Indiana State Department of Health
Indiana Epidemiology Newsletter

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Pertussis: On the Rise In Indiana

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Most people think that vaccine preventable diseases don't occur anymore. For almost all vaccine preventable diseases, the number of cases reported annually in Indiana can usually be counted on one hand. However, the number of cases of pertussis (whooping cough) has increased over the past several years, with sharp increases in the past couple of years. This trend has been seen in many parts of the US, as well as in several other countries. As of November 19, there have been 535 confirmed or probable cases of pertussis reported in Indiana in 2010. This is the highest number of cases reported in one year since 1959. Cases have been reported from every area of the state. Sadly, two infants have died due to pertussis this year in Indiana. Both children were less than two months of age.

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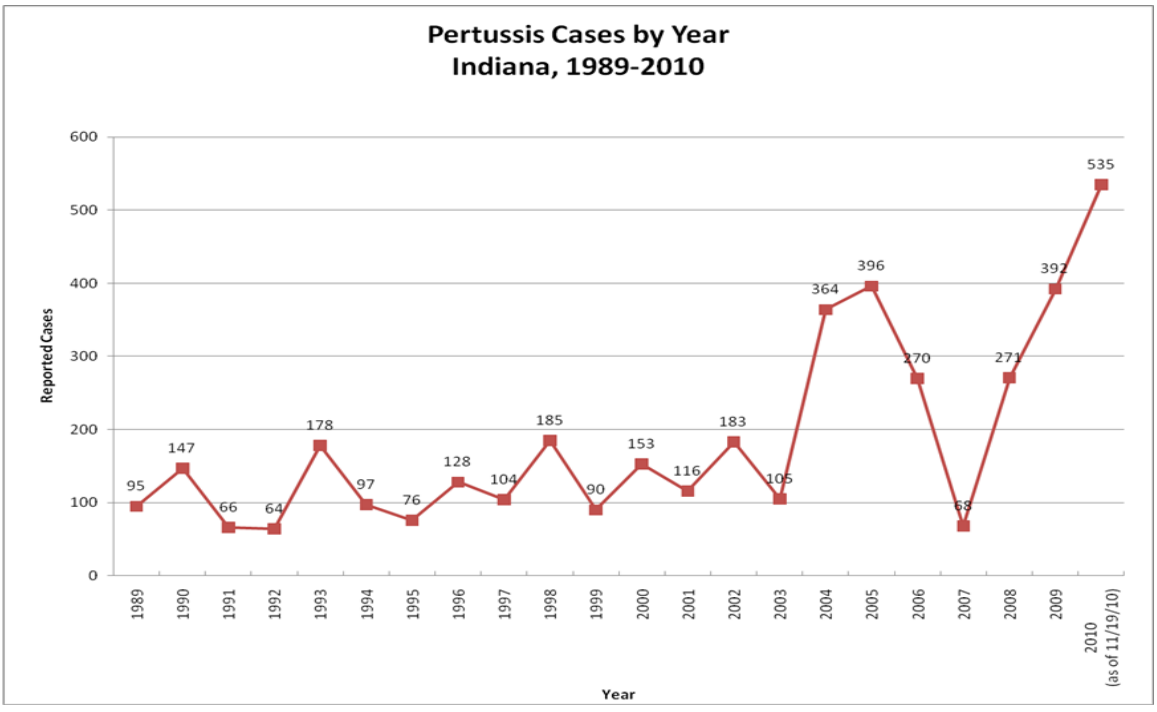

Pertussis can infect people of any age. However, it's most commonly diagnosed in infants under the age of 1 year and pre-teens (9-12 years old). Several school outbreaks have been reported in 2010. Hospitalizations due to pertussis are rare in older children and adults. However, many of the infants with pertussis require hospitalization.

In 2005, a booster vaccine for adults was introduced. Called Tdap (for Tetanus, diphtheria, and acellular pertussis), it's licensed for those who are between the ages of 10 and 64. Starting this school year, all 6^{th}-12^{th} grade students in Indiana are required to have a Tdap vaccination for school entry. The CDC recommends that adults replace their next tetanus vaccine (Td, which is recommended every 10 years) with a Tdap vaccine.

Why is there such an increase in cases? There are several theories as to the cause of the increase. Immunity provided by the pertussis vaccine wanes over time. As soon as five years after receiving the vaccine, a person's immunity to pertussis starts to decline. Also, better testing has become available in the past few years. PCR testing is widely available, accurate, and fast. Declines in childhood immunizations are also thought to play a role. With an increase in the number of parents who want to delay immunizations, or skip them entirely, an increase in vaccine preventable diseases is inevitable.

The most important ways to prevent infection include:

- WASH YOUR HANDS!
- Get vaccinated
- Stay home if you feel sick
- Practice good cough etiquette (cough into your elbow or upper sleeve)

For more information on pertussis and other vaccine-preventable diseases, consult your health care provider, your local health department, or visit http://www.in.gov/isdh/20209.htm.

Cancer Mortality

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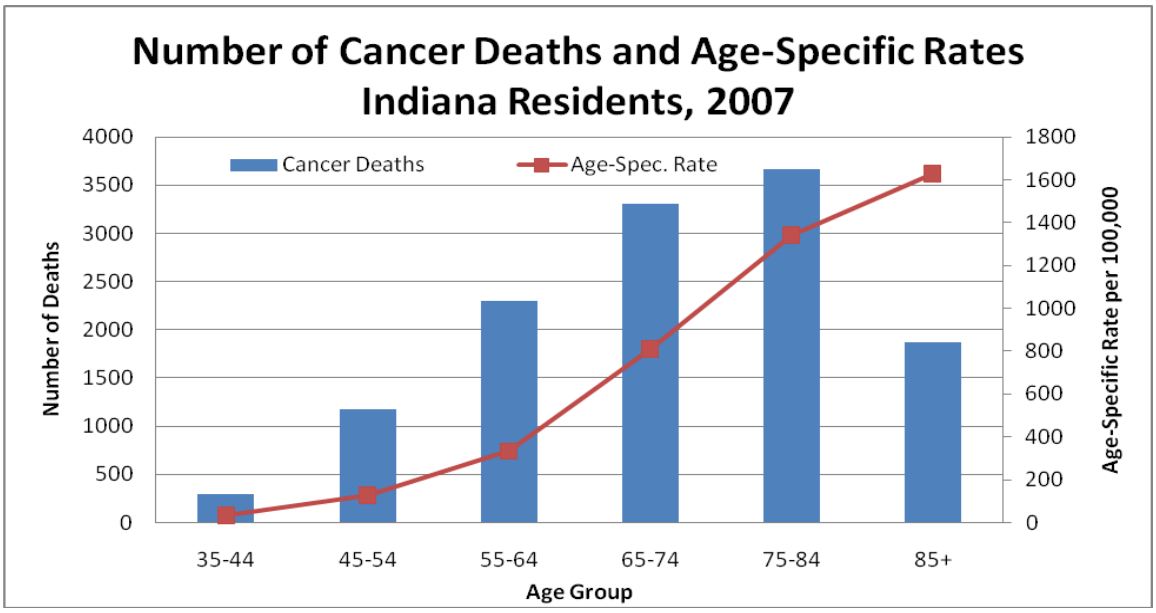
Data Analyst, ERC/Data Analysis Team

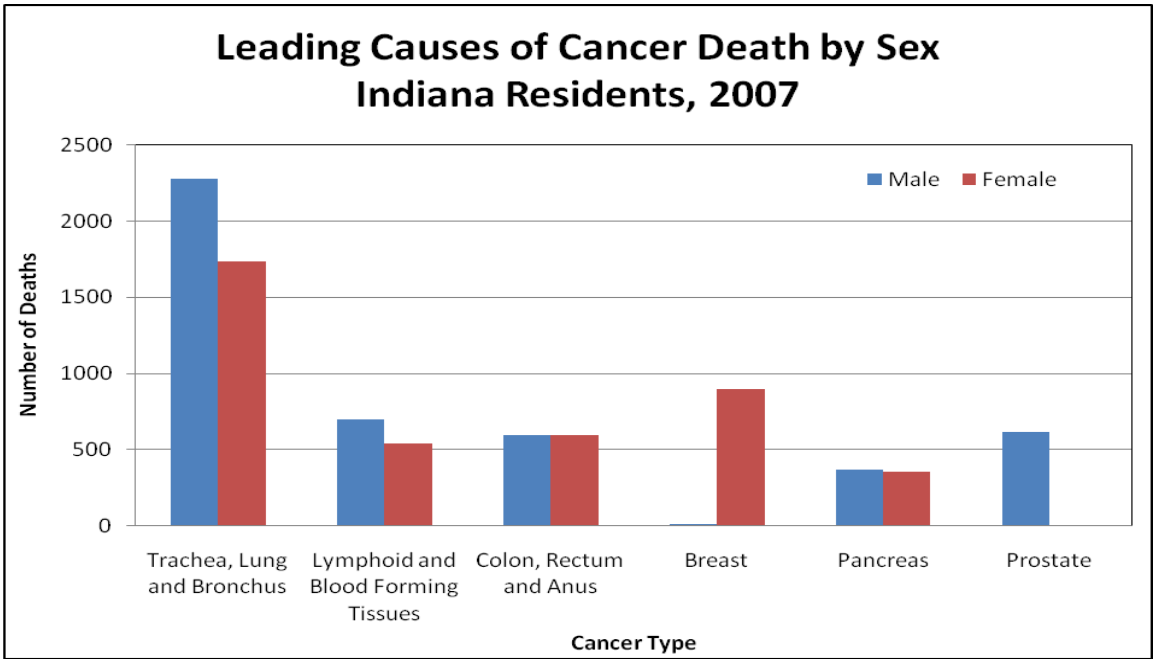
Cancer is the general name for a group of more than 100 diseases in which certain cells begin to grow out of control. If the growth is not controlled, death can result. According to the American Cancer Society (ACS), half of all men and one-third of all women in the United States will develop cancer during their lifetimes and more than 1,500 people die from cancer each day. The ACS estimates that there will be 12,900 deaths from cancer in Indiana in 2010. In the US and Indiana, cancer accounts for nearly one of every four deaths. In Indiana in 2007, cancer was the leading cause of death in the following age groups (years): 45-54, 55-64, and 65-74. The number of cancer deaths peaked in the 75-84 age group, but the age-specific mortality rate continued to increase through the 85 and older age group (Figure 1). Mortality data contained in this article is compiled from death certificate data for calendar year 2007 reported to the Indiana State Department of Health (ISDH).

Figure 1



In 2007, the leading cause of cancer death was lung cancer (trachea, lung and bronchus, Figure 2), with males having a significantly higher mortality rate than females (80.7 per 100,000 age- adjusted vs. 46.7, respectively), even without a difference in the smoking prevalence by sex. However, in 2007, males were significantly more likely than females to have been diagnosed with lung cancer in the advanced stage (age-adjusted rate of 49.2 per 100,000 vs. 29.6, respectively) (Indiana State Cancer Registry Statistics Report Generator).

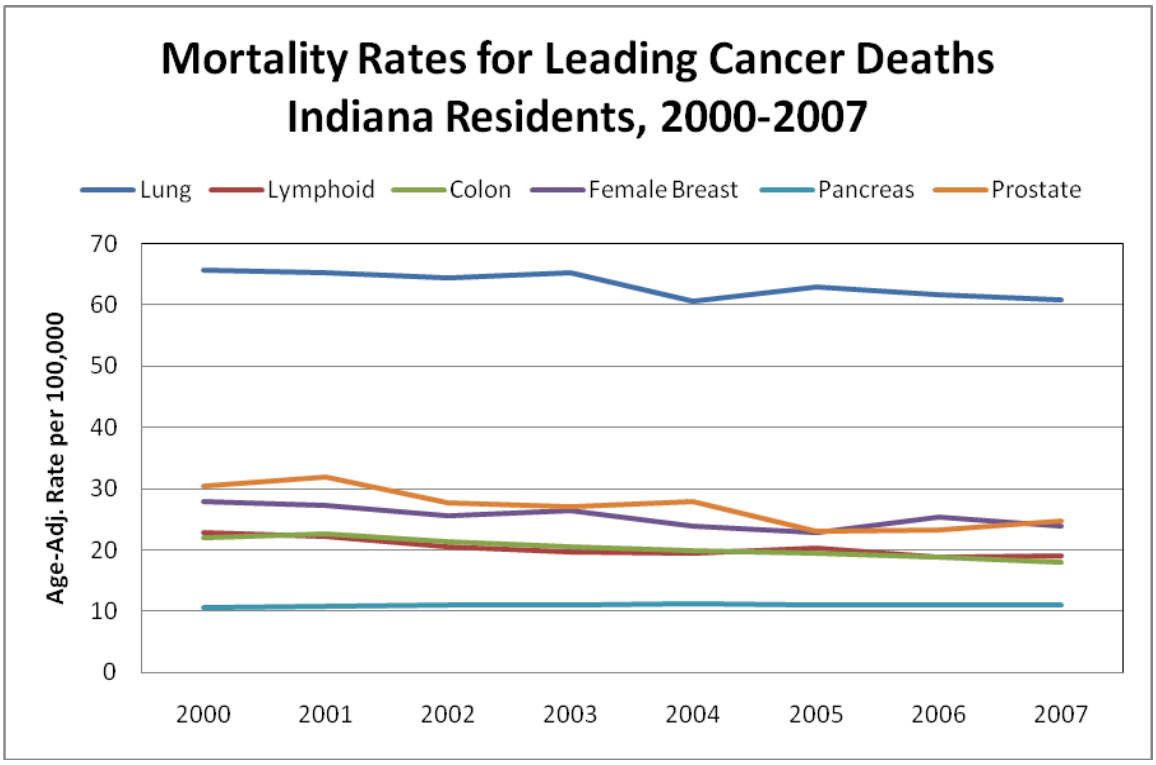
Figure 2



Nationally, the cancer mortality rate has continued a long-term decreasing trend. While the Indiana age-adjusted mortality rate from cancer has decreased significantly from 1999 (217.2 per 100,000) to 2007 (192.8), cancer remains the second leading cause of death

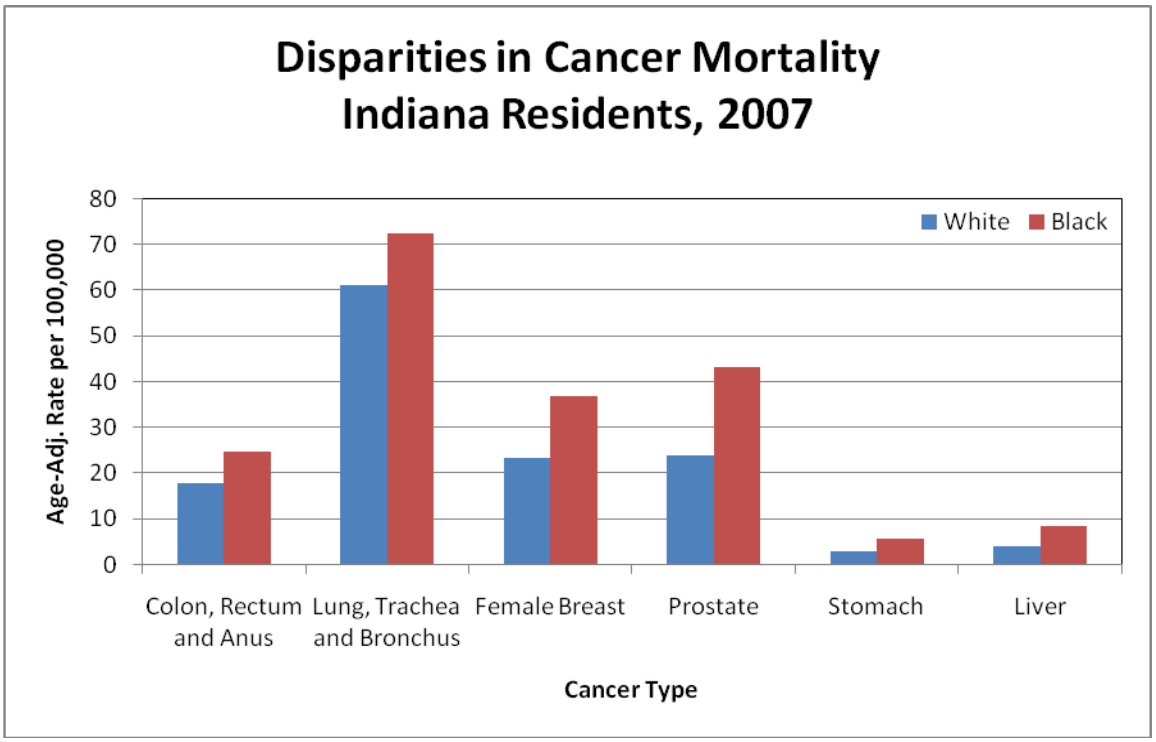
behind heart disease for Indiana residents and the nation as a whole. The difference in the age-adjusted mortality rates for 2000 and 2007 were significantly lower for five of the six leading cancer types (Figure 3). There was not a significant difference between 2000 and 2007 mortality rates for cancer of the pancreas.

Figure 3



The average age of death for an underlying cause of cancer was 70.5 years in 2007, while the average age of death for an underlying cause of heart disease was 76.6 years. The average age of death by major cancer type for Indiana residents who died in 2007 ranged from 68.4 years for cervix uteri to 73.1 years for colon, rectum and anus.
Males in Indiana had higher age-adjusted death rates than females for all cancer types (excluding cancers affecting only one sex such as prostate). African Americans in Indiana had significantly higher mortality rates for several cancers (Figure 4). There were no significant differences between white and black mortality rates for ovarian, pancreas and lymphoid cancers. However, some differences were not able to be calculated due to small numbers (*e.g.*, oral cavity and pharynx). There were several cancers with significantly higher rates for black residents compared to white for finding cancer at the advanced stage, the stage most difficult to treat: colon, rectum and anus; lung; and female breast (2007).

Figure 4



The annual Indiana Mortality Reports have cancer deaths and age-adjusted mortality rates by county available at http://www.in.gov/isdh/19096.htm in Table 5. Additional information on cancer incidence and mortality can be found by using the Indiana State Cancer Registry Report Generator available at http://www.in.gov/isdh/24360.htm. For information on work being done to reduce the burden of cancer in Indiana, the Indiana Cancer Control Plan is located at http://indianacancer.org/indiana-cancer-control-plan/ . The next article in this series will include an overview of the Breast and Cervical Cancer Program and highlight the importance of prevention, early detection, and treatment of cervical cancer to gear up for National Cervical Health Awareness month in January.

Indiana Tuberculosis Annual Summary 2009

Sarah Burkholder, RN, MPH
TB/Refugee Health Division Director

Tina Feaster, RM(AAM), M(ASCP)[CM]
Tuberculosis Epidemiologist

Cases = 119

Crude Incidence Rate per 100,000 population = 1.9 (U.S. 2009 = 4.2)
U.S.-born = 1.1 (U.S. 2009 = 2.0)
Foreign-born = 21.0 (U.S. 2009 = 20.3)

Race and Ethnicity-specific Incidence Rates per 100,000 population [1]

White = 1.0
Black or African-American = 5.6
Asian = 27.5
Hawaiian Native or other Pacific Islander = N/A
American Indian or Alaska Native = N/A
Hispanic or Latino, all races = 7.9

Gender-specific Incidence Rates per 100,000 population
Male = 2.7
Female = 1.0

Executive Summary

The mission of the Tuberculosis and Refugee Health Division is to decrease tuberculosis (TB) incidence within the state of Indiana and to progress towards its elimination by providing technical assistance and support, education, policy development and surveillance in collaboration with local health departments, health and medical providers and the Center for Disease Control and Prevention (CDC) in the care of those infected and affected by tuberculosis.

Our vision is that by 2015, the incidence rate of tuberculosis among U.S.-born residents of Indiana will not exceed 0.5/100,000 as the result of the initiative and collaboration of all local health departments, health care providers, the Indiana State Department of Health (ISDH) and the CDC.

During 2009, there were 119 new cases of TB reported to the ISDH. This is an increase of one counted case from 2008. Figures 1 and 2 show long-term and 8-year trends, respectively.

Figure 1

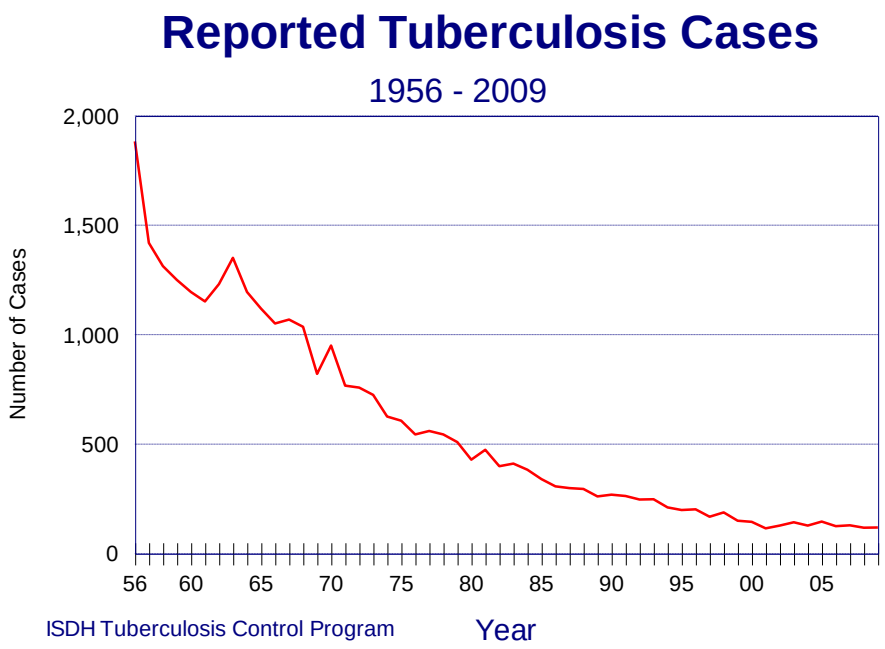
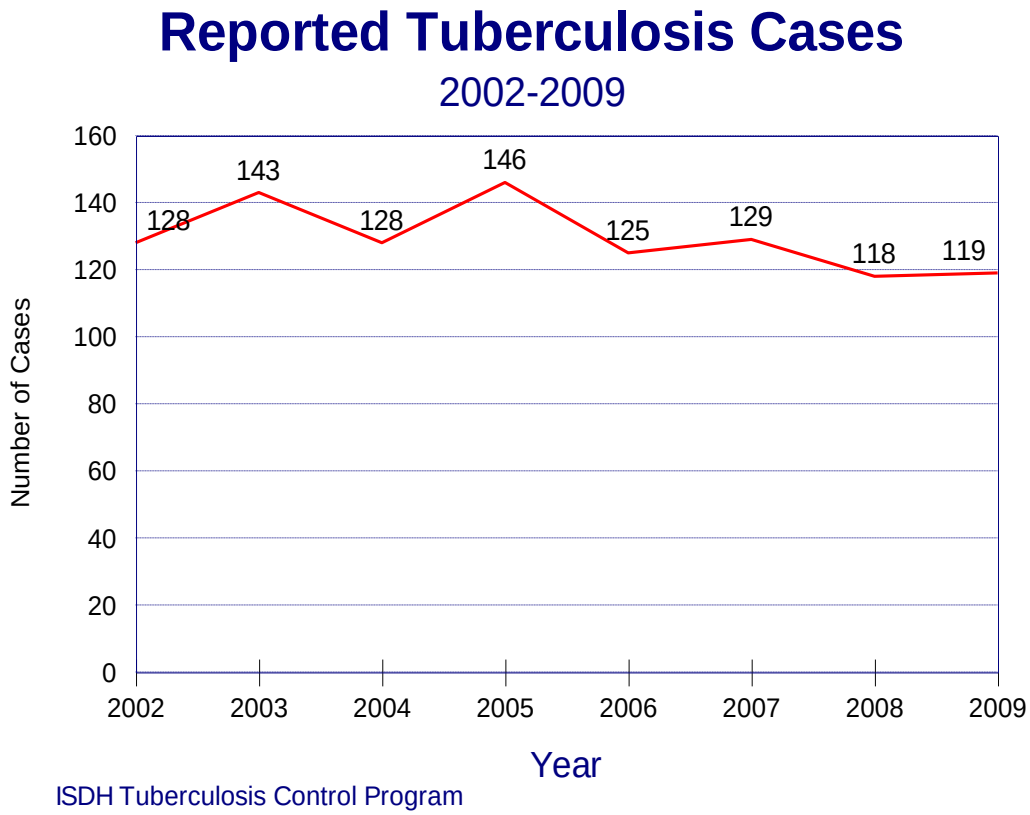
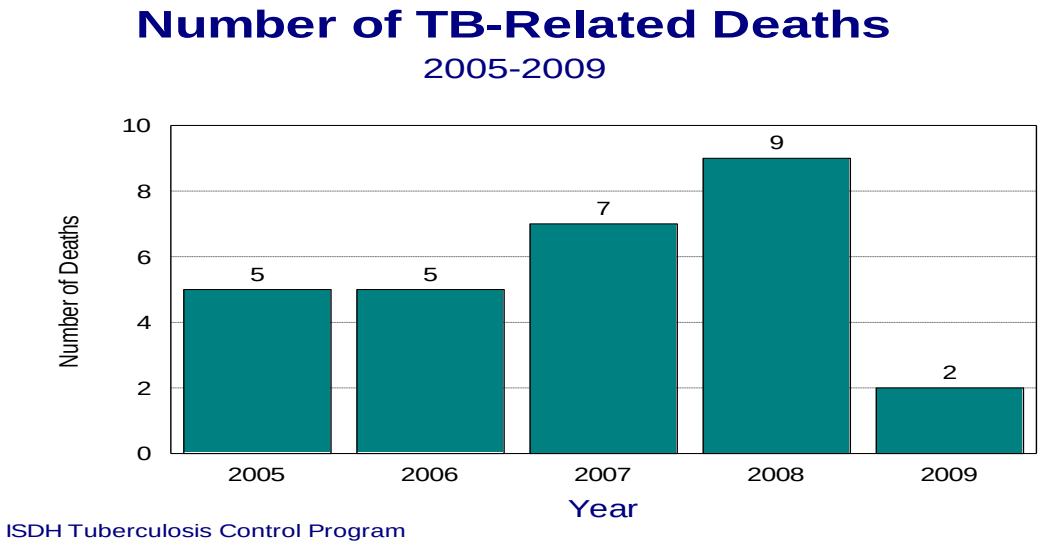


Figure 2



TB was reported in 34 of the 92 counties. According to the estimated 2009 census, the three most populous counties (Marion, Lake, and Allen counties) accounted for 54% of all new cases. Marion County's reported cases increased from 33 cases in 2008 9 to 46 cases in 2009, an increase of 39%. Case counts in Lake and Allen counties also decreased in 2009. Allen County had 13 cases in 2008 and 12 cases in 2009. Lake County reported 13 cases in 2008 and six cases in 2009, a 54% decrease. Figure 3 illustrates TB- related deaths decreased to a low of two cases in the last five years. The TB- related deaths were verified by the death certificate.

Figure 3



High risk populations include: HIV infection, children, and drug and alcohol abuse. The HIV status was known in 97% of the cases in 2009 for the 25 to 44 age group, compared to 79% in 2008 (Table 1).

Table 1

HIV Testing Status

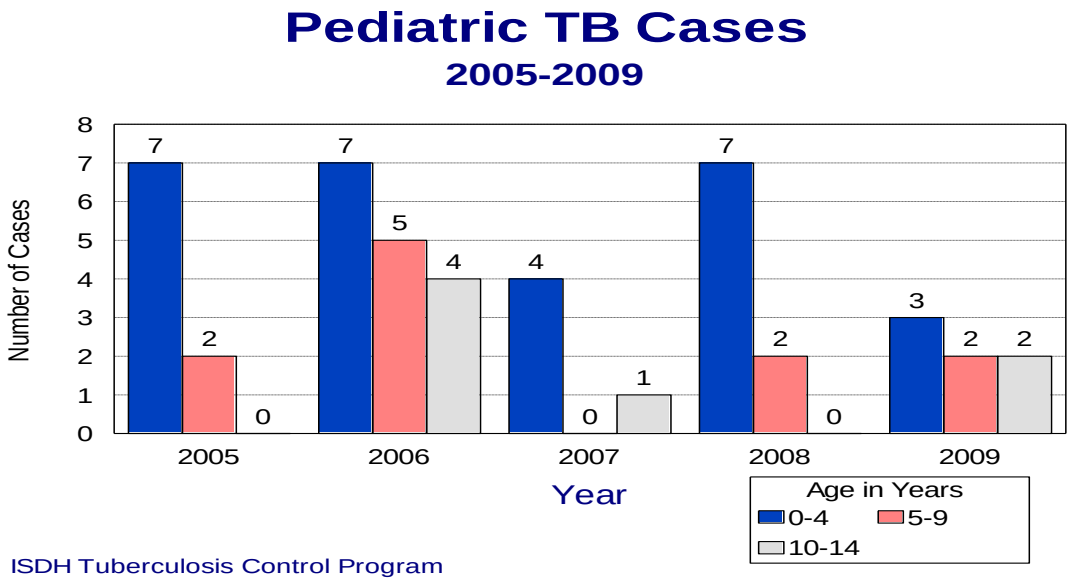
Number and percent of adult patients reported in 2009 offered counseling and testing

Status	Age group 25-44 (n=37)	All adult cases >=15 years of age (n=112)
Tested, results known or pending	36(97%)	81(72%)
Patient refused	0	10(9%)
Test not offered	1(3%)	21(19%)

ISDH Tuberculosis Control Program

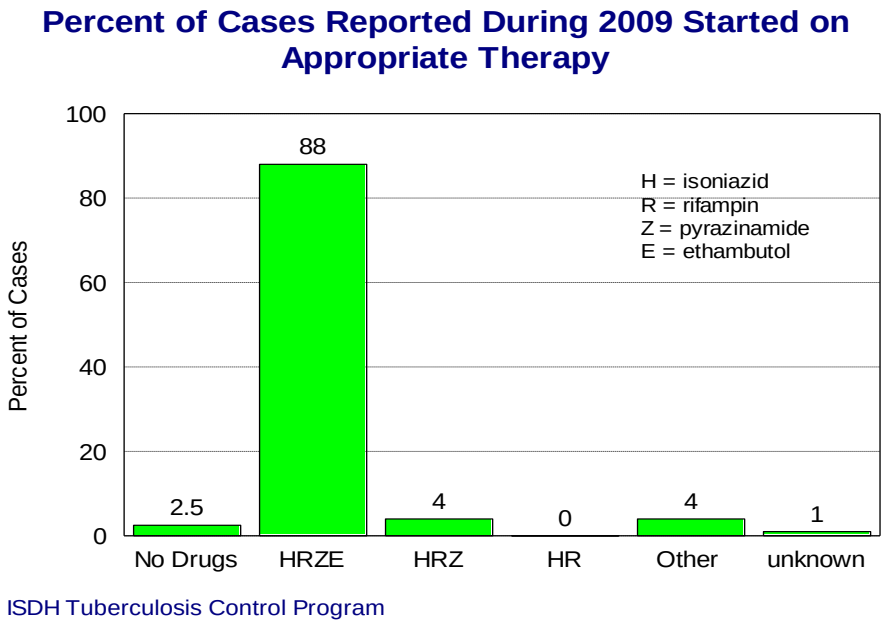
Pediatric cases decreased from nine cases in 2008 to seven cases in 2009 (Figure 4).

Figure 4



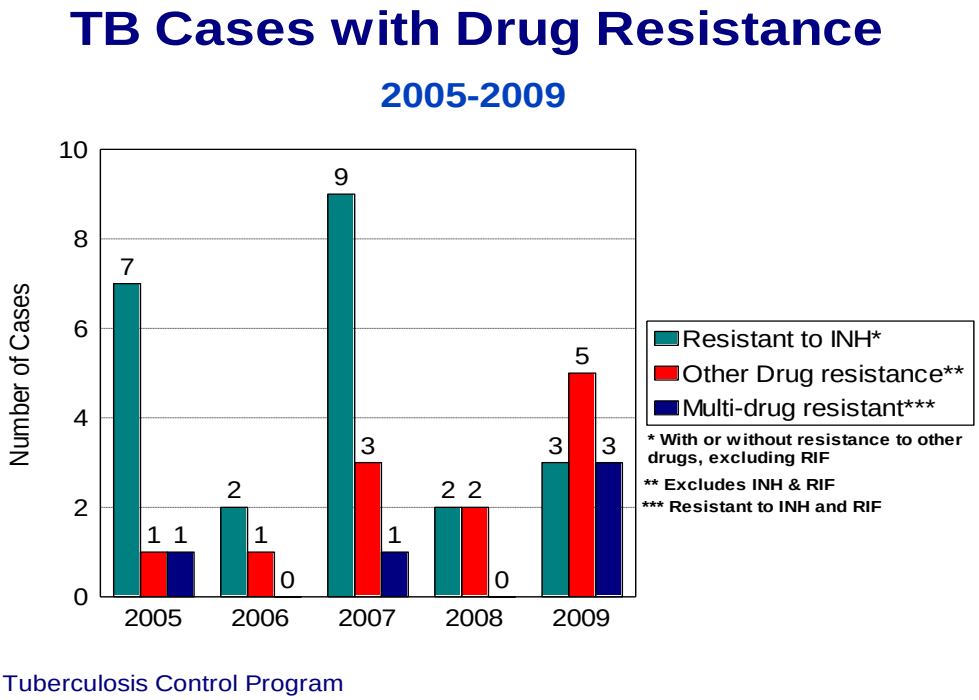
The percentage of cases started on appropriate therapy increased from 84% in 2008 to 88% in 2009 (Figure 5).

Figure 5



Isoniazid resistance increased two cases in 2008 to three cases in 2009 (Figure 6). Resistance to other TB drugs increased from two cases in 2008 to five cases in 2009. Indiana had three cases of multi-drug resistant cases in 2009.

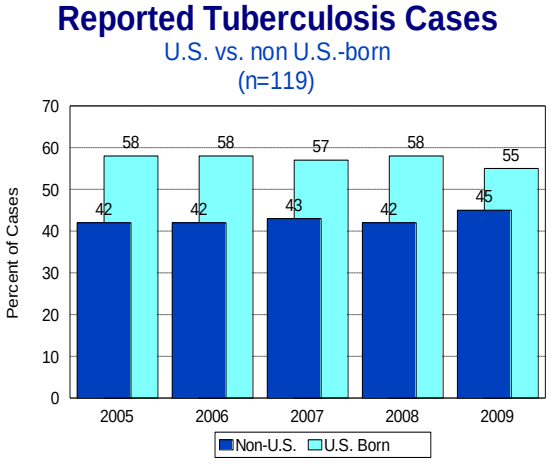
Figure 6



ISDH Tuberculosis Control Program

U.S.- born individuals continue to make up the majority of TB cases diagnosed in Indiana (Figure 7).

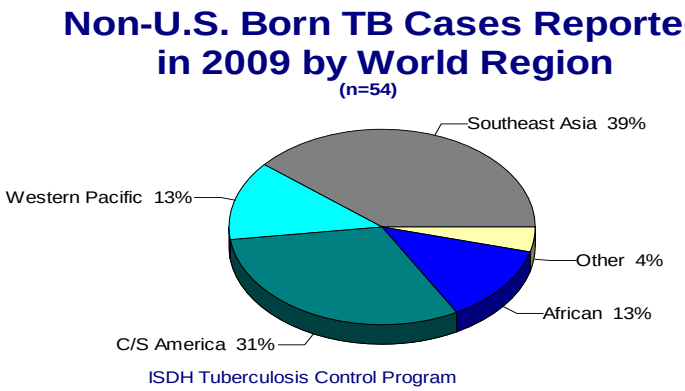
Figure 7



ISDH Tuberculosis Control Program

Of the non-U.S.- born cases, 39% come from Southeast Asia, and 31% come from Central/South America (Figure 8).

Figure 8



Indiana TB cases created ten new genotype clusters (two or more molecular matched isolates) in 2009, IN_0074 to IN_0083. Of interest is IN_0074 (PCR12325), a Marion County genotype cluster with active cases in the homeless population only. No other cases of PCR12325 have been identified outside of Indianapolis or in the U.S. at this time. Ten cases have been identified in Marion County in the past eight months; additional cases are expected to be identified. The Marion County Health Department (MCHD) sent a notification to hospitals regarding the outbreak. A CDC Technical Assistance Team was invited to help evaluate the situation at the onset of the outbreak, and the MCHD created an Outbreak Response Team was created by Marion County. This outbreak attributes to the increase in homeless cases in 2009.

Beginning January 1, 2009, the CDC implemented a revised Report of Verified Case of Tuberculosis (RVCT) form. The additions and changes made to the variables of the RVCT will help programs capture data that are more inclusive to a variety of risk factors. New variables are:

- Count status
- Pediatric TB patients
- Nucleic acid amplification test
- Initial chest CT scan or other chest imaging study
- Primary reason evaluated for TB disease
- Additional TB risk factors
- Immigration status
- Genotype accession number
- Moved
- Reason therapy was extended for more than 12 months

CDC also introduced the National Tuberculosis Indicator Project (NTIP) in 2009. States were requested to set goals to be accomplished by 2015. These indicators focus on: Completion of Treatment, Contact Investigation, Aggregated Reports of Program Evaluation, Data Reporting, Drug Susceptibility results, Known HIV Status, Recommended Initial Therapy, Sputum Culture Conversion, Sputum culture reported, TB

case rates and Universal Genotyping. To help achieve these projections CDC highly recommends that all states incorporate cohort reviews into their programs. Indiana began quarterly cohort reviews in November 2009.

Please view the web link for the full report:
http://www.state.in.us/isdh/files/2009AnnualTBReport_0423_final.pdf

[1] http://www.census.gov/popest/states/asrh/

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/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 (1999-2007)
Indiana Cancer Report: Incidence; Mortality; Facts & Figures	Indiana Infant Mortality Report (1999, 2002, 1990-2003)
Indiana Health Behavior Risk Factors (1999-2008)	Indiana Natality Report (1998-2007)
Indiana Health Behavior Risk Factors (BRFSS) Newsletter (2003-2010)	Indiana Induced Termination of Pregnancy Report (1998-2007)
Indiana Hospital Consumer Guide (1996)	Indiana Marriage Report (1995, 1997, & 2000-2004)
Public Hospital Discharge Data (1999-2008)	Indiana Infectious Disease Report (1997-2008)
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 August 31, 2010 **based on 2000 population of 6,080,485)**

HIV - without AIDS to date:

355	New HIV cases September 2009 thru August 31, 2010	12-month incidence	5.83 cases/100,000
4,417	Total HIV-positive, alive and without AIDS on August 31, 2010	Point prevalence	72.64 cases/100,000

AIDS cases to date:

344	New AIDS cases from September 2009 thru August 31, 2010	12-month incidence	5.65 cases/100,000
5,332	Total AIDS cases, alive on August 31, 2010	Point prevalence	87.69 cases/100,000
10,988	Total AIDS cases, cumulative (alive and dead) on August 31, 2010		

REPORTED CASES of selected notifiable diseases

Disease	Cases Reported in July - August *MMWR* Weeks 26-34		Cases Reported in January – August *MMWR* Weeks 1-34	
	2009	2010	2009	2010
Campylobacteriosis	172	89	435	388
Chlamydia	4305	3752	15613	12029
Cryptococcus	7	4	19	17
Cryptosporidiosis	64	37	186	137
E. coli, shiga toxin-producing	26	22	47	35
Giardiasis	62	49	168	194
Gonorrhea	1374	1047	5052	3390
Haemophilus influenzae, invasive	6	13	54	65
Hemolytic Uremic Syndrome (HUS)	4	3	5	4
Hepatitis A	6	6	15	15
Hepatitis B	8	10	48	45
Hepatitis C Acute	4	4	14	21
Histoplasmosis	21	16	87	69
Influenza Deaths (all ages)	1	1	4	3
Legionellosis	13	15	36	38
Listeriosis	1	3	6	10
Lyme Disease	28	20	48	58
Measles	0	0	0	0
Meningococcal, invasive	1	5	21	18
Mumps	0	0	1	3
Pertussis	81	143	232	418
Rocky Mountain Spotted Fever	0	1	1	1
Salmonellosis	154	152	390	372
Shigellosis	10	9	50	33

REPORTED CASES of selected notifiable diseases

Disease	Cases Reported in July - August *MMWR* Weeks 26-34		Cases Reported in January – August *MMWR* Weeks 1-34	
	2009	2010	2009	2010
Severe *Staphylococcous aureus* in Previously Healthy Person	4	5	13	17
Group A Streptococcus, invasive	14	8	142	73
Group B, Streptococcus, Invasive (All ages)	56	44	198	172
Streptococcus pneumoniae (invasive, all ages)	33	38	309	425
Streptococcus pneumoniae (invasive, drug resistant)	14	13	181	139
Streptococcus pneumoniae (invasive, <5 years of age)	8	5	54	36
Syphilis (Primary and Secondary)	30	36	103	109
Tuberculosis	16	14	75	52
Vibriosis	1	0	3	2
Varicella	2	2	67	140
Yersiniosis	0	1	7	6
Animal Rabies	21 (Bats)	11 (Bats)	32 (Bats)	17 (Bats)

***Note data is provisional only due to migration to a new reporting system**

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 bi-monthly by the Indiana State Department of Health to provide epidemiologic information to Indiana health care professionals, public health officials, and communities.