Indiana Epidemiology Newsletter

Volume 17, Issue 1 January 2009

Closeout of 2008 Reportable Disease Data

Wayne Staggs, MS
ISDH Antibiotic Resistance Epidemiologist

The ISDH Surveillance and Investigation Division (SID) has begun the closeout process of 2008 reportable communicable disease investigations. During January and February, ISDH SID staff will be reviewing 2008 disease case investigation information to ensure that: 1) all cases are entered into the database, 2) the case data entered are as complete as possible, and 3) duplicate entries are eliminated. After completing this process, the ISDH provides a final data set to the Centers for Disease Control and Prevention (CDC) for publication in the annual Summary of Notifiable Diseases. Previous annual summaries are available on the MMWR Web site at http://www.cdc.gov/mmwr/summary.html.

A reportable disease case investigation is considered a 2008 case if the event date meets the following criteria:

- The onset of illness occurred anytime between January 1, 2008 to January 3, 2009, or
- There is a confirmatory laboratory report occurring anytime between January 1, 2008 to January 3, 2009, or
- The diagnosis was made anytime between January 1, 2008 to January 3, 2009

The last MMWR reporting week of 2008 ended January 3, 2009; thus cases with event dates as noted above will be counted as 2008 cases, even though the onset may have occurred within the first three days of 2009.

To ensure the process is completed in a timely manner, the ISDH is requesting that local health departments (LHD) **complete all case investigations that will be reported as 2008 cases as soon as possible**. Reports should be faxed to 317.234.2812 or entered into I-NEDSS as they are completed. If a case met any of the above event date criteria but is reported to the LHD later in 2009, it is still considered a 2008 case for MMWR and ISDH reporting purposes.

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Sometimes, even after numerous attempts, it is not possible to obtain information needed to finalize the investigation report. On these rare occasions, please complete the investigation form with the information that is available and fax it to 317.234.2812.

Efforts made by local public health officials to provide timely and thorough investigation of communicable disease cases are truly appreciated. These cooperative and collaborative efforts contribute to the health of the citizens of Indiana. For questions about this process, please contact Wayne Staggs or the specific SID disease epidemiologist responsible (see below) for the disease in question. If you have general questions about disease reporting, please call 317.233.7125.

Communicable Disease Responsiblities

James Howell, DVM—State/Veterinary Epidemiologist
317-233-7272
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Animal Bites
Anthrax
Babesiosis
Brucellosis
*Chagas' Disease
Dengue Fever
Encephalitis—arthropod-borne and primary
Ehrlichiosis
Hantavirus Pulmonary Syndrome
Leptospirosis
Lyme Disease
Malaria
Plague
Psittacosis
Q-Fever
Rabies—animal and human
Rocky Mountain Spotted Fever
Trichinosis
Tularemia
Typhus
*Toxoplasmosis
Yellow Fever

Jean Svendsen, RN, BS—Chief Nurse Consultant
317-233-7825
jsvendsen@isdh.in.gov
*Artificial Insemination Law
Emergency Responder Law
Hepatitis B/Hepatitis B pregnant women/perinatally exposed infant (surveillance: disease reports; case management of pregnant women and perinatally exposed infants handled by the ISDH Immunization Program)
Hepatitis D
Hepatitis, viral, unspecified
*Infection Control
*Infectious Waste Law
*Tattoo and Body Piercing Law
*Universal Precaution Law

Wayne Staggs, MS—Antibiotic Resistance Epidemiologist
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**Clostridium difficile* infections
*Nocardiosis
Staphylococcus aureus (including MRSA and vancomycin resistant)
Streptococcus pneumoniae antibiotic resistance
*Vancomycin Resistant *Enterococcus* (VRE)

Dana Hazen, RN, MPH—Invasive Disease Epidemiologist
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*Fifth's Disease (Parvovirus B-19)
Hansen's Disease (Leprosy)
*ISDH Employee Health Policy Advisor
Meningitis, Aseptic
Meningococcal Invasive Disease
*Pediculosis (Lice)
*Scabies
*Scarlet Fever
*School Health Liaison
Streptococcus Group A Invasive Disease
Streptococcus Group B Invasive Disease
Toxic Shock Syndrome

***Disease/conditions not reportable** 11-10-2008

Kristin Ryker. MPH—Vaccine Preventable Disease Epidemiologist
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Diphtheria
*International Travel
Invasive *Haemophilus influenzae*
Invasive Pneumococcal Disease
Measles
Mumps
Pertussis (whooping cough)
Polio
Rubella
Rubella, congenital syndrome
Smallpox
Tetanus
Varicella/shingles (hospitalization or death and sentinel reporting)

Amie ThurdeKoos, MPH—Enteric Epidemiologist
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*Amebiasis
Botulism
Campylobacteriosis
Cholera
Cryptosporidiosis
Cyclosporosis
E. coli infections
Foodborne outbreaks
*Giardiasis
Hemolytic Uremic Syndrome
Hepatitis A
Hepatitis E
Listeriosis
Salmonellosis
Shigellosis
Typhoid Fever
*Vibriosis
*Viral gastroenteritis
Waterborne outbreaks
Yersiniosis

Shawn Richards, BS—Respiratory Epidemiologist
317-233-7740
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*Community Acquired Pneumonia
Cryptococcal infections
Histoplasmosis
*Influenza Pandemic Planning
*Influenza Surveillance Coordinator
Legionellosis
*Respiratory Syncytial Virus (RSV)

Sara Sczesny, MPH—Hepatitis C Epidemiologist
317-234-2827
ssczesny@isdh.in.gov
Hepatitis C
*Website Content Coordinator

Reportable disease surveillance addressed by other program areas:

HIV/AIDS: HIV/STD Program, Terry Jackson, 317.233.5580
Sexually Transmitted Diseases:
HIV/STD Program, Dawne Rekas, 317.234.2871
Tuberculosis: Tina Feaster, 317.233.7548
Pediatric venous lead ≥ 10µg/dl in children ≤ 6years of age: Childhood Lead Poisoning Prevention
David McCormick, 317.233.1293

Surveillance and Investigation Division
Communicable Disease Responsibilities
2 N. Meridian Street, 5-K
Indianapolis, IN 46204
Fax: 317-234-2812

Influenza Vaccine Update – 2009

Shawn Richards, BS
ISDH Respiratory Epidemiologist

The Indiana State Department of Health's Surveillance and Investigation Division participates in a national program by the Centers for Disease Control and Prevention (CDC) that monitors influenza like activity on a year- round basis. As of February 13, 2009, the CDC is reporting that:

NEW! Epi Flashback

1894 – Interstate Quarantine Regulations were enacted "to prevent the introduction of contagious disease into one State or Territory …from another…" Quarantineable diseases included cholera, yellow fever, small-pox, typhus fever, leprosy and plague. *Source: Thirteenth Annual Report of the State Board of Health of Indiana*

- Influenza A (H1N1) isolates from 30 states have been tested for antiviral resistance to oseltamivir (Tamiflu). 97.4% of all influenza A (H1N1) isolates tested at the CDC are resistant to oseltamivir. Indiana has sent influenza A (H1's) isolates to the CDC for antiviral resistance studies and results are pending.
- All influenza A (H3N2) isolates tested are resistant to the adamantanes and
  all oseltamivir-resistant influenza A (H1N1) isolates tested are sensitive to the adamantanes.
- Influenza activity in the United States, although increasing, remains relatively low with influenza A (H1N1) viruses predominating overall.
- The level of activity and the relative proportion of circulating virus type or subtype have varied by region and may vary over the course of the season.

These resistance patterns present challenges for the selection of antiviral medications for the treatment and chemoprophylaxis of influenza and highlights the importance of testing patients for influenza and consulting local surveillance data when evaluating patients with acute respiratory infections during this the influenza season.

- CDC issued interim recommendations for the use of influenza antiviral medications in the setting of oseltamivir resistance among circulating influenza A (H1N1) viruses on December 19, 2008. These interim recommendations are available at http://www2a.cdc.gov/HAN/ArchiveSys/ViewMsgV.asp?AlertNum=00279.
- All Indiana influenza deaths (all ages) are to be reported to the health department within 72 hours of knowledge of death.

All CDC confirmed influenza A (H1) isolates are related to the influenza A (H1N1) component of the 2008-09 influenza vaccine (A/Brisbane/59/2007). All influenza A (H3N2) isolates are related to the A (H3N2) vaccine component (A/Brisbane/10/2007).

Influenza B viruses currently circulating can be divided into two distinct lineages represented by the B/Yamagata/16/88 and B/Victoria/02/87 viruses. Twenty-three influenza B isolates tested belong to the B/Yamagata lineage and are related to the vaccine strain (B/Florida/04/2006). The remaining 55 isolates belong to the B/Victoria lineage and are not related to the vaccine strain.

Annual influenza vaccination is expected to provide the best protection against those virus strains that are related to the vaccine strains, but the vaccine may offer limited or no protection if the vaccine and circulating virus strains are from different lineages, as is seen with the two lineages of influenza B viruses.

Bacterial Meningitis Surveillance and Investigation – Important Reminders

Dana Hazen, RN, MPH
ISDH Invasive Disease Epidemiologist

Meningitis is an inflammation of the tissues covering the brain and or spinal cord (meninges). Symptoms can include headache, stiff neck, photophobia, nausea, vomiting, fever, confusion and sometimes seizures. Infants may appear irritable, feed poorly, or be less active then usual.

Although bacterial meningitis can be caused by various organisms, the Indiana Communicable Disease Rule for Physicians, Hospitals and Laboratories (410 IAC 1-2.3) which was revised on December 12, 2008, requires reporting of meningitis cases (and other infections in which the bacteria is isolated from a sterile site, such as blood or synovial fluid) caused by the following bacterial agents:

- *Neisseria meningitidis*
- *Haemophilus influenzae*
- *Streptococcus pneumoniae*
- *Streptococcus agalactiae* (group B strep)
- *Streptococcus pyogenes* (group A strep)

Furthermore, cases of *Neisseria meningitidis* and *Haemophilus influenzae* are to be "reported immediately by telephone or other instantaneous means of communication on first knowledge or *suspicion* of the diagnosis". For meningococcal meningitis, this includes cases that may not yet be laboratory confirmed by a culture result (suspect case).

Meningococcal Meningitis – When to Report a Suspect Case
• Lab report of positive *N. meningitidis* (culture) from an invasive site • Lab report of gram negative diplococci (or cocci) from the CSF • Clinical purpuric fulminans present with or without culture results (often the case with eningococcemia or blood infection) • Lab report of positive *N. meningitidis* result from validated PCR

NEW! Epi Flashback

1959 – The entire January edition of the ISBH discussed careers in the medical/health field. Medical social workers were particularly in demand with 1,800 new positions expected annually. "Salaries for beginning graduate social workers average around $5,000 and increases up to $6,500 are usually possible within two to five years."

Source: The Monthly Bulletin January 1959

When any of the above criteria is met for a case of meningococcal meningitis, an investigation must be started immediately. During weekend, evening or holiday hours, it is important to contact the after-hours duty officer for the local health department (LHD) or the Indiana State Department of Health (ISDH) duty officer if unable to reach an after-hours officer in the county where the patient resides. Prompt reporting allows the investigator to locate all close contacts and provide antibiotic prophylaxis within the first 24 hours of exposure as recommended by the Centers for Disease Control and Prevention (CDC). In addition, the LHD should notify the ISDH immediately upon learning of a new case to improve state-wide disease surveillance. The ISDH has many resources available to assist the LHD with the case investigations, including a newly

revised meningococcal disease investigation manual.

When submitting a report of bacterial meningitis or invasive bacterial disease, please submit the following information with each communicable disease report:

Bacterial Agent	Information to Send
Haemophilus influenzae	final culture results progress notes from hospital admission
Streptococcus pneumoniae	susceptibility testing results progress notes from hospital admission
Neisseria meningitidis	final culture results progress notes from hospital admission
Streptococcus agalactiae	final culture results
Streptococcus pyogenes	final culture results

When a case of bacterial meningitis or invasive disease from *Streptococcus pneumoniae* is identified in children under the age of 5, or *Neisseria meningitidis* or *Haemophilus influenzae* is confirmed by culture, the reference laboratory is required to send the isolate to the ISDH Laboratory within 5 business days for additional molecular typing and susceptibility testing (for meningococcal disease). Due to the current limited Hib vaccine supply and the recommendation to defer the 12-15 month booster dose of Hib vaccine in children without increased risk for disease, it is especially important to submit isolates of *Haemophilus influenzae* in a timely manner so the ISDH may continue surveillance for vaccine failure.

Beginning in 2009, the ISDH is no longer requesting reports of cases using the National Bacterial Meningitis and Bacteremia Case Report form used by the CDC. This form is used for cases of bacterial meningitis of a non-reportable etiology. The ISDH Surveillance and Investigation Division appreciates the efforts of local health departments and health care providers who have participated in voluntary reporting of cases. In 2008, 12 cases of bacterial meningitis – other etiology were reported. Forty-one percent of cases reported a culture result of *Escherichia coli*; 25 percent of cases were reported as *Staphylococcus aureus*.

2007 Indiana HIV Incidence Estimation

Richard T. Passey, MD
HIV Incidence Surveillance Coordinator

NEW! Epi Flashback

1984 – "Lake Michigan Fish: How to Clean Them." This article discribes the proper way to clean trout or salmon taken from Lake Michigan. Concern over PCB's and heavy metals prompted this advisory to "prepare a boneless, skinless filet" in order to avoid the contaminants that "tend to be stored in the fat and …skin"

Source: The ISBH Bulletin – Winter 1984

The 2007 Indiana HIV Incidence Estimation is now available from the Office of Clinical Data and Research. In 2007, some changes were observed in the nature of the HIV epidemic. From 2006 to 2007, there was an apparent overall 20% increase in new HIV infections in Indiana. New infections increased from 639 in 2006 to 771 in 2007. It also appears that women were increasingly diagnosed, from 20% (n=105) of those newly diagnosed to 24% (n=121).

In 2006, the racial disparity for the rate of newly acquired HIV infections was nearly 6 times higher for non-white (45.8/100,000) compared to (8.2/100,000) for white individuals. Racial disparities also grew in 2007. In 2007, those considered non-white had a rate of new infection of (62.3/100,000), or nearly 9 times higher than those who identify themselves as white (7.2/100,000.) in the rate of new HIV infections increased in all age categories in 2007 compared to 2006. However, the age group of 40+ had the largest percentage increase, at 46% (2006, n=158; 2007, n=231).

There is also an apparent change in the mode of transmission of new HIV infection. In 2006, men who have sex with men (MSM) accounted for 352 new infections. In 2007, MSM accounted for only 293 new infections, a decrease of 17%. While in 2006 those in the "Other" risk transmission category (injection drug users, high-risk heterosexual, and no reported risk) accounted for 287 new infections, in 2007, "Other" accounted for 478 new infections, or an increase of 67%.

The charts that follow give 2006 and 2007 HIV incidence estimation with rates per 100,000 and reported diagnosis for sex (gender), race/ethnicity, diagnosis age, and mode of transmission. It is worth noting that the incidence estimation of new infections is 771, while the number diagnosed and reported is 506. That is to say for 2007, 34% (n=265) of those infected were not diagnosed in 2007,while for 2006, only 19% (n=120) of people with new infection were not diagnosed in 2006. Early diagnosis is effective in limiting the spread of HIV disease. The need for early diagnosis is clearly present in Indiana and apparently growing.

Overall, when comparing 2007 new infection data to 2006, the number of new HIV infections is increasing, as are the numbers of those who do not know their status and remained undiagnosed. Racial disparities are widening and transmission by means other than MSM is apparently greatly increasing. Women and those over 40 appear to be at increasing risk for new HIV infection.

The 2006 HIV incidence estimation highlighted the extraordinary risk to the young black MSMs. The 2007 HIV incidence estimation appears to be highlighting the increasing risk to black females over 40 with "Other" risk factors who remain untested.

2007 Indiana HIV Incidence Estimation ‡

	HIV Incidence Estimate*			Std. Dev.**	HIV/AIDS Diagnosis***
STRATA	Count	%	Rate/100,000	Count	Count
Sex					
Male	478	62.0	17.1	102	386
Female	293	38.0	10.3	55	121
Race/Ethnicity					
White	339	44.0	7.2	71	235
Other†	432	56.0	62.3	78	272
Diagnosis Age					
13-29	285	37.0	17.5	52	173
30-39	254	32.9	26.8	52	145
40+	232	30.1	7.6	80	189
Transmission					
MSM	289	37.5	N/A	71	222
Other† (IDU,NRR)	482	62.5	N/A	51	285
Total ±	771	100.0	14.9	126	507

‡Source: Indiana State Department of Health, Office of Clinical Data and Research, January 1, 2007 to December 31, 2007; Reported through December 31, 2008

‡‡Source: Indiana State Department of Health, Office of Clinical Data and Research, January 1, 2006 to December 31, 2006; Reported through August 1, 2008

*Incidence Estimate-Estimated Number of New HIV Infections.

**Std. Dev-Standard Deviation of Incidence Estimate 'Count'

***HIV/AIDS Diagnosis-Newly Reported HIV/AIDS Cases to ISDH though December 31, 2008 and diagnosed January 1, 2007 – December 31, 2007

±Total-Non-Stratified (includes all variables) HIV Incidence Estimation. Each set of STRATA seperately equals the number represented in the 'Total' with the exception of 'Std. Dev.'.

†Other categories-Represent All Race/Ethnicity's other than Whites and All Transmissions other than MSM. Categories represented in 'Other' were too small seperately to accurately estimate Incidence when stratifying.

2007 Estimate rates based on 2007 Census Projection; 2006 Estimate rates based on 2006 Census Projection

2006 Indiana HIV Incidence Estimation ‡‡

HIV Incidence Estimate*			Std. Dev.**	HIV/AIDS Diagnosis***
Count	%	Rate/100,000	Count	Count
452	70.7	17.5	104	414
187	29.3	6.9	63	105
380	59.5	8.2	77	280
259	40.5	45.8	74	239
261	40.8	17.3	51	176
220	34.5	26.3	55	155
158	24.7	5.6	68	188
352	55.1	N/A	67	271
287	44.9	N/A	91	248
639	100.0	12.3	126	519

MSM-Men who have sex with men

IDU-Injection drug user

HET-Heterosexual High Risk

NRR-No Reported Risk

NEW! - Frequently Asked Questions

Q: What is the difference between "stomach flu" and "the flu"?

A: "Stomach flu" is a common but misleading term for viral gastroenteritis. Symptoms of viral gastroenteritis include watery diarrhea, vomiting, nausea, stomach cramps, headache, muscle aches, and tiredness. Influenza is a respiratory illness caused by various influenza viruses, which produce symptoms such as fever, aches, sore throat, and cough, not diarrhea or vomiting. Both viral gastroenteritis and influenza infections are more common in the late fall through the winter, but infections and outbreaks can occur year round.

Amie ThurdeKoos, MPH – Enteric 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
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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:

326	New HIV cases February 2008 thru January 31, 2009	12-month incidence	5.67 cases/100,000
3,859	Total HIV-positive, alive and without AIDS on January 31, 2009	Point prevalence	67.09 cases/100,000

AIDS cases to date:

391	New AIDS cases from February 2008 thru January 31, 2009	12-month incidence	6.80 cases/100,000
4,240	Total AIDS cases, alive on January 31, 2009	Point prevalence	73.71 cases/100,000
8,885	Total AIDS cases, cumulative (alive and dead) on January 31, 2009		

REPORTED CASES of selected notifiable diseases

Disease	Cases Reported in December *MMWR* Weeks 49-53		Cases Reported in January – December *MMWR* Weeks 1-53	
	2007	2008	2007	2008
Aseptic Meningitis	35	12	283	248
Campylobacteriosis	63	65	489	677
Chlamydia	1,333	1,920	20,777	20,868
Cryptococcus	3	1	22	19
Cryptosporidiosis	43	20	149	198
E. coli, shiga toxin-producing	9	9	105	95
Haemophilus influenzae, invasive	24	13	78	79
Hemolytic Uremic Syndrome (HUS)	16	0	16	1
Hepatitis A	1	1	28	22
Hepatitis B	11	9	64	55
Histoplasmosis	20	9	116	81
Influenza Deaths (all ages)	Not Reportable	0	Not Reportable	15
Gonorrhea	507	680	8,813	8,254
Legionellosis	14	5	71	56
Listeriosis	1	3	18	10
Lyme Disease	7	2	55	42
Measles	0	0	0	0
Meningococcal, invasive	4	3	31	27
Mumps	2	1	3	2
Pertussis	15	79	68	179
Rocky Mountain Spotted Fever	1	0	6	6
Salmonellosis	53	70	676	641
Shigellosis	134	43	296	611

REPORTED CASES of selected notifiable diseases (cont.)

Disease	Cases Reported in December *MMWR* Weeks 49-53		Cases Reported in January – December *MMWR* Weeks 1-53	
	2007	2008	2007	2008
Group A Streptococcus, invasive	19	24	128	146
Group B Streptococcus, Newborn	6	1	31	26
Group B, Streptococcus, invasive	40	36	281	304
Streptococcus pneumoniae (invasive, all ages)	208	158	701	871
Streptococcus pneumoniae (invasive, drug resistant)	50	37	203	226
Streptococcus pneumoniae (invasive, <5 years of age)	31	9	74	68
Syphilis (Primary and Secondary)	3	17	54	138
Tuberculosis	17	11	128	118
Yersiniosis	0	2	14	9
Animal Rabies	1	0	13 (bats)	10 (bats)

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.