



Ninetieth Anniversary of the 1918 Influenza Pandemic: A Personal Letter Reflecting the Times in Brook, Indiana

Shawn Richards, BS
ISDH Respiratory Epidemiologist

According to the Yearbook of the State of Indiana for the year 1919, pandemic influenza was first recognized in Indiana about September 20, 1918 and lasted until March, 1919. This past September marked the 90th anniversary of the beginning of the 1918 influenza pandemic.

These personal letters documenting the pandemic in Indiana and photo of Frances Huffman were released in May, 2008 from the Leonard Huffman family to the Indiana State Department of Health (ISDH). All grammar and word spellings from the letters were transcribed word for word by Shawn Richards. According to Leonard, Morgan County Health Department’s Public Health Preparedness Coordinator, Frances Huffman had just graduated from Indiana University in the spring of 1918 and started her first teaching job in the fall of 1918 in Brook, Indiana. She was 30 years old. The letters from Frances are dated September 25, 1918 and October 2, 1918. Frances is informing her family of her condition and what was being done. At least three other teachers at the same Brook school also had influenza at that time. The letter from Mrs. Reed is dated Oct 1, 1918. Mrs. Reed wrote to Francis Huffman’s mother informing her of the gravity of the situation. Frances died of influenza. Interestingly, within a week or so of her death, the hearse driver had also passed away with influenza. These letters provide a glimpse of life during the 1918 pandemic in Indiana.

Brook, Indiana, Sept. 25, 1918

Dear Russel,

How are you getting along now at school? If you are taking French I think you ought to study it at home. I want you to work hard on it and get it. It may be easy for you. I don’t know.

<u>Article</u>	<u>Page No.</u>
Ninetieth Anniversary of the 1918 Influenza Pandemic: A Personal Letter Reflecting the Times in Brook, Indiana	1
E ³ Easy Epidemiology for Everyone	3
<i>OUTBREAK SPOTLIGHT....</i>	6
Training Room	9
Data Reports	10
HIV Summary	10
Disease Reports	11

I have trouble in getting all my lessons because I have 5 classes and 3 assembly periods. The classes though are all work so my day is all full. The classes though are all work that I want.



Last night the girls flee club went to Kentland to sing and play. Some of them play ukuleles. I had a chance to go but I too tired and had to work. I am invited to go to a sophomore party Friday night but don't think I can go because Ethel Reed and I are invited to spend the week end with Winona my roommate so I guess we'll go.

Be sure you don't get the Spanish flu. Several of our high school folks are out with it and several grade chaps. They sprinkled Lysol all over the floors of the school house except for the high school room, and we are all gargling Listerine here where we are board. Am also taking cascara tablets. Am feeling fairly well just now.

How are you and Paul getting along? Have you got your wheat sowed yet? I think it ought to be sowed first then fix the steps but the steps must not be neglected. Have you

hauled the gravel?

I haven't heard from our Aunt Jennie since I came here. I've sent two postals in all. I'm anxious to know how Paul is. I haven't decided about the suit business. I believe it is going to cost about \$40 for me to get one, I can't get one when spring comes nor a spring coat either. I'll wear my green coat the third season. I haven't any hat yet. Am wearing my old one to school. I'm so glad it is warmer. You must wear plenty of wraps to keep from taking cold but I wouldn't put on heavy underwear if I were you until later cause you will roast at school if you do. Our school house is heated these days. It sprinkles a very little here this eve.

We leave heat at the house to Furnace heat. I like my boarding place so well. My boarding place last year wouldn't compare with this one and I don't have to pay as much either.

Well, write me a letter and tell me all the news. I do enjoy letters o much. I'll write a little to mother. I wish you would send me 2 or 3 news,

Lovingly,
Frances

This letter was postmarked Brook, Indiana Oct 2, 1918 and addressed to Mrs. W.B. Huffman Mineral, (Greene County), Indiana.

Dear Folks,

I only had the one stamped envelope and it addressed to Russel. Now don't get scared nor excited when I tell you I have the "influ" I never thought of taking it cause I had been feeling so well and had no cold but I've been right with it at school and here to. So many have been out at school. 17 out of some of the grade rooms and about like that out of the high school. Wish I had a hold of the fellow that started the disease. I'd make it hot for him. It must be some German spy work to kill off our soldier boys and retard schools and other business over the country. I think school should have been closed by Mr. Hogg doesn't seem to worry anything about it. I had a temperature of 102 Thurs night but didn't think much about and taught Friday but felt awful hot. Friday night my temperature was 101. Dr. Collier sent medicine Sat. and Sun. morn fever was 103. I had him come over Sun morn. And he said my lungs weren't affected any. It's only the bronchial tubes. We've kept my fever down to 101 or 2 this rest of the time. Dr. says I'll be up in 2 or 3 days. The girls here are better. They are up. I'm awfully tired laying in bed. 3 of the teachers have been sick but they keep going. Be very careful you don't get it. I'm so afraid Russel will get it. Write and tell me how you are. I like to know these things. I don't

think it is right to keep it. Mrs. Reed is very good to me. I told Dr. C it was my first experience getting sick away from home. Exercise the scribbles for I am lying in bed. Write soon.

Dear Folks,

Am no worse and no better. The disease has to run its course. My fever stay around 102. Dr. Collier and Mrs. Reed are doing all they can for me. Dr. comes each day to watch that no complications set in. He said the board won't dock me. All the adjoining schools are closed and our attendance is below half but Mr. Hogg won't close schools.

Brook, Indiana. Oct.1, 1918

Dear Mrs. Huffman,

Frances wrote you yesterday about her sickness, she is not feeling at all well. The doctor was here last evening. He said she was verging very close to pneumonia. She has been in since Friday night. The doctor did not tell her that the condition was so nearly that of pneumonia but told her it was deep and that the bronchial tubes were very much affected. The told me we would have to see what developments were before he could determine exactly, but that it is bordering closely on pneumonia. I am writing you just as nearly as I can what I know because if it were my girl I would want you to do the same with me. If it develops, we would want you to come at once. If it proves not to we would be glad for you to come if you would like to.

Sincerely,

Mrs. Annie Reed

P.S. I did not say anything to Frances about this letter I am writing you.

E³ Easy Epidemiology for Everyone

E³ is a new feature of the Indiana Epidemiology Newsletter dedicated to exploring the fundamentals of epidemiology. Each month, a different epidemiology concept will be explored to enhance understanding of basic epidemiology.

Epidemiology Tools

Tom Duszynski, BS, REHS

ISDH Field Epidemiology Director

Epidemiologists use certain “tools” to help do their jobs, just as in any position. Think of the epidemiologist as a disease detective that uses “just the facts ma’am” to solve the problem. These tools help collect the facts, put them in chronological order, and allow epidemiologists to recreate the “crime” (or outbreak) which not only helps solve it, but also prevents additional people from becoming ill.

One of the first and basic tools used is the interview. Like law enforcement officials, epidemiologists talk to all of the “eyewitnesses,” or in the case of public health, all of the people

who became ill. Epidemiologists also interview the people who did the same things as those who became ill but didn't become sick. This allows epidemiologists to collect the facts of what happened, to whom it happened, where it happened, and when it happened. The who, what, where, and when is what is called "descriptive epidemiology." It tells the story of the "crime," or disease outbreak.

Once the information is collected, it is organized to allow a better view of what happened. There are multiple ways to do that. One tool is a simple line listing. This is just a spread sheet that gives a quick look at all the data on one page. Each row represents a person interviewed and each column represents a variable.

ID	AGE	SEX	TIME OF MEAL	ILL	DATE OF ONSET	TIME OF ONSET	BAKED HAM	SPINACH	MASHED POTATOES	CABBAGE SALAD	JELLO	ROLLS	BROWN BREAD	MILK	COFFEE	WATER	CAKES	VAN. ICE CREAM	CHOC. ICE CREAM	FRUIT SALAD
1	11	M	UNK	N			N	N	N	N	N	N	N	N	N	N	N	N	N	N
2	52	F	8:00PM	Y	4/19	12:30 AM	Y	Y	Y	N	N	Y	N	N	N	N	N	N	Y	N
3	65	M	6:30 PM	Y	4/19	12:30 AM	Y	Y	Y	Y	N	N	N	N	Y	N	N	Y	Y	N
4	59	F	6:30 PM	Y	4/19	12:30 AM	Y	Y	N	N	N	N	N	N	Y	N	N	Y	Y	N
5	13	F	UNK	N			N	N	N	N	N	N	N	N	N	N	N	N	Y	N
6	63	F	7:30 PM	Y	4/18	10:30 PM	Y	Y	N	Y	Y	N	N	N	N	N	N	Y	Y	N
7	70	M	7:30 PM	Y	4/18	10:30 PM	Y	Y	Y	N	Y	Y	Y	N	Y	Y	N	Y	N	N
8	40	F	7:30 PM	Y	4/19	2:00 AM	N	N	N	N	N	N	N	N	N	N	N	Y	Y	N
9	15	F	10:00 PM	Y	4/19	1:00 AM	N	N	N	N	N	N	N	N	N	N	N	Y	Y	N
10	33	F	7:00PM	Y	4/18	11:00 PM	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	Y	N
11	65	M	UNK	N			Y	Y	Y	N	Y	Y	N	N	N	N	N	Y	Y	N
12	38	F	UNK	N			Y	Y	Y	N	N	Y	N	N	Y	N	N	Y	Y	Y
13	62	F	UNK	N			Y	Y	N	Y	Y	Y	N	N	N	Y	N	N	Y	N
14	10	M	7:30 PM	Y	4/19	2:00 AM	N	N	N	N	N	N	N	N	N	N	N	Y	Y	N
15	25	M	UNK	N			Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	N
16	32	F	UNK	Y	4/19	10:30 AM	Y	Y	N	N	N	Y	N	N	Y	N	Y	Y	Y	N
17	62	F	UNK	Y	4/19	12:30 AM	N	N	N	N	N	N	N	N	N	N	N	Y	N	N
18	36	M	UNK	Y	4/18	10:15 PM	Y	Y	N	Y	N	Y	Y	N	N	N	N	Y	N	N
19	11	M	UNK	N			Y	Y	?	Y	N	Y	N	N	N	Y	N	N	Y	N
20	33	F	UNK	Y	4/18	10:00 PM	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	N

(continued)

Another tool that is used at multiple levels is statistical analysis. The analysis allows epidemiologists to look at all the variables (such as all foods eaten) independently to determine which variable is most likely associated with illness. The more complex and larger the outbreak, the more analysis would need to be done to find the culprit. There are many statistical analysis programs that exist to aid in this effort, and these methods are probably some of the most useful tools in the epidemiologist's tool box.

An odds ratio is one way to identify potential causes of illness by comparing cases (those who are ill) and controls (those who are not ill but exposed to the same variables). A simple two-by-two table (see below) is constructed to calculate the odds ratio in a case-control study.

		Disease		total
		Yes (+)	No (-)	
Exposure	Yes (+)	a	b	a + b
	No (-)	c	d	c + d
total		a + c	b + d	a+b+c+d

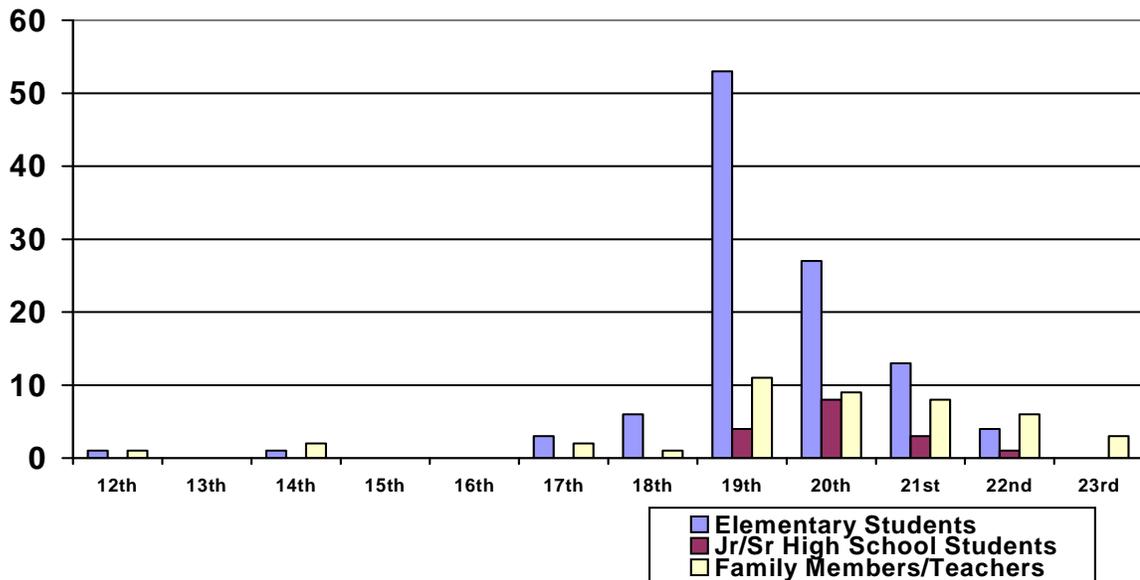
Odds Ratio =

$$\frac{a/c}{b/d} = \frac{ad}{bc}$$

- OR = 1** **No Association with illness**
- OR < 1** **Negative association**
- OR > 1** **Positive association**

For example, if the people who became ill at an event all ate chocolate ice cream and all the people who didn't become ill ate the vanilla ice cream, then the chocolate ice cream would have a much higher odds ratio than the vanilla ice cream. This would tell the epidemiologist that the odds of becoming ill are much higher if you ate the chocolate ice cream than if you ate the vanilla ice cream.

Another useful tool that an epidemiologist will use to describe the outbreak is the epidemiological curve ("epi curve"). This is usually a simple histogram or bar graph that shows the number of cases by some time interval (hour, day, week, etc...).



This epi curve shows the number of cases by date of a particular disease. There were two cases with onset of illness on February 12, and the outbreak continued to spread in February. From an epi curve, epidemiologists can tell when the outbreak started, determine approximate incubation periods and transmission routes, and possibly when control measures helped end the outbreak.

There are many other tools that are used when conducting an investigation; however, one the best, basic tools is the interview. From that, all the other information is gathered and analyzed to solve the problem as quickly as possible to prevent additional people from becoming ill, which is the epidemiologist's ultimate goal.



OUTBREAK SPOTLIGHT....

Outbreak Spotlight is a regularly occurring feature in the Indiana Epidemiology Newsletter to illustrate the importance of various aspects of an outbreak investigation.

OUTBREAK OF A VIRAL GASTROENTERITIS ILLNESS AT A CAMPGROUND

Rob Allen, MPA
ISDH Field Epidemiologist, District 7

Jill Stauffer, MS
ISDH Field Epidemiologist, District 6

Penny Caudill
Monroe County Health Department

Background

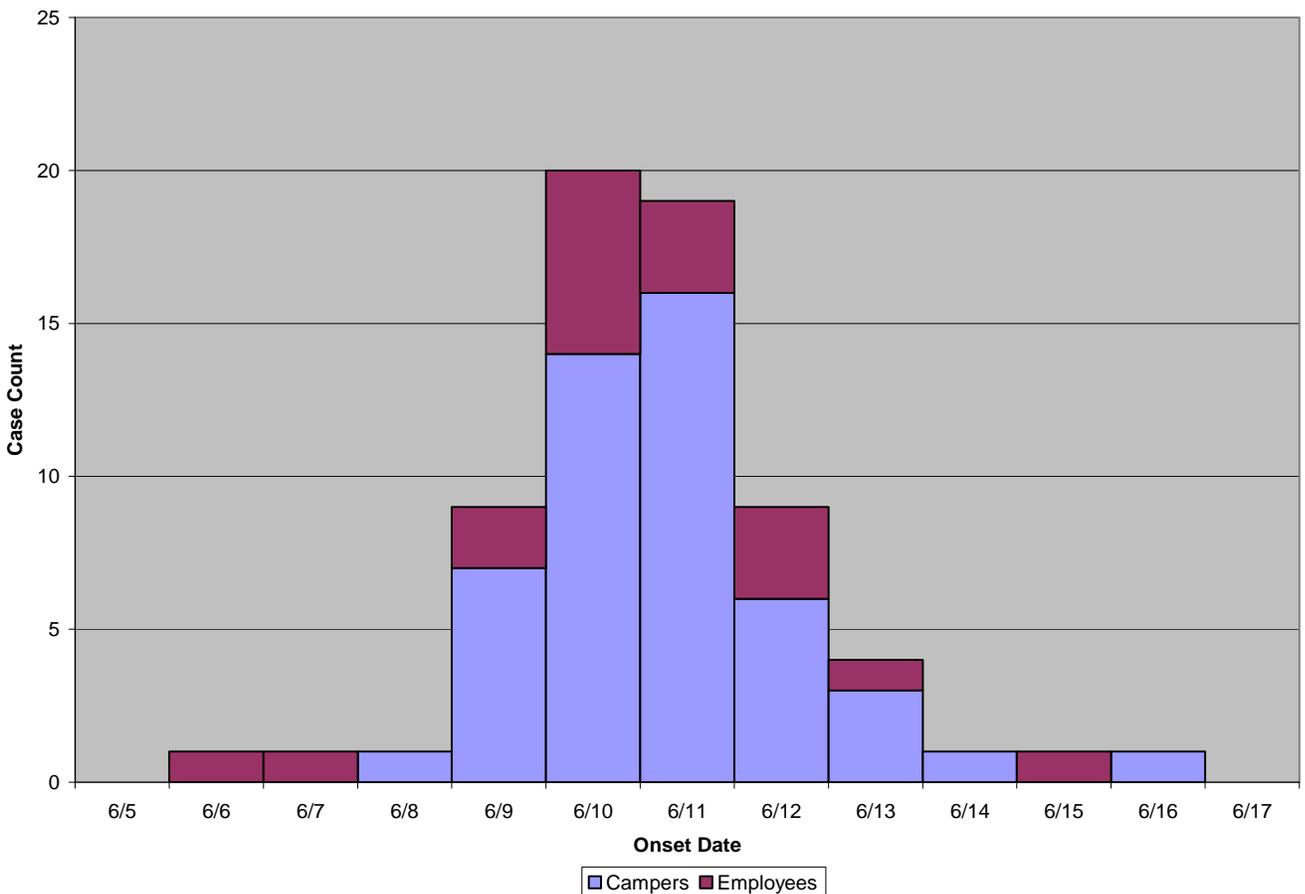
On June 13, 2008, Jessica Kincaid, Owen County Health Department (OCHD) notified the Indiana State Department of Health (ISDH) that 4-H members and leaders from Monroe County attending camp on June 8 – 11 at Timber Ridge Camp Ground in Owen County were experiencing symptoms of gastroenteritis, including diarrhea, vomiting and nausea. Several of the camp's employees were reported to have similar illness. Approximately 158 4-H members and leaders and 23 Timber Ridge employees were attending the camp at the time. From June 9 through June 16, 2008, approximately 54 4-H members and leaders became ill, and 14 Timber Ridge employees became ill with diarrhea and/or vomiting. Two employees initially reported illness on June 6 and 7.

Epidemiologic Investigation

The Monroe County Health Department (MCHD), OCHD, and the ISDH initiated a collaborative investigation to determine the cause of the outbreak and implement control measures to prevent additional illnesses. A case study was conducted to describe the outbreak and to determine if the disease was foodborne, waterborne or a result of person-to-person transmission. The ISDH developed a questionnaire which was used to document illness history such as onsets, symptoms, and foods and beverages consumed while at the camp. The Monroe County Purdue Cooperative Extension office personnel contacted 4-H members and leaders who were attending the camp to determine their illness status. The names of those who reported illness were then provided to MCHD and ISDH personnel for case follow-up. Timber Ridge employees also completed questionnaires. A case was defined as any previously healthy person visiting or epidemiologically linked with someone attending the Timber Ridge Camp Ground and who became ill with diarrhea and/or vomiting from June 8 to June 16.

The MCHD interviewed 54 4-H members and leaders using the ISDH questionnaire. Twenty-four Timber Ridge employees were also interviewed. Sixty-six individuals interviewed met case definition (see Figure 1). Predominant symptoms included diarrhea (79.22%) and vomiting (23.38%), with an attack rate of 86.84%. The incubation period was 56 hours, and duration of illness was 36 hours. Cases recovered on their own without treatment. Two cases, believed to be the index cases, were interviewed and were determined to have symptoms on June 6 and 7.

Figure 1: Epidemiologic Curve (N=66)



Environmental Assessment

Timber Ridge Camp Ground has 14 duplex cabins. The cabins held between 8-12 campers. The individual cabins do not have running water or any restroom facilities. The campers have two restroom facilities at their disposal with hot and cold water. The camp ground offers a kitchen facility that meets MCHD and the ISDH Food Protection requirements. There is a small lake on the property that is staffed by lifeguards. The camp ground is open all year.

The OCHD notified the Indiana Department of Environmental Management (IDEM) of the situation at the camp. Timber Ridge officials collected water samples of drinking water from the camp, and an official from the IDEM Drinking Water Branch inspected the site on June 13. Water samples from the kitchen and one of the restroom facilities were submitted to the ISDH Laboratories for testing (see Laboratory Results). Camp officials implemented chlorination procedures on their private water system and took measures to implement hand washing procedures, chlorinate all surfaces, and excluding any staff or visiting campers who were ill.

Laboratory Results

Five stool specimens were submitted to the laboratory for analysis. All specimens tested negative for *Salmonella*, *Shigella*, *Campylobacter*, and *E. coli* 0157:H7 by culture. All specimens also tested negative for *Norovirus* by reverse transcription-polymerase chain reaction (RT-PCR).

Timber Ridge officials sent drinking water samples from three facilities and one sample from the lake to a private environmental testing laboratory on June 12. All samples came back positive for coliform bacteria. The one sample taken from the lake was positive for *E. coli*.

Water samples collected from the kitchen and restroom facility tested positive for coliform bacteria and negative for *E. coli*.

Conclusions

The investigation confirmed that an outbreak of gastroenteritis occurred at the Timber Ridge Camp beginning on June 8, 2008. The causative agent of outbreak was not determined, the sudden, acute onset, predominant signs and symptoms (diarrhea and vomiting), incubation period, and duration of symptoms are indicative of a viral agent.

Noroviruses are extremely common causes of viral gastroenteritis in the United States. Infection is transmitted through the fecal-oral route from contaminated food and beverages, contaminated water, person-to-person transmission, and contact with contaminated surfaces or objects. Predominant symptoms include nausea, vomiting and diarrhea that generally occur 12-48 hours after exposure. The illness generally resolves in approximately 24-72 hours without complications. Treatment is supportive and usually involves maintaining adequate hydration.

Noroviruses are extremely environmentally hardy, surviving for several hours on surfaces. Noroviruses can also survive freezing and temperatures up to 140°F. The inoculum dose is extremely low, about 10-100 viral particles, and the infection is extremely contagious, especially within groups of individuals having close contact with each other.

The pattern of illness onset dates indicated that the outbreak was most likely spread through person-to-person rather than foodborne or waterborne (see Figure 1). Point source outbreaks, such as foodborne outbreaks, have epidemic curves with a steep upslope and gradual downslope,

indicating a single source of infection that transmits illness generally within one incubation period of the agent. No single meal or food item was identified with illness. Continuous source outbreaks, such as waterborne, have a steep upslope and a trickling downslope that diminishes as the source is contained or people become immune. The epidemic curve for this outbreak is more consistent with a person-to-person outbreak. In addition, campers and staff had ample opportunities for close contact, thereby facilitating transmission.

Drinking water samples and water samples from the kitchen and restroom facility tested negative for *E. coli*, indicating that fecal contamination was not present, again supporting the hypothesis that the infection was transmitted person-to-person. The positive coliform result could indicate environmental leakage from a compromised water system or incorrect sampling technique.

Recommendations

In general, viral gastroenteritis can be prevented by strictly adhering to the following guidelines:

- Practice good hygiene:
 - Thoroughly wash hands with soap and water after using the restroom; after changing diapers; after assisting someone with diarrhea and/or vomiting; after swimming; and before, during, and after food preparation (please refer to Quick Facts about Hand Washing).
 - Clean food preparation work surfaces, equipment, and utensils with soap and water before, during, and after food preparation.
- Eat safe foods and drink safe water (Remember: Contaminated foods may look and smell normal):
 - Wash all produce before eating raw or cooking.
 - Use treated water for washing, cooking, and drinking.
- Protect others:
 - Persons with diarrhea and/or vomiting should not prepare food or provide health care for others and should limit direct contact with others as much as possible.
 - Persons with diarrhea and/or vomiting should not attend a child-care facility or school.
 - Persons with diarrhea and/or vomiting shall be excluded from employment involving food handling (Indiana Retail Food Establishment Sanitation Requirements, 410 IAC 7-24-122).
 - Do not change diapers near recreational water.
 - Do not go swimming or use hot tubs if you have diarrhea and for at least two weeks after diarrhea stops.
 - Chlorination of the private water system.

The Indiana State department of Health extends its appreciation for the outstanding professionalism demonstrated by the Monroe County Health Department, Owen County Health Department, Monroe County Purdue Cooperative Extension, and the Timber Ridge Camp officials during this investigation.



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/>

HIV/STD Quarterly Reports (1998-June, 2006)	Indiana Mortality Report (1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006)
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, 2006)
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, 4/2008, 7/2008)	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 September 30, 2008 (based on 2000 population of 6,080,485)

HIV - without AIDS to date:

349	New HIV cases from October 2007 thru September 30, 2008	12-month incidence	6.07 cases/100,000
3,807	Total HIV-positive, alive and without AIDS on September 30, 2008	Point prevalence	66.19 cases/100,000

AIDS cases to date:

412	New AIDS cases from October 2007 thru September 30, 2008	12-month incidence	7.16 cases/100,000
4,171	Total AIDS cases, alive on September 30, 2008	Point prevalence	72.51 cases/100,000
8,780	Total AIDS cases, cumulative (alive and dead) on September 30, 2008		

REPORTED CASES

 of selected notifiable diseases

Disease	Cases Reported in September <i>MMWR</i> Weeks 36-39		Cases Reported in September <i>MMWR</i> Weeks 1-39	
	2007	2008	2007	2008
	Aseptic Meningitis	43	42	180
Campylobacteriosis	41	71	348	504
Chlamydia	1,664	1,474	15,759	15,099
Cryptococcus	1	0	15	16
Cryptosporidiosis	17	20	67	145
<i>E. coli</i> , shiga toxin-producing	6	12	57	73
<i>Haemophilus influenzae</i> , invasive	2	1	45	57
Hemolytic Uremic Syndrome (HUS)	0	0	0	1
Hepatitis A	7	2	19	16
Hepatitis B	12	5	41	28
Histoplasmosis	6	4	68	58
Influenza Deaths (all ages)	Not Reportable	0	Not Reportable	15
Gonorrhea	787	633	6,758	6,150
Legionellosis	11	3	44	38
Listeriosis	2	1	12	6
Lyme Disease	2	4	42	31
Measles	0	0	0	0
Meningococcal, invasive	2	0	20	22
Mumps	0	1	1	1
Pertussis	0	12	47	47
Rocky Mountain Spotted Fever	0	1	5	7
Salmonellosis	54	64	509	464
Shigellosis	9	35	81	528

REPORTED CASES of selected notifiable diseases (cont.)

Disease	Cases Reported in September MMWR Weeks 36-39		Cumulative Cases Reported January – September MMWR Weeks 1-39	
	2007	2008	2007	2008
Group A Streptococcus, invasive	8	8	98	112
Group B Streptococcus, Newborn	3	2	22	20
Group B, Streptococcus, invasive	29	35	193	231
<i>Streptococcus pneumoniae</i> (invasive, all ages)	24	25	412	517
<i>Streptococcus pneumoniae</i> (invasive, drug resistant)	9	4	126	164
<i>Streptococcus pneumoniae</i> (invasive, <5 years of age)	3	3	33	48
Syphilis (Primary and Secondary)	4	10	38	103
Tuberculosis	7	3	97	93
Yersiniosis	1	1	13	6
Animal Rabies	1 (bat)	3 (bat)	10 (bats)	7 (bats)

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



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

State Health Commissioner
Judith A. Monroe, MD

Deputy State Health Commissioner
Mary Hill, RN, JD

State Epidemiologist
James F. Howell, DVM, MPH,
DACVPM

Editor
Pam Pontones, MA

Contributing Authors
Shawn Richards, BS
Tom Duszynski, BS, REHS
Rob Allen, MPA
Jill Stauffer, MS
Penny Caudill

Design/Layout
Ryan Gentry