Indiana Epidemiology Newsletter

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Reporting of Severe *Staphylococcus aureus* Infections Effective July 1

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ISDH Chief Nurse Consultant

Effective July 1, 2008, Indiana health care providers will be required to immediately report cases of severe *Staphylococcus aureus* infections in previously healthy people to local health departments (LHD). The LHDs will investigate these cases using case investigation forms provided by the Indiana State Department of Health (ISDH).

In response to political and public interest in methicillin-resistant *Staphylococcus aureus* (MRSA), the ISDH enacted a 90-day emergency rule requiring laboratory reporting of MRSA infections from January 1-March 30, 2008. A detailed report describing data from this surveillance will be posted in the near future on the ISDH Web site.

The laboratory surveillance data were consistent with what is already known about MRSA infections. The laboratory data did not provide insight about several significant factors regarding the burden of MRSA infections. The study did not differentiate healthcare-acquired MRSA (HA-MRSA) from community-acquired MRSA (CA-MRSA), nor was severity of infection noted. Antimicrobial susceptibility patterns were not studied due to the low number of laboratories reporting. Additional resources would also be needed to sustain laboratory reporting.

The limitations of the laboratory surveillance data allowed for the development and implementation of a more useful way to study the burden of MRSA infections in Indiana. Most cases of MRSA infections identified in the laboratory surveillance data were skin and soft tissue infections, which are typically not life threatening, whereas invasive MRSA infections are life threatening. While invasive HA-MRSA infections are typically already being

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addressed by health care professionals, most invasive CA-MRSA infections are not. These are the cases that are reported in the media and can cause concern. These issues can be addressed by specifically studying severe *Staphylococcus aureus* infections in the state while conserving public health resources.

Since severe infections can be caused by MRSA and methicillin-sensitive *Staphylococcus aureus* (MSSA), the reporting of severe *Staphylococcus aureus* in previously healthy people will allow for better data collection to:

- Measure the burden and severity of staphylococcal infection
- Provide information on antimicrobial susceptibility patterns
- Identify populations at risk for severe infection
- Provide information to formulate prevention and control measures
- Utilize resources judiciously

The reporting rule, case investigation form, and detailed reporting instructions for health care providers and the LHDs will be posted on the ISDH Web site at www.statehealth.in.gov by July 1, 2008.

New Staff Members Join Surveillance and Investigation Division

Pam Pontones, MA
Director, Surveillance and Investigation

Kristin Ryker, MPH, joined the Division on May 5 as the Vaccine-Preventable Disease Epidemiologist, the position formerly held by Karee Buffin. Kristin previously served as the Assessment Epidemiologist in the ISDH Immunization Program and supervised the Immunization field representatives. As the Vaccine-Preventable Disease Epidemiologist, Kristin will conduct surveillance and outbreak investigation of vaccine-preventable diseases, provide training, and continue to collaborate with the Immunization Program. Kristin earned her MPH with concentrations in epidemiology and behavioral health science from the Indiana University (Indianapolis) Department of Public Health in 2007.

Jill Stauffer, MS, also joined the Division on May 5 as the District 8 Field Epidemiologist. Jill previously worked as an environmental health specialist at the Indiana Family and Social Services Administration and served as a public health investigator at the ISDH from November 1985-October 1987. As the District 8 Field Epidemiologist, Jill will provide local assistance with disease surveillance, outbreak investigation, and training to local health departments, hospitals, and other partners. Jill earned her MS in health science and natural resources from Ball State University in 1988. Rob Allen will continue to serve as the District 7 Field Epidemiologist.

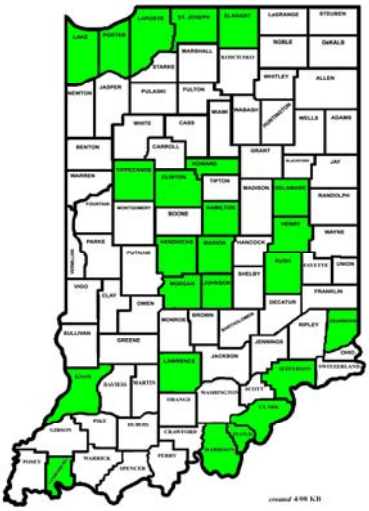
2007 Pertussis Activity in Indiana

Karee L. Buffin, MS
ISDH Vaccine-Preventable Disease Epidemiologist

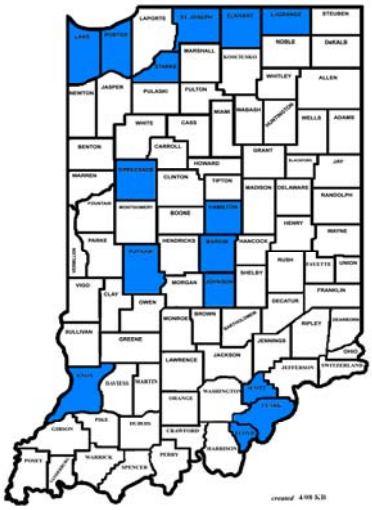
Pertussis, more commonly known as "whooping cough," is caused by the *Bordetella pertussis* bacterium. It has gained attention in recent years due to the increase in the number of reported cases in the United States. In 2004, 25,827 cases were reported nationwide to the Centers for Disease Control (CDC). This was the largest number of reported cases of pertussis since 1959.[1] The increase in pertussis disease activity was also significant in Indiana. In 2005, the Indiana State Department of Health (ISDH) reported 396 cases of pertussis to the CDC. This was the highest number of reported cases in Indiana since 1964. In 2006, the ISDH reported 280 cases of pertussis.

Figure 1: Pertussis Incidence in Indiana: Counties Reporting Five or More Cases

2005



2006



Because of the cyclic nature of pertussis (marked by a saw-toothed pattern every 3-5 years, see Figure 2)[2], a decrease in the number of cases from 2005 to 2006 was theoretically expected. However, the continued drop in reported cases from 2006 through 2007 was more dramatic than expected. In 2007, 67 cases of pertussis were reported in Indiana. In the previous 10-year period (1994-2003), the baseline for pertussis was 124 cases. Surprisingly, only two Indiana counties reported five or more cases in 2007.

Factors Influencing the Reduction in Reported Cases

Reporting Trends

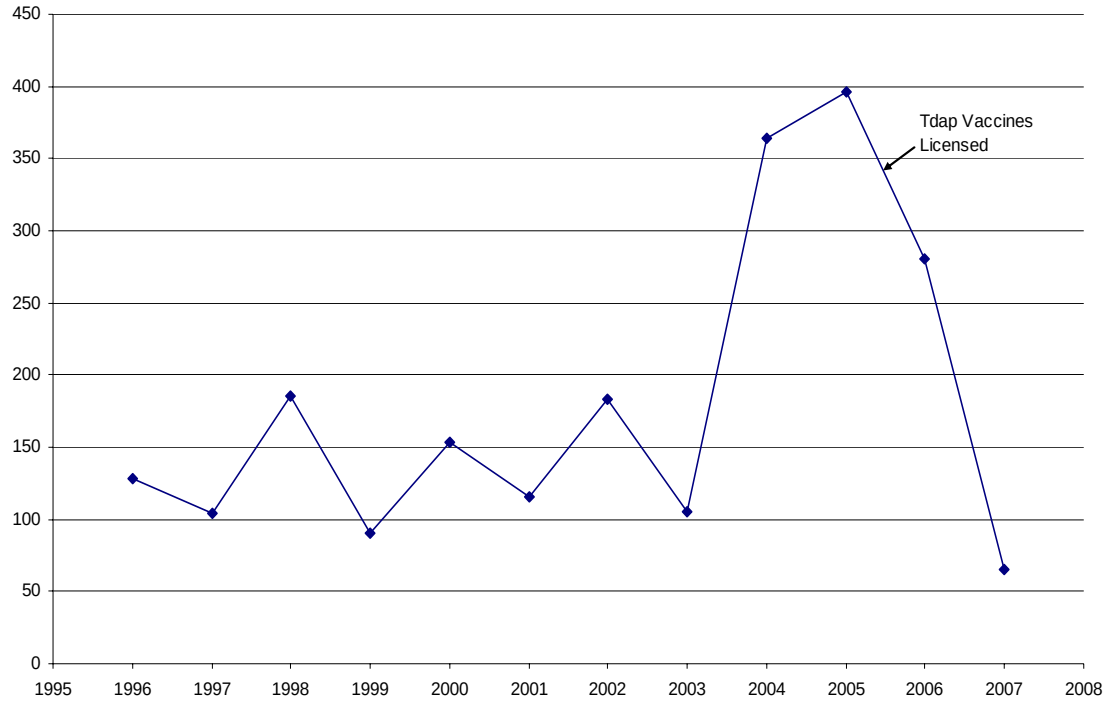
Although the reporting of vaccine-preventable diseases has been a challenge, awareness of the increase in pertussis cases due to media attention likely would have caused an increase in

[1] http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/pert.pdf

[2] http://www.cdc.gov/ncidod/dbmd/diseaseinfo/pertussis_t.htm

reporting and would not have contributed to the decrease in reported cases documented in 2007. Therefore, reporting should be considered a constant, because there are no known factors that would have caused a decrease in reporting.

Pertussis Cases Reported in Indiana 1996-2007



Laboratory Detection

Because pertussis can be clinically confused with other cough illnesses, it is critically important to perform the most effective laboratory testing in order to differentiate pertussis from other illnesses.[3]

Performing currently recommended laboratory testing, rather than relying on less accurate serologic testing, may have led to more accurate reporting and may have eliminated the reporting of some false positive cases in 2007. Although nasopharyngeal culture is considered to be the "gold standard" for detecting the presence of pertussis, only three cases in 2007 were culture confirmed in Indiana. Polymerase chain reaction (PCR), although not currently available at the ISDH Laboratories, was used to detect 21 of the 67 reported cases of pertussis in Indiana in 2007. All of the cases met the CDC case definition for pertussis: a cough illness lasting at least two weeks with one of the following: paroxysms of coughing, inspiratory "whoop," or post-tussive vomiting, and without other apparent cause (as reported by a health care professional).

Use of Tdap (tetanus toxoid, reduced diphtheria toxoid and acellular pertussis vaccine)

Tdap vaccine was licensed in 2005. The Tdap booster has been labeled as the newest tool in

[3] . http://www.in.gov/isdh/dataandstats/epidem/2007/Aug/page_1.htm

fighting the rising number of pertussis cases. Since the introduction of the Tdap vaccine, the number of reported cases of pertussis in Indiana has fallen to levels not seen since 1992, when there were 64 cases reported. In 2006, the CDC stated that the decrease in pertussis incidence was more likely due to the cyclic nature of the illness and less likely to be related to the use of Tdap.[4]

In addition to introducing Tdap boosters to both adults and eligible children, local health departments aggressively administered Tdap as an outbreak response tool. Outbreak response clinics may also have aided in preventing an increase in cases. Infection control personnel have also promoted Tdap administration to health care workers.

To what degree the use of Tdap has influenced the decline in pertussis cases in Indiana remains an interesting topic for discussion. Arguably the numbers should continue to cycle below expected baseline values if the vaccine continues to be administered and has contributed to the reduction of cases.

2008 Measles Activity in the U.S. Description and Recommendations

Wayne Staggs, MS
ISDH Invasive Disease Epidemiologist

Kristin Ryker, MPH
ISDH Vaccine-Preventable Disease Epidemiologist

On May 1, 2008, the Centers for Disease Control and Prevention (CDC) issued a *Morbidity and Mortality Weekly Report* (MMWR) dispatch reporting increased incidence of measles in the United States during the first four months of 2008. The CDC received 64 reports of confirmed measles cases from January 1-April 25, 2008. This is the highest number of reported cases for the same period of time since 2001.

The dispatch reported on cases in nine different states, three of which border on or are near Indiana. One of the cases was contagious while in Chicago, with rash onset around April 17. The proximity of the case to Indiana and the public venues the case visited in Chicago concerned investigators at the Indiana State Department of Health (ISDH) and local public health officials. As of May 16, no secondary cases have been reported from exposure to this case. At the time of dispatch publication, ongoing outbreaks were occurring in Wisconsin, Arizona, Michigan, and New York. Since the dispatch was issued, additional cases of measles have been reported in the state of Washington and Toronto, Canada.

Of the 64 reported cases in the dispatch, 59 occurred among U.S. residents, and 54 were associated with importation of measles from other countries. Sixty-three of the 64 cases were unvaccinated or had unknown vaccine history. The May 1 dispatch can be read in its entirety at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5718a5.htm

[4] http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5553a1.htm

The recent cases and outbreaks resulted primarily from imported cases who then exposed groups of individuals who were unvaccinated due to personal or religious beliefs. Transmission occurred primarily in community and health care settings, including homes, child-care centers, schools, hospitals, emergency departments, and the offices of health care providers. These cases strongly illustrate:

- The ongoing risk of measles in unvaccinated persons
- The risk of unvaccinated persons transmitting measles to others, including infants too young to vaccinate (13 of the cases were less than 12 months of age)
- The primary source of measles incidence in this country is importation from outside the United States, including developed countries regularly visited for tourism and business
- The importance of maintaining high levels of vaccination coverage among persons living in the U.S.

In 2005, Indiana reported the largest measles outbreak (34 cases) in the U.S since 1996. All cases in this outbreak were a result of importation into a population with low vaccination rates. Twenty-seven cases occurred in those aged 1-19 years, 26 of whom were unvaccinated. This recent Indiana outbreak is a stark reminder that measles outbreaks can occur anywhere there are groups or clusters of persons with low vaccination coverage.
This outbreak is described in the MMWR, October 28, 2005, Volume 54, No. 42, found at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5442a1.htm or in the September 2005 issue of the *Indiana Epidemiology Newsletter* at http://www.in.gov/isdh/dataandstats/epidem/2005/sept/Sept05newsletter.pdf

Measles is characterized by fever (≥101° F.), cough, coryza, and conjunctivitis followed by a generalized rash 2-4 days later. The rash begins on the face and then spreads to the rest of the body and is present for three or more days. Persons suspected of having measles should be questioned about travel to any area of the country affected by measles or international travel to determine risk exposure. Health care providers who identify possible cases are asked to report the case immediately to the local health department or to Kristin Ryker, ISDH Vaccine-Preventable Disease Epidemiologist, at 317.233.7125. Unvaccinated persons meeting the clinical case definition* who have traveled outside of the U.S. or to areas with ongoing measles transmission should be treated as highly suspect.

Although ongoing measles transmission was declared eliminated in the U.S. in 2000, the risk for imported disease and outbreaks remains. The cases reported in the May 1, 2008, MMWR dispatch and the recent Indiana outbreak highlight the risk created by importation of disease into groups of people with low vaccination rates.

RECOMMENDED ACTIONS FOR HEALTH CARE PROVIDERS

- Report all suspected cases of measles to your local health department immediately (prior to completion of laboratory testing).
- Isolate suspected cases: health care workers with known immunity to measles should be the only staff having contact with patients suspected of having measles.
- Susceptible persons (patients or staff) should not enter a room where a person with measles was examined for two hours following departure.
- If you have questions, please call the ISDH at 317.233.7125 during normal working hours (8:15am-4:45pm, Indianapolis time) or 317.233.1325 during non- working hours or on weekends.

For further information on the diagnosis of measles, including the preferred laboratory specimens needed to confirm the diagnosis, please visit the ISDH Web site at http://www.in.gov/isdh/pdfs/measles.pdf

*Measles Clinical Case Definition: an illness characterized by all of the following:

- a generalized rash lasting ≥3 days
- a temperature ≥101.0°F (≥38.3°C)
- cough, coryza, or conjunctivitis

Reported Communicable Disease Exposures in Indiana Emergency Medical Service Providers September 2003-December 2007

Sara Sczesny, MT(ASCP)
MPH Intern

Jean Svendsen, RN, BS
ISDH Chief Nurse Consultant

Indiana Code 16-41-10 requires that emergency medical service providers receive appropriate medical evaluations after an exposure to blood or body fluids that have been demonstrated to transmit dangerous communicable diseases. An emergency medical services provider is defined as a firefighter, law enforcement officer, paramedic, emergency medical technician, physician licensed under IC 25-22.5, nurse licensed under IC 25-23, or other person who provides emergency medical services in the course of the person's employment.

The process of notifying the ISDH of such exposures began in September 2003 and is accomplished by completing the Notification of Blood or Body Fluid Exposure form located at http://www.in.gov/isdh/form/pdfs/51467-(9-03)-BloodExposure.pdf . From September 2003 to December 2007, emergency medical service providers have reported 203 exposures using this form. Reported exposures occurred in 49 of Indiana's 92 counties. More detailed information for emergency medical service providers and employers can be located at http://www.in.gov/isdh/form/information.htm.

Exposures most commonly occurred in those aged 30-39 years, followed by those aged 40-49 and 20-29 years (Figure 1), and more commonly in males (79%) than females (19%). Exposures occurred most frequently at the site where an incident occurred, with ambulances being the second most frequent location of exposure (Figure 2). Blood was the most common fluid of exposure (Figure 3). The most frequent types of exposure were skin breaks with contaminated objects and mucous membrane exposure (Figure 4).

Figure 1

Reported Communicable Disease Exposures in Indiana Emergency Medical Service Providers by Age Group, September 2003 to December 2007

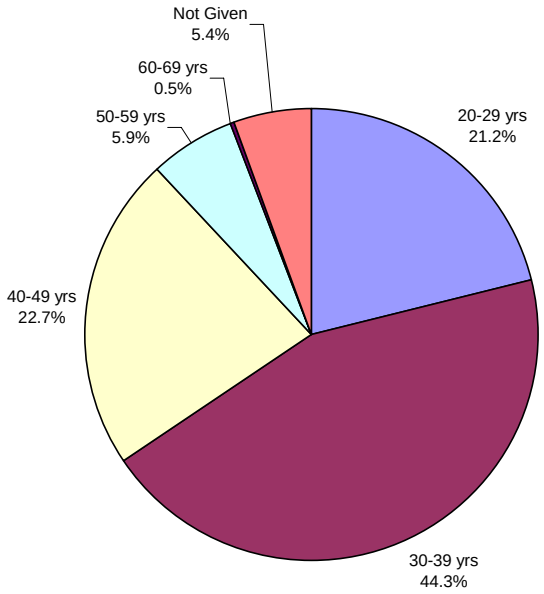


Figure 2

Reported Communicable Disease Exposures in Indiana Emergency Medical Service Providers by Location, September 2003 to December 2007

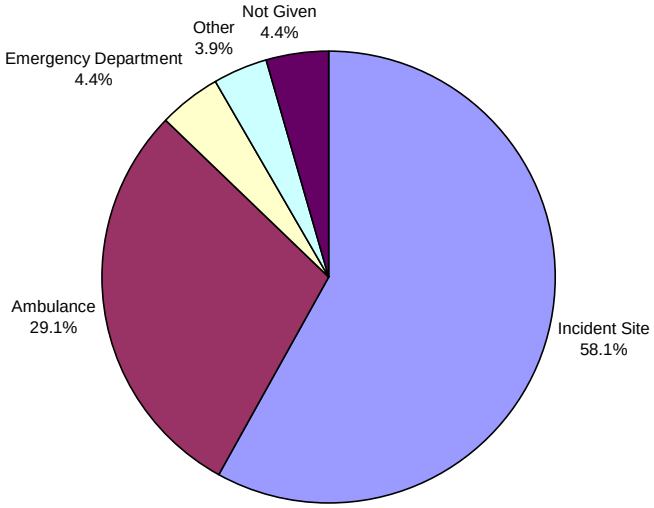


Figure 3

Reported Body Fluid Exposure in Indiana Emergency Medical Service Providers, September 2003 to December 2007

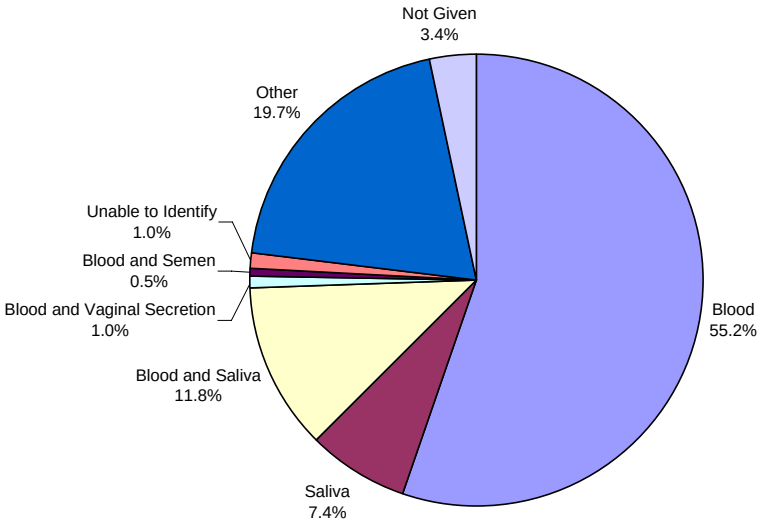
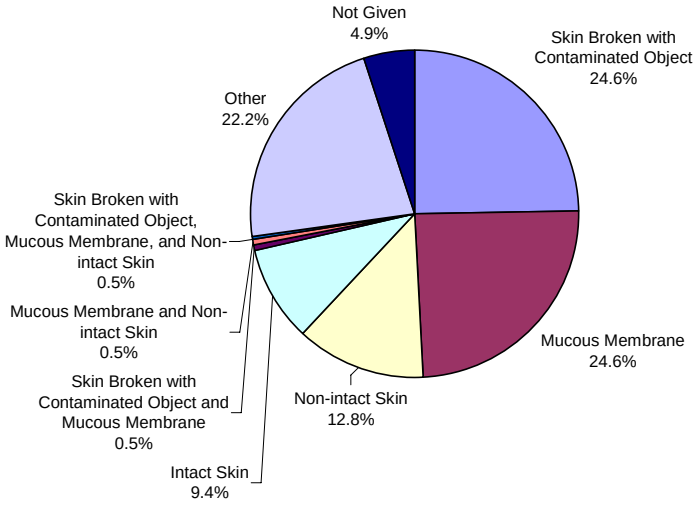


Figure 4

Reported Exposure Type in Indiana Emergency Medical Service Providers, September 2003 to December 2007



District 3 News

Brad Beard
ISDH Field Epidemiologist, District 3

Tammy McMaken, RN
DeKalb County Health Department

In April, District 3 partners conducted a pandemic influenza tabletop exercise with Purdue University. The exercise allowed agencies and major stakeholders in the 11 District 3 counties to begin discussing and planning for the local response to an influenza pandemic. Overall, the comments received following the exercise indicated this goal was achieved. While there were concerns regarding the lack of sufficient time to fully discuss the issues, participants were informed that this was not the intent of the exercise, and further discussions within the counties are vital to successfully implement a workable plan. Information shared was beneficial regardless of county size. The exercise provided insight into issues faced by surrounding counties as well as solutions which could be applied to the participants' individual counties. Specific issues, including antiviral usage, personal protective equipment, pre-pandemic vaccine, surge capacity, and alternate care facilities, were addressed in three different modules,.

Also in April, Mike Wilkinson, ISDH Hepatitis C Epidemiologist, presented information on hepatitis C case investigations to attendees from District 3 local health departments. He shared general information on hepatitis C trends in Indiana, hepatitis C transmission, and interpretation of common laboratory tests and reviewed the process for submitting case investigation reports. In addition, he provided guidance for ensuring proper transmission of these reports. Additional questions relating to hepatitis C surveillance can be directed to Mike at 317.234.2827.

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

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, 2006)	Indiana Marriage Report (1995, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004)
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, 12/2007)	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, 1996-2005)
Public Hospital Discharge Data (1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006)	Assessment of Statewide Health Needs – 2007

HIV Disease Summary

Information as of April 30, 2008 **(based on 2000 population of 6,080,485)**

HIV - without AIDS to date:

396	New HIV cases from May 2007 thru April 30, 2008	12-month incidence	6.88 cases/100,000
3,879	Total HIV-positive, alive and without AIDS on April 30, 2008	Point prevalence	67.43 cases/100,000

AIDS cases to date:

344	New AIDS cases from May 2007 thru April 30, 2008	12-month incidence	5.98 cases/100,000
4,118	Total AIDS cases, alive on April 30, 2008	Point prevalence	71.59 cases/100,000
8,588	Total AIDS cases, cumulative (alive and dead) on April 30, 2008		

REPORTED CASES of selected notifiable diseases

Disease	Cases Reported in April *MMWR* Weeks 14-18		Cumulative Cases Reported January – April *MMWR* Weeks 1-18	
	2007	2008	2007	2008
Aseptic Meningitis	18	10	55	64
Campylobacteriosis	30	45	96	101
Chlamydia	2,049	1,420	7,530	6,481
Cryptococcus	7	1	8	8
Cryptosporidiosis	5	19	14	34
E. coli, shiga toxin-producing	7	2	9	7
Haemophilus influenzae, invasive	9	10	17	35
Hemolytic Uremic Syndrome (HUS)	0	0	0	0
Hepatitis A	0	2	4	5
Hepatitis B	8	4	13	9
Histoplasmosis	11	4	25	15
Influenza Deaths (all ages)	Not Reportable	1	Not Reportable	13
Gonorrhea	847	574	3,019	2,651
Legionellosis	2	1	7	7
Listeriosis	2	1	4	2
Lyme Disease	1	1	2	2
Measles	0	0	0	0
Meningococcal, invasive	7	3	13	12
Mumps	0	0	0	0
Pertussis	8	3	11	15
Rocky Mountain Spotted Fever	1	0	1	0
Salmonellosis	51	46	144	92
Shigellosis	8	48	21	257

REPORTED CASES of selected notifiable diseases (cont.)

Disease	Cases Reported in April *MMWR* Weeks 14-18		Cumulative Cases Reported January – April *MMWR* Weeks 1-18	
	2007	2008	2007	2008
Group A Streptococcus, invasive	15	20	47	62
Group B Streptococcus, Newborn	4	3	7	10
Group B, Streptococcus, invasive	23	33	69	94
Streptococcus pneumoniae (invasive, all ages)	87	97	231	420
Streptococcus pneumoniae (invasive, drug resistant)	32	29	71	114
Streptococcus pneumoniae (invasive, <5 years of age)	7	10	14	32
Syphilis (Primary and Secondary)	0	11	12	47
Tuberculosis	8	9	45	38
Yersiniosis	2	1	3	5
Animal Rabies	1 (bat)	1 (bat)	1 (bat)	1 (bat)

For information on reporting of communicable diseases in Indiana, call the *Epidemiology Resource Center* 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.