waterborne disease outbreak, and coordination between the local health department and its many government and non-government partners.

Notices

Guidance for Dialysis Care Providers

What to do when your municipal water supplier issues a "boil water advisory."

http://www.cdc.gov/ncidod/hip/dialysis/boilwater_advisory.htm

Infection Control

Boil-water Advisories and the Dental Office

http://www.cdc.gov/OralHealth/infection_control/fact_sheet/boilwater.htm

Surveillance is Information for Action!

By Kathy Ritger, M.D., M.P.H.

Q: What public health action is triggered when a case of invasive pneumococcal disease is reported to a local health department?

A: The bacteria that causes invasive pneumococcal disease is *Streptococcus pneumoniae*, which is also known as the pneumococcus. It is a gram-positive bacteria capable of causing a wide variety of illnesses in humans, such as pneumonia, sepsis, meningitis and otitis media. Illness typically occurs in young children and older adults and in those with impaired immune systems. Invasive pneumococcal disease results when the organism infects a normally sterile site, such as the lungs, blood, or cerebrospinal fluid. Humans are the only reservoir for *S. pneumoniae* and colonization of the upper respiratory tract is common even in healthy people. Transmission is by respiratory droplets. The incubation period is short, generally about one to three days.

Since April 1, 2001, all invasive pneumococcal infections have been reportable to the local health authority within seven days of identification of the organism. Previously, only cases of meningitis caused by *S. pneumoniae* were reportable. In addition, the antibiotic susceptibility pattern of the isolate must be included in the reporting of invasive pneumococcal cases. For reporting purposes, a case of invasive *S. pneumoniae* infection is defined as a person with clinically compatible symptoms and isolation of the organism from a normally sterile site. Clinicians and laboratories should report cases by completing an invasive pneumococcal disease case report form and a morbidity card, which are then sent to the local health authority. The local health authority sends the report to the IDPH Division of Infectious Diseases, where the reports are entered into an electronic database.

This database is useful in tracking the distribution of invasive pneumococcal disease over time in Illinois. For example, the number of cases of invasive pneumococcal disease reported in 2003 was 944, a 26 percent increase compared to 2002. In 2003, the majority of cases occurred at the extremes of ages, with 15 percent <6 years old and 41 percent

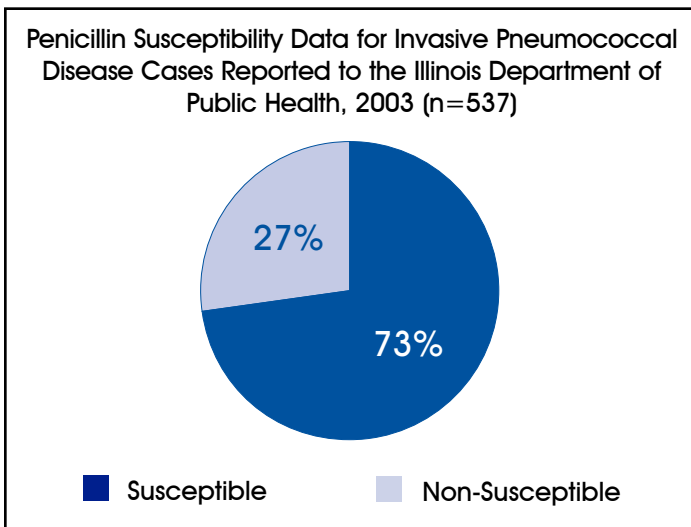
>65 years old. The most commonly reported types of disease were bacteremia (88 percent), pneumonia (60 percent), and meningitis (7 percent); the total is >100% because more than one type of disease can occur in an individual patient. The most common underlying conditions for invasive pneumococcal disease were chronic cardiac disease (36 percent) and chronic pulmonary disease (27 percent). The case fatality proportion was 15 percent for the 712 cases in which the outcome was known.

With the recent addition of the reporting of antibiotic susceptibility patterns, the database can be used to track *S. pneumoniae* penicillin susceptibility and non-susceptibility rates. Penicillin non-susceptibility refers to *S. pneumoniae* isolates that are either resistant or of intermediate susceptibility to penicillin upon in vitro testing. In 2003, 27.0 percent of *S. pneumoniae* isolates causing invasive disease in Illinois were non-susceptible to penicillin among the 537 case reports that had provided penicillin susceptibility information. This compares to 21.2 percent non-susceptibility among the U.S. Centers for Disease Control and Prevention's active bacterial core surveillance population (approximately 25 million people in nine states not including Illinois) in 2002.¹

The invasive pneumococcal disease database also can be utilized to help to determine if an outbreak is occurring. While outbreaks of pneumococcal pneumonia typically occur in closed settings, such as nursing homes² and in military barracks,³ where recognition of an outbreak may be relatively easy, an outbreak of pneumococcal pneumonia can occur in a community setting.⁴ In the case of a community-acquired pneumococcal disease outbreak, the statewide reporting system may prove invaluable for triggering a public health intervention before more people are infected. Typical control measures in an outbreak of invasive pneumococcal disease include elimination of crowding, if applicable, droplet precautions for cases and vaccination of high-risk contacts.

Finally, the case report form requests information on the vaccination status of the case. This allows for monitoring of the effectiveness of the pneumococcal vaccines and for assessing compliance with state legislation requiring pneumococcal vaccination for all residents of long-term care and nursing home facilities (Public Act 093-0384, 210 ILCS 40/10.1).

It is strongly encouraged that case report forms be filled out completely, especially including information on outcome (such as death), and that forms are accompanied by antibiotic susceptibility reports. During 2003, 43 percent of forms were submitted with antibiotic susceptibility information missing compared to 49 percent in 2002. It is encouraging that antibiotic susceptibility reporting is improving, but further improvements are necessary for surveillance data to accurately reflect statewide trends in antibiotic resistance.



References

1. Available on the Internet at <http://www.cdc.gov/ncidod/dbnd/abcs/survreports/spneu02.pdf>
2. CDC. Outbreak of pneumococcal pneumonia among unvaccinated residents of a nursing home-New Jersey, April 2001. *MMWR* 2001;50:707-710.
3. Crum NF, Wallace MR, Lamb CR, et al. Halting a pneumococcal pneumonia outbreak among United States Marine Corps trainees. *Am J Prev Med* 2003;25(2):107-11.
4. O'Brien KL, Walters MI, Sellman J, et al. Severe pneumococcal pneumonia in previously healthy children: the role of preceding influenza infection. *Clin Inf Dis* 2000;30:784-9.

Factoid
 The influenza epidemic of 1918-1919 had an attack rate of 28 percent, causing 675,000 deaths in the United States, and a global toll of 20 million. The epidemic decreased life expectancy in the United States by 11 years.

IDPH Reportable Diseases as of July 2002

Health care providers and hospitals must report any suspected or confirmed case of these diseases to the local health authority within the number of days or hours indicated in parentheses.

- Any suspected bioterrorism threat or event (immediately*)
- Any unusual case or cluster that may indicate a public health hazard (24h)
- AIDS (7d)
- Amebiasis (7d)
- Anthrax (immediately*)
- Blastomycosis (7d)
- Botulism, foodborne (immediately*)
- Botulism, infant, wound, other (24h)
- Brucellosis (7d)
- Campylobacteriosis (7d)
- Chancroid (7d)
- Chickenpox in > 19 year old (24h)
- Chickenpox in < 20 year old (7d)
- Chlamydia (7d)
- Cholera (24h)
- Cryptosporidiosis (7d)
- Cyclosporiasis (7d)
- Diarrhea of the newborn (24h)
- Diphtheria (24h)
- Ehrlichiosis, human granulocytic or monocytic (7d)
- Encephalitis (7d)
- Enteric E. coli infections (O157:H7, STEC, EHEC, EPEC, ETEC) (24h)
- Foodborne or waterborne illness (24h)
- Giardiasis (7d)
- Glomerulonephritis, acute streptococcal (24h)
- Gonorrhea (7d)
- Haemophilus influenzae, invasive (24h)
- Hantavirus pulmonary syndrome (7d)
- Hemolytic uremic syndrome, post diarrheal (24h)
- Hepatitis A, (24h), B (cases and carriers), C and other (7d)
- Histoplasmosis (7d)
- HIV infection (7d)**
- Legionnaires' disease (7d)
- Leprosy (7d)
- Leptospirosis (7d)
- Listeriosis (7d)
- Lyme disease (7d)
- Malaria (7d)
- Measles (24h)
- Meningitis, aseptic (7d)
- Meningitis, meningococcal, meningococcemia, H. influenzae, other invasive disease (24h)
- Mumps (7d)

Neisseria meningitidis, meningitis, meningococemia and other invasive (24h)
Ophthalmia neonatorum (gonococcal) (7d)
Pertussis or whooping cough (24h)
Plague (immediately*)
Poliomyelitis (24h)
Psittacosis (7d)
Q fever (immediately*)
Rabies, human and potential human exposure (24h)
Reye syndrome (24h)
Rheumatic fever (24h)
Rocky Mountain spotted fever (7d)
Rubella (7d)
Salmonellosis, other than typhoid (7d)
Shigellosis (7d)
Smallpox (immediately*)
Staphylococcus aureus infections in infants <28 days (7d)
Staphylococcus aureus infections with intermediate or high level vancomycin resistance (24h)
Streptococcal acute glomerulonephritis (24h)
Streptococcal infections, group A invasive (24h)
Streptococcal infections, group B, invasive < 3 months (7d)
Streptococcus pneumoniae, invasive with antibiogram (7d)
Streptococcal rheumatic fever (24h)
Syphilis (7d)
Tetanus (7d)
Toxic shock syndrome, presumed staphylococcal (7d)
Toxic shock syndrome, streptococcal (24h)
Trichinosis (7d)
Tuberculosis (7d)
Tularemia (immediately*)
Typhoid fever (24h)
Typhus (24h)
Whooping cough or pertussis (24h)
Yersiniosis (7d)

*within three hours

**HIV reporting is by patient code number (PCN).

Contacts

Editor Mark S. Dworkin, M.D., M.P.H. and T.M., State Epidemiologist, Division of Infectious Diseases

Managing Editor Michele McGee, M.P.A.

160 N. LaSalle St. - 7th Floor South
Chicago, IL 60601
Phone 312-814-4846 • Fax 312-814-4844
www.idph.state.il.us

Send Comments and Feedback to:
mmcgee@idph.state.il.us

Web site: www.idph.state.il.us