Indiana Epidemiology Newsletter

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Reporting of Severe *Staphylococcous aureus* in Previously Healthy Persons

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In response to increased interest in methicillin-resistant *Staphylococcus aureus* (MRSA) during the fall of 2007, the Indiana State Department of Health (ISDH) enacted a 90-day emergency rule requiring laboratory reporting of MRSA infections. The reporting period for the emergency rule was January 1 March 30, 2008. After an exhaustive review of over 21,000 laboratory reports, ISDH staff identified 5,641 individual cases of MRSA during the three-month reporting period. As expected, the vast majority of cases (91%) were soft skin and tissue infections. Only 9% were found to be invasive infections. Other analysis from these data was also consistent with what is already known about MRSA infections. A detailed report describing data from this surveillance is posted on the ISDH Web site at http://www.in.gov/isdh/files/LabReportingMRSA1-08to3-08.pdf

Several limitations were discovered during the collection and analysis of the data obtained from the laboratory reporting rule:

- The study did not differentiate health care-acquired MRSA (HA-MRSA) from community-acquired MRSA (CA-MRSA).
- Severity of infection could not be determined.
- Antimicrobial susceptibility patterns were not studied due to the low number of laboratories reporting them.
- Significant additional resources would be needed to sustain laboratory reporting.

The limitations of the laboratory surveillance data led to the development and implementation of a more useful way to study the burden of MRSA infections in Indiana. As mentioned above, most MRSA cases identified in the laboratory surveillance data were skin and soft tissue infections. Skin and soft tissue infections are typically not life threatening, whereas invasive MRSA infections can be serious, life- threatening events. Invasive HA-MRSA is being addressed by healthcare professionals, while most invasive CA-MRSA infections have not been a focus of

health care professionals or public health officials. Since CA-MRSA can be addressed by specifically studying severe *Staphylococcus aureus* infections (SSAI), and at the same time conserving public health resources, a new reporting system was implemented following the analysis of the laboratory surveillance data.

Effective July 1, 2008, health care providers arerequired to report cases of severe *Staphylococcus aureus* infections in previously healthy people to local health departments (LHD). Local health departments then investigate these cases using case investigation forms provided by ISDH. To meet the case definition for SSAI in a previously healthy person, the case must have been either admitted to anintensive care unit or died (or both). If patients have any of the following risk factors they do not meet the case definition:

- Hospitalized in the past year (including more than 48 hours prior to first *S.aureus* positive culture)
- Surgery within the past year
- Dialysis (hemo or peritoneal) within past year
- Resident of a long-term care facility within the past year
- Indwelling percutaneous device or catheter

Epi Flashback

1929 – Dr. Walter Lee describes the campaign to immunize Evansville children under ten years of age against diphtheria. Suggesting that immunizing "5,000 pre-school children and a like number of school children in order to eliminate diphtheria," Dr. Lee says this "is the first and only really intensive, honest-to-goodness, immunization campaign that has been put on in Indiana."

Source: Monthly Bulletin
Indiana State Board of Health
February, 1929

Since severe infections can be caused by either MRSA or methicillin-sensitive *Staphylococcus aureus* (MSSA), the reporting of severe *Staphylococcus aureus* in previous healthy people allows for better data collection that:

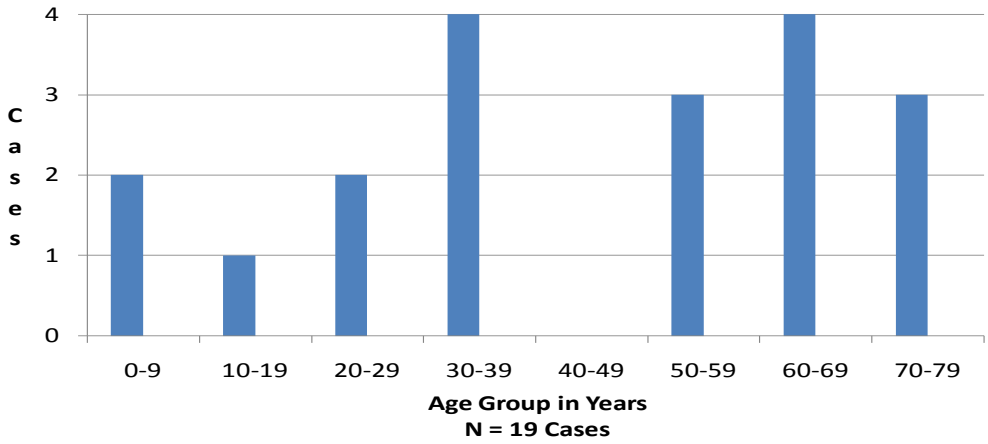
- Measures the burden and severity of staphylococcal infection
- Provides information on antimicrobial susceptibility patterns
- Identifies populations at risk for severe infection
- Provides information to formulate prevention and control measures
- Utilizes resources judiciously

The reporting rule, case investigation form and detailed reporting instructions for health care providers and the LHD are posted on the ISDH web site at http://www.in.gov/isdh/19042.htm

Surveillance Data from SSAI Reporting
July 1- December 31, 2008

Nineteen cases of SSAI were reported from July 1 -December 31, 2008. Since this was the first six months of SSAI reporting, it is likely that cases were underreported. Of the 19 cases, 10 (53%) were MSSA and 9 (47%) were MRSA. Eleven cases (58%) were male; the median age was 51 (range 2 -77 years), and 53% were persons 51 years and older. (See figure below for age group distribution.) Eighteen cases were white, with one case of unknown race. Six cases were identified as non- Hispanic, 3 were Hispanic, and ethnicity information was not available for 10 of the cases. Allen County reported five cases, while 10 counties reported the other 14 cases.

Figure 1. Age Distribution of Severe *Staphylococcus aureus* infections in Previously Healthy Indivduals, Indiana, July 1-December 31, 2008.



As mentioned above, antibiotic resistance patterns for each case (isolate) are available with the new SSAI reporting. The table below shows the number of isolates tested (total and MRSA only) and the number and percentage of isolates resistant for each antibiotic. Susceptibility patterns were reported on all 19 cases. Resistance data listed in Table 1 is only for antibiotics that were tested on at least 9 of the 19 available isolates.

Table 1. Resistance rates for MSSA and MRSA isolates obtained through SSAI reporting – Indiana, July 1-December 31, 2008

Antibiotic	All Isolates (MRSA and MSSA)		MRSA Isolates Only	
	Number of Isolates Tested	Number and Percent Resistant	Number of MRSA isolates Tested	Number and percent Resistant
Amox K Clav	9	4 (44%)	5	4 (80%)
Cefazolin	10	5 (50%)	6	5 (83%)
Ciprofloxacin	9	1 (11%)	3	1 (33%)
Clindamycin	10	4 (40%)	5	4 (80%)
Erythromycin	16	7 (44%)	8	6 (75%)
Gentamicin	15	1 (7%)	6	1 (17%)
Levofloxacin	10	2 (20%)	3	2 (67%)
Linezolid	9	0 (0%)	4	0 (0%)
Oxacillin	16	6 (38%)	7	6 (86%)
Rifampin	12	0 (0%)	6	0 (0%)
Tetracycline	19	0 (0%)	9	0 (0%)
Trimeth/Sulfa	18	0 (0%)	8	0 (0%)
Vancomycin	19	0 (0%)	9	0 (0%)

Epi Flashback

1939 – Dr. Thurman Rice writes about his idea of feeding spinach to cows and letting children drink the milk rather than eat the spinach. *The News* (Indianapolis newspaper) included an editorial quite critical of this suggestion. *The News* states that research shows spinach is a favorite vegetable of boys and girls, also stating that Dr. Rice's "anti-spinach campaign has attracted nation-wide attention." Dr. Rice sees this attention as all in good fun.

Source: Monthly Bulletin, Indiana State Board of Health February, 1939

Local health departments are encouraged to collaborate with their hospital infection control staff to encourage reporting of SSAI. Since the case definition does not rely on laboratory confirmation alone, additional investigative work is necessary to determine if the case definition is met. Working together will assist in identifying additional cases that may go unreported. Complete reporting of all cases will help increase Indiana's statistical information, which will lead to the identification of better prevention and control measures.

Additional information regarding MRSA can be found at the ISDH MRSA Web page at http://www.in.gov/isdh/22122.htm.

If you have questions about SSAI reporting, please contact Wayne Staggs by calling 317-234-2804 or email at wstaggs@isdh.in.gov.

Hepatitis C Case Definitions

Sara Sczesny, MPH
Hepatitis C Epidemiologist

Currently, no hepatitis C virus (HCV) test can distinguish an acute infection from a chronic infection. Case definitions are used to make this distinction. To be classified as an acute case, all clinical and laboratory criteria listed below must be met. If a case does not meet all the criteria, chronic hepatitis C should be considered. The criteria for classifying a case as chronic are listed below. Over 80% of acute hepatitis C cases will become chronic cases.

Acute Hepatitis C

- Clinical Case Definition:
  - Discrete onset of any sign or symptom consistent with acute viral hepatitis (e.g. anorexia, abdominal discomfort, nausea, vomiting) **AND**
  - jaundice **or** serum alanine aminotransferase (ALT) levels >400 IU/L
- Laboratory Criteria:
  One or more of the following three criteria must be met:
  - HCV antibody (anti-HCV) screening test positive with a signal-to-cut-off ratio as determined for the particular assay as defined by the Centers for Disease Control and Prevention (CDC) (see http://www.cdc.gov/ncidod/diseases/hepatitis/c/sc_ratios.htm for signal-to-cut-off ratios) **OR**
  - HCV Recombinant Immunoblot Assay (HCV RIBA) positive **OR**
  - Nucleic Acid Test (NAT) for HCV ribonucleic acid (RNA) positive

  The following two criteria must also be met:
  - IgM antibody to hepatitis A virus (IgM anti-HAV) negative **AND**
  - IgM antibody to hepatitis B core antigen (IgM anti-HBc) negative

Chronic Hepatitis C

- Laboratory Criteria:
    - Anti-HCV screening test positive with a signal-to-cut-off ratio predictive of a true positive as determined for the particular assay by the CDC **OR**
    - Anti-HCV screening test positive (repeat reactive) that does not meet the signal-to-cut-off ratio but is verified by an additional, more specific assay (e.g. RIBA for anti-HCV or NAT for HCV RNA) **OR**
    - HCV RIBA positive **OR**
    - NAT for HCV RNA positive **OR**
    - Report of HCV genotype
- Case Classifications:
    - Probable: a case that is anti-HCV positive (repeat reactive) by enzyme immunoassay (EIA) and has ALT values above the upper limit of normal, but the anti-HCV EIA result has not been verified by an additional more specific assay or the signal to cut-off ratio is unknown.
    - Confirmed: a case that is laboratory confirmed and that does not meet the case definition for acute hepatitis C.

References:

CDC. Hepatitis C Virus Infection, Acute. 2007. Retrieved on July 10, 2008 from http://www.cdc.gov/ncphi/disss/nndss/print/hepatitiscacutecurrent.htm.

CDC. Hepatitis C Virus Infection, Past or Present. 2005. Retrieved on July 10, 2008 from http://www.cdc.gov/ncphi/disss/nndss/print/hepatitisccurrent.htm.

Division of Viral Hepatitis. Guidelines for Viral Hepatitis Surveillance and Case Management. CDC. January 2005.

Sexually-Transmitted Disease Reporting to Disease Intervention Specialists (DIS)

ISDH HIV/STD Program

Disease Intervention Specialists, otherwise know as DIS, are considered to be the "authorized agents" for local health departments for the specific purpose of reporting chlamydia, gonorrhea, syphilis, and neonatal herpes.

According to the 2008 Communicable Disease Rule for Physicians, Hospitals, and Laboratories (410 IAC 1-2.3), diagnosis reports of chlamydia, gonorrhea, syphilis, and neonatal herpes are to be reported to the local health officer based on the patient's county of residence. If the county of residence is unknown or out of state, then the report is to be based on the location of the county in which the reporting facility exists. Because the State of Indiana uses a district reporting system that includes DIS for STD reporting, it is necessary for reports to be received by the DIS so that intervention efforts may be enhanced to prevent further disease transmission.

To facilitate timely reporting the Indiana State Department of Health requests that communicable disease reports for these STDs be sent directly to the DIS rather than the local public health department.

If you have questions or concerns please call the ISDH STD Control Program at 317-234-2871.

Bloodborne Pathogen Exposure

Jean Svendsen, RN, BS
Chief Nurse Consultant

The Occupational Safety and Health Administration's (OSHA's) Bloodborne Pathogens standard, 29 CFR 1910.1030, protects employees against occupational exposure to bloodborne pathogens. These pathogens include hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV). Exposures occur through needlesticks or cuts from other sharp instruments contaminated with an infected person's blood or through mucous membrane contact (eye, nose, mouth, or skin) with infected blood.

Recently, the Indiana State Department of Health (ISDH) has received multiple reports of skin puncture incidents involving schoolage children. Devices used in these incidents include needles and syringes, sewing needles, fingerstick devices, pins, and compasses. All incidents occurred during regular school attendance and have involved from 1-23 students.

Epi Flashback

1979 – "Indiana's Fallout Plan" describes how the Indiana State Board of Health would "accurately assess fallout levels and the potential statewide effect of the fallout levels on the people of Indiana" following an atmospheric nuclear detonation. "After the 'bomb test' on March 14, 1978, the ISBH was the first institution in the United States to identify fallout contamination in rain and airborne …samples."

Source: The ISBH Bulletin – Winter, 1979

Such inappropriate behavior may result in health risks ranging from minor to major infections, including viral hepatitis. The wound site should be immediately washed with soap and water following a needlestick-type injury. Do not squeeze the wound.

Prompt reporting is critical because, in some cases, postexposure treatment may be recommended and should be started as soon as possible. Public health officials at the local health department will be aware what individual blood testing should be performed. Circumstances surrounding an exposure incident should be evaluated and assessed for prevention of such a situation occurring again. Behavior of this objectionable nature may constitute a crime and can be prosecuted.

All school administrators, faculty, staff and students should be educated concerning the serious nature of such incidents.

For additional information, see the ISDH Quick Facts about Exposure to Bloodborne Pathogens at http://www.in.gov/isdh/24522.htm.

Frequently Asked Questions

Q: On July 1, 2008, reporting of severe *Staphylococcus aureus* infection in a previously healthy person (SSAI) was mandated by emergency rule of the Executive Board of the Indiana State Department of Health. Is SSAI reporting now required by the revised Communicable Disease Reporting Rule for Physicians, Hospitals and Laboratories (effective December 12, 2008)?

A: Yes, SSAI reporting is required by the revised 2008 Communicable Disease Rule. Reporting requirements can be found under Section 98, along with Vancomycin resistant *Staphylococcus aureus* (VRSA). SSAI cases should be reported immediately to the local health department in whose jurisdiction the patient normally resides.

Wayne Staggs, MS – Antibiotic Resistance Epidemiologist

Q: What new resource is available to nurses with questions related to communicable disease in schools?

A: The 2009 edition of the *Communicable Disease Guide for Schools*. The guide can be found on the ISDH Web site under Publications by going to http://www.in.gov/isdh/23291.htm

Dana Hazen, RN, MPH – Invasive Disease Epidemiologist

Training Room

• Save the Date •

2009 Public Health Nurse Conference

Dates:
*Thursday, May 28, 2009 (1pm-4pm)
Friday, May 29, 2009 (9am-4pm)
*optional workshops and open forum

Location:
IUPUI Campus Center
Indianapolis, IN

Cost:
Free but pre-registration will be required.

Sessions include:

- Keynote by Dr. Judy Monroe on Public Health Workforce and Accreditation
- ISDH/LHD PHN orientation
- SharePoint training
- Integrating Preparedness into Public Health
- Understanding the new Communicable Disease Rule
- Injury Prevention

For more information, contact:
Jessica Trimble
jtrimble@isdh.in.gov
317-234-6623

Public Health Nurses are Essential!

Indiana State Department of Health

Office of Public Health Practice
connect. learn. act.

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/17193.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/

HIV/STD Spotlight Reports (June 2007, December 2007, June 2008, January 2009)	Indiana Mortality Report (1999-2006)
Indiana Cancer Report: Incidence; Mortality; Facts & Figures	Indiana Infant Mortality Report (1999, 2002, 1990-2003)
Indiana Health Behavior Risk Factors (1999-2006)	Indiana Natality Report (1998-2006)
Indiana Health Behavior Risk Factors (BRFSS) Newsletter (2003-2008)	Indiana Induced Termination of Pregnancy Report (1998-2005)
Indiana Hospital Consumer Guide (1996)	Indiana Marriage Report (1995, 1997, & 2000-2004)
Public Hospital Discharge Data (1999-2006)	Indiana Infectious Disease Report (1997-2006)
Assessment of Statewide Health Needs – 2007	Indiana Maternal & Child Health Outcomes & Performance Measures (1989-1998, 1990-1999, 1991-2000, 1992-2001, 1993-2002, 1994-2003, 1995-2004, 1996-2005)

HIV Disease Summary

Information as of January 31, 2009 **based on 2000 population of 6,080,485)**

HIV - without AIDS to date:

306	New HIV cases March 2008 thru February 28, 2009	12-month incidence	5.37 cases/100,000
3,855	Total HIV-positive, alive and without AIDS on February 28, 2009	Point prevalence	67.02 cases/100,000

AIDS cases to date:

402	New AIDS cases from March 2008 thru February 28, 2009	12-month incidence	6.99 cases/100,000
4,278	Total AIDS cases, alive on February 28, 2009	Point prevalence	74.37 cases/100,000
8,924	Total AIDS cases, cumulative (alive and dead) on February 28, 2009		

REPORTED CASES of selected notifiable diseases

Disease	Cases Reported in January *MMWR* Weeks 1-4	
	2008	2009
Campylobacteriosis	9	20
Chlamydia	1,428	1,179
Cryptococcus	1	2
Cryptosporidiosis	5	10
E. coli, shiga toxin-producing	2	0
Giardiasis	Not Reportable	7
Haemophilus influenzae, invasive	2	0
Hemolytic Uremic Syndrome (HUS)	0	0
Hepatitis A	1	4
Hepatitis B	0	0
Hepatitis C Acute		0
Histoplasmosis	2	6
Influenza Deaths (all ages)	Not Reportable	0
Gonorrhea	645	433
Legionellosis	2	5
Listeriosis	0	0
Lyme Disease	0	0
Measles	0	0
Meningococcal, invasive	1	0
Mumps	0	0
Pertussis	1	34
Rocky Mountain Spotted Fever	0	0
Salmonellosis	12	19
Shigellosis	68	7

REPORTED CASES of selected notifiable diseases (cont.)

Disease	Cases Reported in January *MMWR* Weeks 1-4	
	2007	2008
Severe *Staphylococcous aureus* in Previously Healthy Person	Not Reportable	1
Group A Streptococcus, invasive	7	15
Group B Streptococcus, Newborn	2	0
Group B, Streptococcus, invasive	14	30
Streptococcus pneumoniae (invasive, all ages)	69	26
Streptococcus pneumoniae (invasive, drug resistant)	15	5
Streptococcus pneumoniae (invasive, <5 years of age)	2	1
Syphilis (Primary and Secondary)	5	7
Tuberculosis	10	8
Vibriosis	Not Reportable	0
Varicella	Not Reportable	0
Yersiniosis	1	0
Animal Rabies	0	0

For information on reporting of communicable diseases in Indiana, call the Surveillance and Investigation Division at 317.233.7125.

Indiana State Department of Health
Epidemiology Resource Center
2 North Meridian Street, 5-K
Indianapolis, IN 46204
317/233-7125

Cover photo of Cryo-EM reconstruction of a norovirus capsid.courtesy of Dr. B.V.V. Prasad, Baylor College of Medicine, Houston, TX 77030

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.