



## Enterovirus Season and Aseptic Meningitis Clusters: It's That Time of Year

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Aseptic meningitis is an illness characterized by typical meningeal symptoms including sudden onset of fever, headache, stiff neck, malaise, nausea, confusion, and photophobia. It is usually accompanied by an increased number of lymphocytes in the cerebral spinal fluid (CSF). The illness is usually mild and self-limiting; however, some cases can be severe and life threatening. Viral meningitis is the most common type of aseptic meningitis. Coxsackieviruses and echoviruses, members of the enterovirus family, account for about 90 percent of viral meningitis cases.

Aseptic meningitis can occur sporadically and as outbreaks, with outbreaks normally occurring during the enteroviral season, which runs from July through October. In 2005 and 2006, the highest incidence of aseptic meningitis occurred during the month of September (see Figure 1).

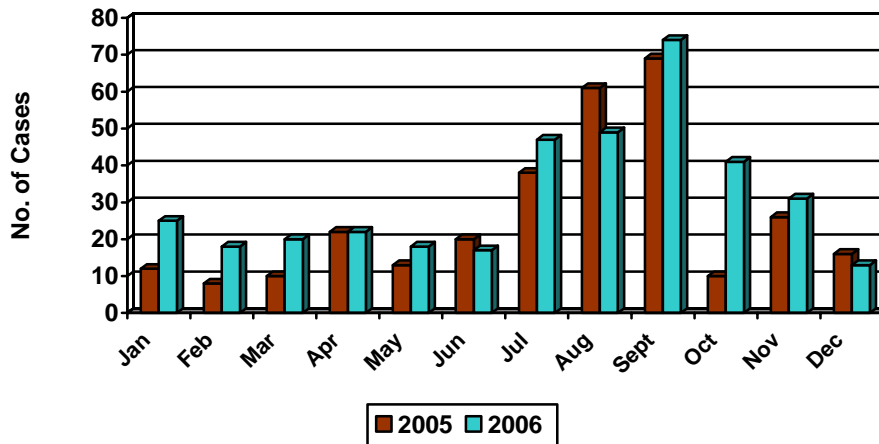
Two small clusters of viral meningitis have occurred in Indiana counties in recent weeks:

- Five cases have occurred in County A, four of which had onset dates ranging from August 27-31. Ages of these cases range from 9 days to 13 years. Three cases attend schools in the same school district. A fourth case has an epidemiologic link to the school-age cases. Two cases have tested positive for entero-like viruses, and further subtyping of these isolates is being conducted at the Centers for Disease and Control and Prevention (CDC) Laboratory. The fifth case, an infant with onset on September 9, has no identified link to the other four cases.

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- Seven cases have occurred in County B with onsets ranging from September 4-20. Ages of the cases range from 10 to 15 years. Two school districts had three cases each. The seventh case has no identified link to the other cases. None of these cases has been confirmed as enteroviral, but laboratory tests are pending on some individuals.

**Figure 1. Aseptic Meningitis Incidence Indiana, 2005-2006**



Populations that appear to be more susceptible to viral meningitis include children and elderly persons who interact or live in group settings. Fall sports teams may be at increased risk, because the season coincides with the enteroviral peak period and the likelihood of athletes sharing water bottles and having close contact with each other.

Transmission of aseptic meningitis is primarily the fecal-oral route, but infection can also be transmitted by respiratory droplets and fomites. Adherence to good hygienic practices, such as frequent and thorough hand washing (especially after diaper changes), disinfection of contaminated surfaces by household cleaners (e.g., diluted bleach solution), and avoidance of shared utensils and drinking containers, are recommended to interrupt transmission. More information on hand-washing and proper hand washing techniques can be found on the Indiana State Department of Health (ISDH) Web site at:

<http://www.in.gov/isdh/healthinfo/handwashing.htm>. A quick fact sheet on aseptic meningitis can be found at <http://www.in.gov/isdh/healthinfo/viral%20meningitis.htm>

The ISDH Laboratory is available for enteroviral testing in outbreak situations. Viral culture testing in outbreak situations will assist the ISDH and local health departments in determining whether a case may be a part of a cluster or outbreak. Stool or rectal swabs are the preferred specimens; enteroviruses may also be recovered from throat specimens and CSF fluid. The ISDH Laboratory will accept specimens for testing from any of these sources. If throat or CSF specimens are submitted, the ISDH Laboratory would prefer that stool or rectal swabs also be collected. Specimen collection kits may be obtained by contacting the Containers Section, ISDH Laboratory, at:

Clinical Containers  
 Indiana State Department of Health (ISDH) Laboratories  
 550 West 16th Street, Suite B  
 Indianapolis, IN 46202  
 (317) 921-5500

containers@isdh.in.gov

Specimens should be submitted to the ISDH Laboratories at:

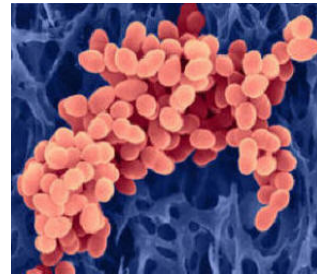
Indiana State Department of Health Laboratories  
550 West 16<sup>th</sup> Street, Suite B  
Indianapolis, IN 46202

For questions regarding aseptic meningitis, please contact Wayne Staggs, ISDH, 317-234-2804; or your local health department.

## MRSA Lives Among Us

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*Staphylococcus aureus*, or “staph”, is a common bacterium that lives on the human skin (armpit, groin, and genital areas) and in the nasal passageways of many people. Although staph bacteria are usually harmless, they can cause skin and soft tissue infections, such as pimples, boils, and cellulitis. Staph is one of the most common causes of skin infections in the U.S.

MRSA (Methicillin-resistant *Staphylococcus aureus*) is a strain of staph that is resistant to methicillin and other related antibiotics. The first reported U.S. outbreak of MRSA occurred in 1968 in a Boston hospital, seven years after the first reported case. Since MRSA can be resistant to several different antibiotics, infections can be difficult to treat.<sup>1</sup>

MRSA is most commonly associated with hospitalized patients, long-term care facilities, and healthcare workers (healthcare acquired or HA-MRSA). HA-MRSA infections have risen sharply in recent years. In the U.S. in 1972, HA-MRSA accounted for only 2 percent of all healthcare-acquired infections. reported to the Centers for Disease Control and Prevention (CDC). Recent data show that HA-MRSA now accounts for 50-70 percent of healthcare-acquired infections.<sup>2</sup>

In the past several years, MRSA has emerged into the community, where its incidence has greatly increased.<sup>3</sup> The CDC defines community-acquired MRSA (CA-MRSA) as MRSA infections that are acquired by individuals who have not been hospitalized within the last year or had a medical procedure. Most CA-MRSA infections are seen as skin and soft tissue infections such as pimples, boils, abscesses, and cellulitis and occur in otherwise healthy people. MRSA skin infections often appear red, swollen, painful, and have a pus-like discharge. More serious infections may cause pneumonia and bone, bloodstream, or surgical wound infections.



In Indiana, most CA-MRSA cases originate in correctional facilities

and competitive sports teams<sup>4</sup> in high schools and colleges. Infections have been associated with direct skin-to-skin contact through cuts and abrasions and indirect contact, such as sharing contaminated sports equipment, towels, and clothing as well as crowded living conditions, and poor hygiene. Individual cases of MRSA are not reportable in Indiana, because the infection is so common. However, any suspected clusters or outbreaks are immediately reportable to local health departments for investigation.

As with any infectious disease, prevention is key. The CDC recommends the following practices to help prevent spreading staph or MRSA skin infections:

- 1. Clean your hands.** Hand hygiene plays a vital role in reducing the transmission of infection. Wash hands frequently with soap and water or use an alcohol-based hand sanitizer, especially after changing bandages or touching an infected wound.
- 2. Cover your wounds.** Wounds that are draining or have pus should be covered with clean, dry bandages. Follow your healthcare provider's instructions on proper wound care. Pus from infected wounds can contain staph and MRSA, so keeping the infection covered will help prevent the spread to others. Bandages or tape can be discarded in the regular trash.
- 3. Do not share personal items.** Avoid sharing personal items such as towels, washcloths, razors, clothing, or uniforms that may have had contact with infected wounds or bandages. Use hot water and laundry detergent to wash soiled sheets, towels, and clothing. Dry items in a clothes dryer on the hottest setting possible, rather than air-dry, to help kill bacteria.
- 4. Talk to your healthcare provider.** Tell your healthcare providers who treat you that you have or have had a staph or MRSA skin infection. See your healthcare provider promptly if you have wounds that do not heal or appear red, swollen, draining, or painful.



You can learn more about MRSA by visiting the following Web sites:

- <http://www.in.gov/isdh/healthinfo/mrsa.htm>
- [http://www.cdc.gov/ncidod/dhqp/ar\\_mrsa\\_ca\\_public.html](http://www.cdc.gov/ncidod/dhqp/ar_mrsa_ca_public.html)

## References

1. Barrett FF, McGehee RF Jr, Finland M. Methicillin-resistant *Staphylococcus aureus* at Boston City Hospital: bacteriologic and epidemiologic observation. *New England Journal of Medicine* 1968; 279:441-448.
2. Siegel JD, Rhinehart E, Jackson M, Chiarello L; Healthcare Infection Control Practices Advisory Committee. Management of multi-drug resistant organisms in healthcare settings, 2006. US Centers for Disease Control and Prevention. Available at <http://www.cdc.gov/ncidod/dhqp/pdf/ar/mdroGuideline2006.pdf> (accessed September 19, 2007)
3. Chambers HF. The changing epidemiology of *Staphylococcus aureus*? *Emerging Infectious Disease* 2001;7:178-82. Available at <http://www.cdc.gov/ncidod/eid/vol7no2/chambers.htm> (accessed September 19, 2007)
4. Centers for Disease Control and Prevention. Methicillin-resistant *Staphylococcus aureus* among competitive sports participants—Colorado, Indiana, Pennsylvania, and Los Angeles County, 2000-2003. *MMWR Morbidity and Mortality Weekly Report* 2003;52:793-5. Available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5233a4.htm> (accessed September 19, 2007)

## News from District 2

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District 2 recently conducted a tabletop exercise during their July meeting at the St. Joseph Regional Medical Center in Plymouth. The facilitators for this particular exercise were the Emergency Management Agent, St. Joseph County; and the Local Public Health Coordinator, Marshall County Health Department. The exercise scenario involved an imaginary town within the District and some protesters of the annual local festival.

There were 41 participants in the exercise consisting of the following agencies: local and state law enforcement; the public health nurses and public health coordinators from the local health departments; Emergency Medical Services; Emergency Management Agency; the Red Cross; the local fire departments; the local hospitals (emergency preparedness personnel and the infection control practitioners); the liaison from the office of Senator Joe Donnelly; the ISDH field staff: hospital liaison, epidemiologist, public information officer, and veterinarian; and the IDEM field emergency responder.

The exercise consisted of 5 modules, beginning with the initial preparation for the protesters 10 months prior to the festival and ending with the explosion of a festival food vendor's propane tank. The exercise took approximately 2.5 hours to complete.

Lessons learned included: 1) the need for more District tabletops (this was considered a positive use of District time), 2) all tabletops need not start from the beginning of an event but could continue with another level of the exercise to incorporate more role-playing time for each agency, 3) many participants did not know who to include in the Emergency Operations Center (EOC) or who should establish the EOC, and 4) possible participants in future exercises: pharmacists, animal control, and a mortuary team/coroner/state demort team.

While the exercise was not a grant requirement, it was determined to be a positive use of District time.

**Correction:** In last month's newsletter (August 2007), the Outbreak Spotlight article stated that *norovirus* "Illness is typically self-limiting and is treatable with antibiotics." The sentence should have read "Illness is typically self-limiting and is **NOT** treatable with antibiotics."



## ***OUTBREAK SPOTLIGHT....***

*Outbreak Spotlight is a regularly occurring feature in the Indiana Epidemiology Newsletter to illustrate the importance of various aspects of an outbreak investigation. The event described below provides another example of the many outbreaks that occur among closed populations, including long-term care facilities. Thanks to enhanced surveillance and reporting in the field by local health departments, hospital infection control practitioners, long-term care facilities, and educated citizens, swift implementation of control measures reduce the length of many Norovirus outbreaks. In many Norovirus instances, transmission has been curtailed within 48 hours after control measures were put in place.*

## **Another Norovirus Target**

Sandra Gorsuch, MS  
Field Epidemiologist District 5

### ***Background***

On December 18, 2006, a representative of the Shelby County Health Department (SCHD) notified the Indiana State Department of Health (ISDH) that at least 19 of 56 (33%) residents at Ashford Place, a local long-term care facility, were experiencing symptoms of gastroenteritis, including nausea, vomiting, diarrhea, and fever.

### ***Epidemiologic Investigation***

The ISDH and the SCHD initiated a collaborative investigation to determine the cause of the outbreak and implement control measures to prevent further transmission of the illness. The investigation revealed that 26 residents (46%) were experiencing nausea, vomiting, or diarrhea, and some had low-grade fever. Two of the symptomatic residents were hospitalized. Four residents submitted stool specimens to the ISDH Laboratories for analysis (see Laboratory Results). Generally, illness self-resolved within 48 hours. None of the facility medical or dietary staff were ill. The pattern of illness onset dates, as well as the fact that no staff members were ill, indicated that the outbreak was most likely person to person rather than foodborne or related to another point source.

### ***Environmental Assessment***

Given no facility inspection was conducted the apparent person-to-person transmission route of the outbreak, the ISDH and the SCDH recommended disinfecting facility environmental surfaces with a 1:10 chlorine bleach to water solution, isolating ill residents, discontinuing the use of hand gels, thoroughly washing hands with warm water and soap for at least 20 seconds between residents, and changing gloves between residents when performing medical procedures. Facility staff initiated use of surgical masks while caring for residents and restricted visitation. After implementation of these control measures, only nine ill residents were reported as of December 19, 2006.

### ***Laboratory Results***

Four residents submitted stool specimens to the ISDH Laboratories for analysis. All specimens tested negative for *Salmonella*, *Shigella*, *Campylobacter*, and *E. coli* 0157:H7 by culture. One specimen tested positive for *Norovirus* by reverse transcription-polymerase chain reaction (RT-PCR).

### ***Conclusions***

The investigation confirmed that an outbreak of viral gastroenteritis occurred at Ashford Place beginning December 17, 2006. The causative agent of this outbreak was *Norovirus*. The sudden, acute predominant signs and symptoms (vomiting, diarrhea, and nausea) and duration of symptoms, approximately 48 hours, reported in this investigation are typical of *Norovirus* outbreaks. The pattern of illness onset dates indicated a person-to-person route of transmission rather than foodborne or another point source.

*Norovirus* is characterized primarily by abrupt onset of nausea, vomiting and/or diarrhea, headache, body aches, chills, but little or no fever.<sup>1</sup> The incubation period for *Norovirus* is 24-48 hours. Illness usually resolves on its own within 1-2 days without complications. Dehydration may result after prolonged vomiting and diarrhea, particularly in young children, the elderly, and those with weakened immune systems. *Norovirus* infections typically occur during cooler months of the year (October to April), but can occur year-round.

*Norovirus* is thought to be responsible for 50 percent of all foodborne gastroenteritis outbreaks.<sup>2</sup> The mode of transmission is fecal-oral, and persons are infected by contaminated food or water, through close contact with an infected person, or contact with contaminated environmental surfaces and fomites. Because studies indicate *Norovirus* can become aerosolized during the cleaning process of infected vomitus, and stool, it is recommended a mask be worn for protection while cleaning restrooms, vomitus or stool. *Norovirus*, which is shed in stool, is highly contagious, and an infectious dose can contain as little as 100 viral particles.<sup>1</sup> Persons with *Norovirus* usually become infectious when symptoms begin and can continue to shed in their stool for up to 2 weeks or longer. Up to 30 percent of individuals infected with *Norovirus* are asymptomatic. *Norovirus* survives chlorine up to 10 ppm (above levels recommended for swimming pools and public water systems)<sup>1</sup> and temperatures below 32°F and up to 140°F. Although the virus does not multiply outside the human body, it can survive readily on environmental surfaces for 24-48 hours.



### ***Recommendations***

Outbreaks caused by *Norovirus* can be prevented by strictly adhering to the following prevention measures:

- Thoroughly wash hands with soap and clean running warm water (at least 100°F) for a minimum of 20 seconds after using the restroom, after assisting someone using the restroom, or caring for people ill with diarrhea and/or vomiting, after cleaning a restroom, before eating, and before preparing or serving food. Waterless antiseptic agents significantly reduce the number of microorganisms on skin but are not effective in eliminating *Norovirus*.
- Persons with diarrhea and/or vomiting should not prepare food for others and should limit direct contact with others as much as possible.
- Persons ill with diarrhea and/or vomiting should not attend meals and activities with other residents not experiencing symptoms.
- Staff with diarrhea and/or vomiting shall be excluded from employment involving food handling (Indiana Retail Food Establishment Sanitation Requirements, 410 IAC 7-24-122) and should not provide health care or child care.

The Indiana State Department of Health extends its appreciation to the Shelby County Health Department and the staff members of Ashford Place for their quick response and professionalism. Their prompt and appropriate actions were instrumental in ending this outbreak. Swiftly implemented control measures taken by Ashford Place on December 18, 2006, prevented the infection from spreading throughout the rest of the facility.

### ***References***

1. "Norwalk-Like Viruses" Public Health Consequences and Outbreak Management. Centers for Disease Control and Prevention. *MMWR*, June 1, 2001 50(9); 1-17.
2. Norovirus: Technical Fact Sheet. January 21, 2005. Centers for Disease Control and Prevention Web site, <http://www.cdc.gov/ncidod/dvrd/revb/gastro/norovirus-factsheet.htm>





## Training Room

# INDIANA STATE DEPARTMENT OF HEALTH IMMUNIZATION PROGRAM PRESENTS:

## *Immunizations from A to Z*

Immunization Health Educators offer this FREE, one-day educational course that includes:

- Principles of Vaccination
- Childhood and Adolescent Vaccine-Preventable Diseases
- Adult Immunizations
  - Pandemic Influenza
- General Recommendations on Immunization
  - Timing and Spacing
  - Indiana Immunization Requirements
  - Administration Recommendations
  - Contraindications and Precautions to Vaccination
- Safe and Effective Vaccine Administration
- Vaccine Storage and Handling
- Vaccine Misconceptions
- Reliable Resources

This course is designed for all immunization providers and staff. Training manual, materials, and certificate of attendance are provided to all attendees. Please see the Training Calendar for presentations throughout Indiana. Registration is required. To attend, schedule/host a course in your area or for more information, please reference

<http://www.IN.gov/isdh/programs/immunization.htm>.

## ISDH Data Reports Available

**The following data reports and the *Indiana Epidemiology Newsletter* are available on the ISDH Web Page:**

[http://www.IN.gov/isdh/dataandstats/data\\_and\\_statistics.htm](http://www.IN.gov/isdh/dataandstats/data_and_statistics.htm)

HIV/STD Quarterly Reports (1998-June 2006)	Indiana Mortality Report (1999, 2000, 2001, 2002, 2003, 2004, 2005)
Indiana Cancer Incidence Report (1990, 1995, 1996, 1997, 1998)	Indiana Infant Mortality Report (1999, 2002, 1990-2003)
Indiana Cancer Mortality Report (1990-1994, 1992-1996)	Indiana Natality Report (1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005)
Combined Cancer Mortality and Incidence in Indiana Report (1999, 2000, 2001, 2002, 2003, 2004)	Indiana Induced Termination of Pregnancy Report (1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005)
Indiana Health Behavior Risk Factors (1999, 2000, 2001, 2002, 2003, 2004, 2005)	Indiana Marriage Report (1995, 1997, 1998, 1999, 2000, 2001, 2002)
Indiana Health Behavior Risk Factors (BRFSS) Newsletter (9/2003, 10/2003, 6/2004, 9/2004, 4/2005, 7/2005, 12/2005, 1/2006, 8/2006, 10/2006, 5/2007)	Indiana Infectious Disease Report (1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005)
Indiana Hospital Consumer Guide (1996)	Indiana Maternal & Child Health Outcomes & Performance Measures (1990-1999, 1991-2000, 1992-2001, 1993-2002, 1994-2003, 1995-2004)
Public Hospital Discharge Data (1999, 2000, 2001, 2002, 2003, 2004, 2005)	

### **HIV Disease Summary**

**Information as of August 31, 2007 (based on 2000 population of 6,080,485)**

***HIV - without AIDS to date:***

375	New HIV cases from September 2006 thru August 31, 2007	12-month incidence	6.52 cases/100,000
3,799	Total HIV-positive, alive and without AIDS on August 31, 2007	Point prevalence	66.04 cases/100,000

***AIDS cases to date:***

322	New AIDS cases from September 2006 thru August 31, 2007	12-month incidence	5.59 cases/100,000
4,087	Total AIDS cases, alive on August 31, 2007	Point prevalence	71.05cases/100,000
8,353	Total AIDS cases, cumulative (alive and dead)		

## REPORTED CASES of selected notifiable diseases

Disease	Cases Reported in August MMWR Weeks 31-35		Cumulative Cases Reported January – August MMWR Weeks 1-35	
	2006	2007	2006	2007
Campylobacteriosis	90	66	338	332
Chlamydia	1,894	1,997	13,527	13,820
Cryptosporiosis	10	22	41	56
Cyclosporiosis	0	1	1	2
<i>E. coli</i> O157:H7	20	22	49	52
<i>Haemophilus influenzae</i>	3	11	51	43
Hepatitis A	1	7	16	13
Hepatitis B	7	3	34	29
Gonorrhea	927	894	5,969	5,852
Legionellosis	9	6	27	23
Listeriosis	2	4	9	12
Lyme Disease	9	16	20	32
Measles	0	0	1	0
Meningococcal, invasive	3	3	18	18
Mumps	0	0	10	1
Pertussis	17	7	146	47
Rocky Mountain Spotted Fever	2	2	5	5
Salmonellosis	196	136	555	483
Shigellosis	10	36	88	74
<i>Streptococcus pneumoniae</i> (invasive, all ages)	28	18	419	393
<i>Streptococcus pneumoniae</i> (invasive, drug resistant)	8	5	112	115
<i>Streptococcus pneumoniae</i> (invasive, <5 years of age)	3	4	42	30
Syphilis (Primary and Secondary)	15	10	59	36

**REPORTED CASES** of selected notifiable diseases (cont.)

Disease	Cases Reported in August MMWR Weeks 31-35		Cumulative Cases Reported January – July MMWR Weeks 1-35	
	2006	2007	2006	2007
Tuberculosis	10	15	89	92
Yersiniosis	1	3	7	13
Animal Rabies	3 (bats)	3 (bats)	9 (bats)	9 (bats)

**For information on reporting of communicable diseases in Indiana, call the *Surveillance and Investigation* section of the *Public Health Preparedness and Emergency Response Division* at 317.233.7125.**



The *Indiana Epidemiology Newsletter* is published monthly by the Indiana State Department of Health to provide epidemiologic information to Indiana health care professionals, public health officials, and communities.

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