
Annual Summary of *REPORTABLE DISEASES* 2008

July 2010

Compiled and Prepared by:

Allen Emanuel, M.P.H.

Epidemiologist, Center for Assessment and Preparedness, Columbus Public Health

Radhika Nagisetty, M.P.H.

Communicable Disease Epidemiologist, Franklin County Board of Health



240 Parsons Avenue
Columbus, Ohio 43215

www.publichealth.columbus.gov

Franklin County



Board of Health

280 E. Broad St., Rm. 300
Columbus, Ohio 43215

www.franklincountyohio.gov/board_of_health

ACKNOWLEDGEMENT

We would like to thank the staff of the Center for Assessment and Preparedness at Columbus Public Health; in particular, Kathy Cowen M.S., Abdoul Shmohamed M.P.H./H.S.A., Ben DeJesus M.S. and Suellen Bennett M.P.H. We would also like to thank Michelle Groux M.P.H. for her work on formatting the report.

Table of Contents

Introduction	i
Quick Guide to Reportable Diseases in Ohio	ii
Reportable Diseases, Franklin county, Ohio	iii
Table 1: Annual Counts and Rates, 2006-2008,.....	iii
Highlights of Selected Diseases	
Campylobacteriosis	1
Cryptosporidiosis	2
Giardiasis	3
Legionellosis.....	4
Pertussis	5
Salmonellosis	6
Shigellosis	7
<i>E. coli</i> O157:H7 Multi-State Outbreak - Summer 2008	8
Timeliness of Disease Reports	9
Table 2: Franklin County Reporting Lag Times for Selected Diseases, 2008.....	9
Technical Notes	11
References	12

Introduction

Communicable diseases are illnesses caused by microorganisms, such as bacteria, viruses and parasites, and are transmitted from an infected person/ animal and/or contaminated food or water source to another person or animal. Most communicable diseases spread from direct contact with the bacteria or viruses that are carried in bodily fluids (e.g., blood) or expelled into the air (in the form of respiratory droplets) by an infected person. Some diseases can be spread only indirectly through contaminated food and water sources. Other diseases are introduced into the body by animals or insects carrying the infectious agent.

This annual summary represents the 2008 communicable disease data reported to state and local public health agencies as required by Ohio Administrative Code 3701-3-02. Only selected communicable diseases determined to be of public health significance are reportable; therefore, the data presented here do not represent all cases of communicable disease that occur in Columbus and Franklin County. Additionally, only confirmed cases of disease have been analyzed for this summary. The data are considered provisional but provide valuable insight into these diseases.

The summary is intended to be a resource for individuals and our public health partners for whom communicable diseases are of concern. Further information on communicable disease may be obtained by contacting either Columbus Public Health or the Franklin County Board of Health.

For over nine years, the Columbus and Franklin County Health Departments have joined forces to make the reporting, tracking and investigation of communicable disease cases easier and more convenient through the Communicable Disease Reporting System (CDRS). This provides early identification of potential outbreaks and new trends in infectious diseases. The Communicable Disease staff ensures proper investigation, timely case follow-up of all reports and preventive interventions to reduce secondary cases.

KEY FINDINGS ARE SUMMARIZED BELOW:

- In 2008, a total of 2,873 cases of communicable disease (excluding sexually transmitted diseases and tuberculosis) were reported and confirmed among Franklin County residents.
- Franklin County's total rate of confirmed communicable diseases in 2008 was 254 cases per 100,000 people.
- Franklin County's total rate of confirmed communicable diseases increased significantly to 254 cases per 100,000 in 2008 from 195 cases per 100,000 in 2007.
- The rate of shigellosis increased significantly to 56.9 cases per 100,000 in 2008 from 1.3 cases per 100,000 in 2007.
- The rate of cryptosporidiosis increased significantly to 27.7 cases per 100,000 in 2008 from 2.4 cases per 100,000 in 2007.
- The rate of pertussis decreased significantly to 14.1 cases per 100,000 in 2008 from 26.8 cases per 100,000 in 2007.
- The incidence rates of sexually transmitted diseases (e.g., gonorrhea, chlamydia, and syphilis) and hepatitis C ranks high among all the counties in the state.

Quick Guide to Reportable Diseases in Ohio

This list of Reportable Infectious Disease was in effect for 2008; however, changes were made to the list and the new changes went into effect January 1, 2009. The latest version can be located at <http://www.odh.ohio.gov/pdf/IDCM/intro1.pdf>

Know Your ABCs: A Quick Guide to Reportable Infectious Diseases in Ohio

From the Ohio Administrative Code 3701-3-02. Effective January 1, 2006

Class A Diseases

(1) diseases of major public health concern because of the severity of disease or potential for epidemic spread - report by telephone immediately upon recognition that a case, suspect case or positive laboratory result exists

Anthrax	Measles	Rubella (not congenital)	Tularemia
Botulism, foodborne	Meningococcal disease	Severe acute respiratory syndrome (SARS)	Viral hemorrhagic fever (VHF)
Cholera	Plague	Smallpox	Yellow fever
Diphtheria	Rabies, human		

Any unexpected pattern of cases, suspected cases, deaths or increased incidence of any other disease of major public health concern, because of the severity of disease or potential for epidemic spread, which may indicate a newly recognized infectious agent, outbreak, epidemic, related public health hazard or act of bioterrorism.

(2) diseases of public health concern needing timely response because of potential for epidemic spread - report by the end of the next business day after the existence of a case, suspect case or positive laboratory result is known

Arboviral neuroinvasive and non-neuroinvasive disease	Chancroid	Hepatitis B, perinatal	Rubella (congenital)
Eastern equine encephalitis virus disease	Coccidioidomycosis	Influenza-associated pediatric mortality	Salmonellosis
LaCrosse virus disease (other California serogroup virus disease)	Cyclosporiasis	Legionnaires' disease	Shigellosis
Powassan virus disease	Dengue	Listeriosis	Staphylococcus aureus, with resistance or intermediate resistance to vancomycin (VRSA, VISA)
St. Louis encephalitis virus disease	E. coli O157:H7 and other enterohemorrhagic (Shiga toxin-producing) E. coli	Lymphogranuloma venereum	Syphilis
West Nile virus disease (also current infection)	Foodborne disease outbreaks	Malaria	Tetanus
Western equine encephalitis virus disease	Granuloma inguinale	Meningitis, aseptic, including viral meningoencephalitis	Tuberculosis (TB), including multi-drug resistant tuberculosis (MDR-TB)
Other arthropod-borne disease	Haemophilus influenza (invasive disease)	Mumps	Typhoid fever
	Hantavirus	Pertussis	Waterborne disease outbreaks
	Hemolytic uremic syndrome (HUS)	Poliomyelitis (including vaccine associated cases)	
	Hepatitis A	Psittacosis	
		Q fever	

(3) diseases of significant public health concern -- report by the close of the working week after the existence of a case, suspect case or positive laboratory result is known

Amebiasis	Ehrlichiosis	Kawasaki disease	Streptococcal disease, group A, invasive (IGAS)
Botulism, wound	Encephalitis, other viral	(mucocutaneous lymph node syndrome)	Streptococcal disease, group B, in newborn
Botulism, infant	Encephalitis, postinfection	Leprosy (Hansen disease)	Streptococcal toxic shock syndrome (STSS)
Brucellosis	Giardiasis	Leptospirosis	Streptococcus pneumoniae, invasive disease (ISP)
Campylobacteriosis	Gonococcal infections (urethritis, cervicitis, pelvic inflammatory disease, pharyngitis, arthritis, endocarditis, meningitis and neonatal conjunctivitis)	Lyme disease	Toxic shock syndrome (TSS)
Chlamydia infections (urethritis, epididymitis, cervicitis, pelvic inflammatory disease, neonatal conjunctivitis and pneumonia)	Hepatitis B	Meningitis, including other bacterial	Toxoplasmosis (congenital)
Creutzfeldt-Jakob disease (CJD)	Hepatitis C	Mycobacterial disease, other than tuberculosis (MOTT)	Trichinosis
Cryptosporidiosis	Hepatitis D (delta hepatitis)	Reye syndrome	Typhus fever
Cytomegalovirus (CMV) (congenital)	Hepatitis E	Rheumatic fever	Varicella
	Herpes (congenital)	Rocky Mountain spotted fever (RMSF)	Vibriosis
			Yersiniosis

Class B Disease - report the number of cases by the close of each working week

Influenza

Class C Diseases - report an outbreak, unusual incidence or epidemic by the end of the next business day

Balstomycosis	Pediculosis	Outbreak, unusual incidence, or epidemic of other infectious diseases of known etiology categorized as Class A, Class B, or Class C.
Conjunctivitis, acute	Scabies	
Histoplasmosis	Sporotrichosis	
Nosocomial infection of any type	Staphylococcal skin infections	
	Toxoplasmosis	

Except as otherwise required for the Class A(1) diseases, reports of cases, suspect cases and positive laboratory results shall be in writing, and shall include the name and address of the case, suspect case, or person from whom the specimen was taken. A Board of Health may accept verbal reports by telephone or other electronic systems approved by the Director within the same time limitations. Reports shall include supplementary information relevant to the case or laboratory reports as needed to complete official surveillance forms provided or approved by the Director.

Cases of AIDS (acquired immune deficiency syndrome), AIDS-related conditions, HIV (human immunodeficiency virus) infection, perinatal exposure to HIV, and CD4 T-lymphocytes counts <200 or 14% must be reported on forms and in a manner prescribed by the Director.

Reportable Diseases for Franklin County, Ohio

Table 1: Annual Counts and Rates, 2006-2008

	2006		2007		2008	
Population	1,095,662		1,118,107		1,129,067	
DISEASE NAME	# of Cases	Case Rate*	# of Cases	Case Rate*	# of Cases	Case Rate*
HIV/AIDS*	222	20.3	259	23.2	184	16.3
Amebiasis	7	0.6	16	1.4	9	0.8
Anthrax	0	0.0	0	0.0	0	0
Botulism (foodborne)	0	0.0	0	0.0	0	0
Botulism (infant)	0	0.0	0	0.0	0	0
Brucellosis	0	0.0	0	0.0	0	0
Campylobacteriosis	101	9.2	73	6.5	93	8.2
Cholera	0	0.0	0	0.0	0	0
Chlamydia*	5,429	495.5	6,276	561.3	7255	642.6
Cryptosporidiosis	17	1.6	27	2.4	313	27.7
Cytomegalovirus	1	0.1	5	0.4	1	0.1
Dengue	1	0.1	0	0.0	0	0
Diphtheria	0	0.0	0	0.0	0	0
E. coli O157:H7	24	2.2	6	0.5	29	2.6
E. coli Unspecified	7	0.6	2	0.2	4	0.4
Encephalitis, (primary viral)	1	0.1	1	0.1	0	0
Encephalitis, West Nile	1	0.1	0	0.0	0	0
Ehrlichiosis	n/a	n/a	1	0.1	0	0
Giardiasis	125	11.4	112	10.0	167	14.8
Gonorrhea*	3,286	299.9	3,817	341.4	3,478	308.0
Haemophilus influenzae-Type B	2	0.2	3	0.3	5	0.4
Hantavirus	0	0.0	0	0.0	0	0
Hemolytic uremic syndrome	3	0.3	0	0.0	1	0.1
Hepatitis A	7	0.6	10	0.9	10	0.9
Hepatitis B (acute)*	11	1.0	10	0.9	14	1.2
Hepatitis B (chronic)*	156	14.2	110	9.8	74	6.6
Hepatitis C (chronic)*	826	75.4	1,000	89.4	739	65.5
Herpes (congenital)	n/a	n/a	1	0.1	0	0
Legionellosis	52	4.7	38	3.4	65	5.8
Leprosy	0	0.0	0	0.0	0	0
Leptospirosis	0	0.0	0	0.0	0	0
Listeriosis	0	0.0	6	0.5	2	0.2
Lyme disease	5	0.5	2	0.2	1	0.1
Malaria	6	0.5	8	0.7	16	1.4
Measles	0	0.0	0	0.0	0	0
Meningitis, aseptic (viral)	67	6.1	74	6.6	62	5.5
Meningococcal disease (N. meningitidis)	8	0.7	5	0.4	3	0.3

Reportable Diseases for Franklin County, Ohio

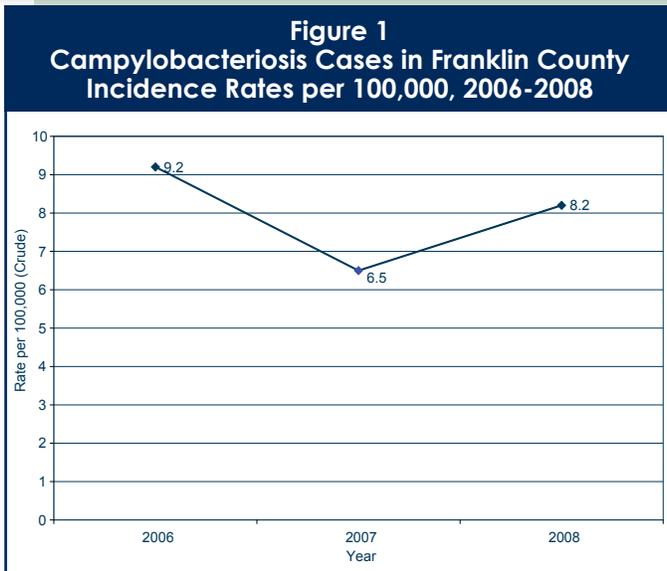
Table 1: Annual Counts and Rates, 2006-2008

DISEASE NAME	2006		2007		2008	
	1,095,662		1,118,107		1,129,067	
	# of Cases	Case Rate*	# of Cases	Case Rate*	# of Cases	Case Rate*
Meningitis (other bacterial)	0	0.0	0	0.0	6	0.5
Kawasaki Disease	0	0.0	2	0.2	0	0
Mumps	0	0.0	0	0.0	0	0
Pertussis	158	14.4	300	26.8	159	14.1
Plague	0	0.0	0	0.0	0	0
Polio	0	0.0	0	0.0	0	0
Psittacosis	0	0.0	0	0.0	0	0
Rocky Mountain Spotted Fever (RMSF)	0	0.0	0	0.0	0	0
Rubella (congenital)	0	0.0	0	0.0	0	0
Salmonellosis	110	10.0	120	10.7	131	11.6
Severe Acute Respiratory Syndrome (SARS)	0	0.0	0	0.0	0	0
Shigellosis	11	1.0	15	1.3	642	56.9
Smallpox	0	0.0	0	0.0	0	0
Streptococcus pneumoniae, invasive	113	10.3	125	11.2	51	4.5
Streptococcal disease-group A, invasive	28	2.6	35	3.1	38	3.4
Streptococcal disease-group B (perinatal)	9	0.8	6	0.5	8	0.7
Streptococcal toxic shock syndrome (STSS)	n/a	n/a	2	0.2	0	0
Syphilis*	103	9.4	195	17.4	280	24.8
Tetanus	0	0.0	0	0.0	0	0
Tuberculosis (TB)*	85	7.8	78	7.0	61	5.4
Tularemia	0	0.0	0	0.0	0	0
Typhoid Fever	3	0.3	1	0.1	2	0.2
Varicella*	125	11.4	57	5.1	15	1.3
Vibriosis	1	0.1	1	0.1	1	0.1
Yersiniosis	9	0.8	8	0.7	4	0.4
Yellow Fever	0	0.0	0	0.0	0	0

***Notes on specific diseases and rates:**

- Varicella: became a Class A reportable disease January 1, 2006. Prior to 2006, varicella was a Class B reportable disease, reported in aggregate form on a weekly basis
- Chlamydia, Gonorrhea, Syphilis, TB and HIV/AIDS data are from separate ODH sources.
- Syphilis numbers include primary and secondary cases only.
- Disease totals and calculated disease rates are limited to confirmed cases. Suspects and probable cases are not included.
- Population estimates obtained from the United States Census Bureau for each year were used in annual rate calculations. Case rate is per 100,000 people.

Campylobacteriosis - 2008



Number of cases: 93

Franklin County rate
 8.2 per 100,000

Age of cases

Mean: 36.3 years

Median: 38 years

Range: 10 months – 85 years

Rate by sex

Female: 4.1 per 100,000

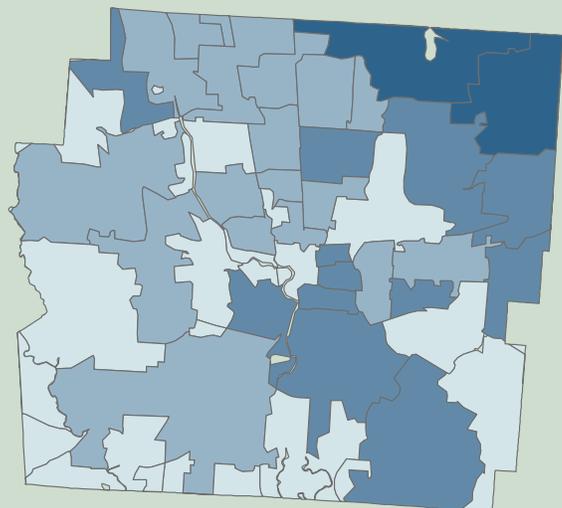
Male: 4.1 per 100,000

BACKGROUND

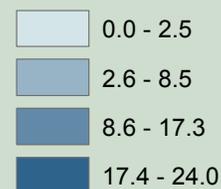
Campylobacteriosis is an acute enteric disease characterized by diarrhea, malaise, abdominal pain, fever, nausea and vomiting. The disease, caused by *Campylobacter* bacteria, has an onset within two to five days after exposure to the organism and commonly lasts another two to five days. People can spread the disease for several days to several weeks after they are infected. However, the period of communicability can be shortened to a few days by providing effective treatment, which may include rehydration and electrolyte replacement.

People can become infected with *Campylobacter* by handling raw chicken, eating undercooked poultry or drinking unpasteurized milk. Transmission occurs most commonly by ingestion of the infectious agents in undercooked poultry and pork, and by contact with infected infants, pets, or farm animals. Water streams and wells contaminated with animal feces may also pose a hazard. *Campylobacter* contamination can be prevented by thoroughly cooking all animal-derived foods, especially those from poultry. Cross-contamination can be avoided by hand washing after handling animals or raw poultry and thoroughly washing cutting boards and utensils with soap after contact with food.

Figure 2
Franklin County Zip Codes
Incidence Rates



Number of New Cases per 100,000



Source: Ohio Disease Reporting System
 See technical notes for details.

Cryptosporidiosis - 2008

Number of cases: 313

Franklin County rate
27.7 per 100,000

Age of cases

Mean: 14.5 years

Median: 8 years

Range: 5 months – 85 years

Rate by sex

Female: 13.4 per 100,000

Male: 13.4 per 100,000

Figure 3
Cryptosporidiosis Cases in Franklin County
Incidence Rates per 100,000, 2006-2008

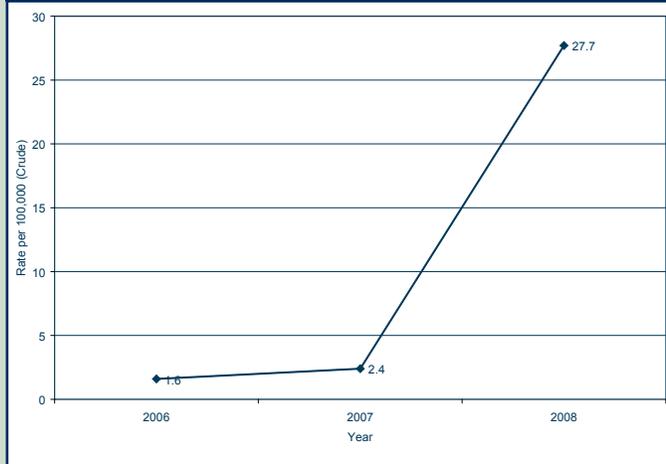
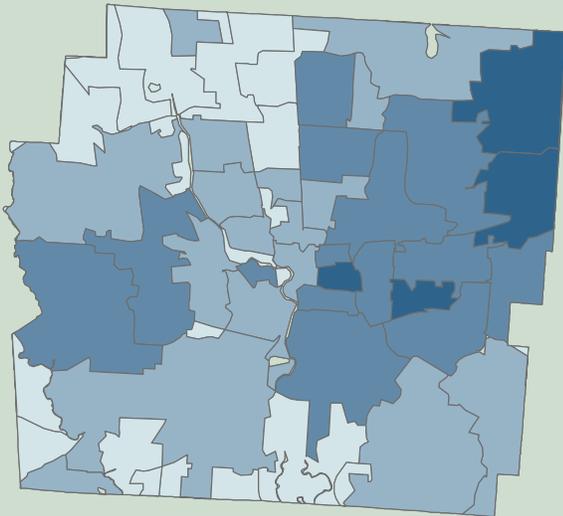
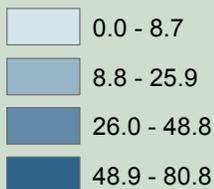


Figure 4
Franklin County Zip Codes
Incidence Rates



Number of New Cases per 100,000



Source: Ohio Disease Reporting System
See technical notes for details.

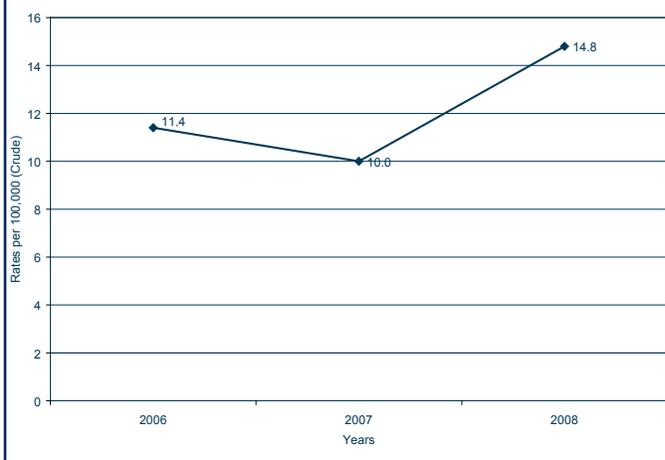
BACKGROUND

Cryptosporidiosis is a diarrheal disease caused by microscopic parasites of the genus *Cryptosporidium*. Both the disease and the parasite are commonly known as "Crypto." Many species of *Cryptosporidium* exist that infect humans and a wide range of animals. The parasite is protected by an outer shell that allows it to survive outside the body for long periods of time and makes it very resistant to chlorine disinfection.

While this parasite can be transmitted in several different ways, water is a common method of transmission and *Cryptosporidium* is one of the most frequent causes of waterborne disease (drinking water and recreational water) among humans in the United States.

Giardiasis - 2008

Figure 5
Giardiasis Cases in Franklin County
Incidence Rates per 100,000, 2006-2008



Number of cases: 167

Franklin County rate

14.8 per 100,000

Age of cases

Mean: 17.3 years

Median: 10 years

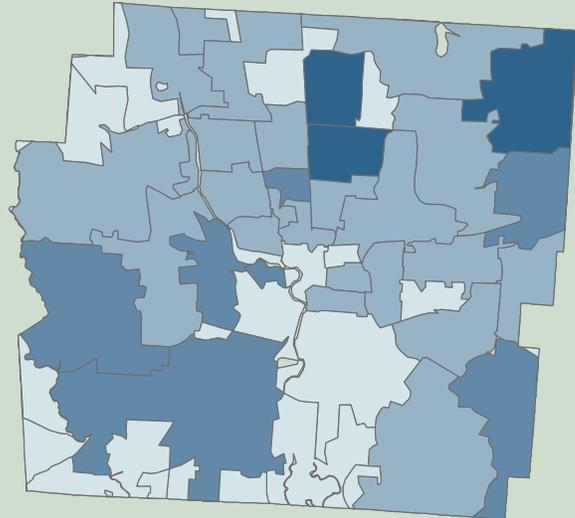
Range: 3 months – 73 years

Rate by sex

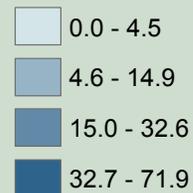
Female: 6.6 per 100,000

Male: 8.2 per 100,000

Figure 6
Franklin County Zip Codes
Incidence Rates



Number of New Cases per 100,000



BACKGROUND

Giardiasis is a diarrheal illness caused by a one-celled, microscopic parasite, *Giardia lamblia*. Once an animal or person has been infected, the most common symptoms are chronic diarrhea, abdominal cramps, bloating, and loose, pale, greasy stools. Symptoms appear 1-2 weeks after exposure to the protozoan. Asymptomatic infections and prolonged shedding in the feces are common. The principal modes of spread include transmission through the fecal-oral route, person-to-person, especially in institutions and day care centers, and animal-to-person.

Source: Ohio Disease Reporting System
 See technical notes for details.

Legionellosis - 2008

Number of cases: 65

Franklin County rate

5.8 per 100,000

Age of cases

Mean: 60.2 years

Median: 60 years

Range: 19 years – 93 years

Rate by sex

Female: 2.5 per 100,000

Male: 3.3 per 100,000

Figure 7
Legionellosis Cases in Franklin County
Incidence Rates per 100,000, 2006-2008

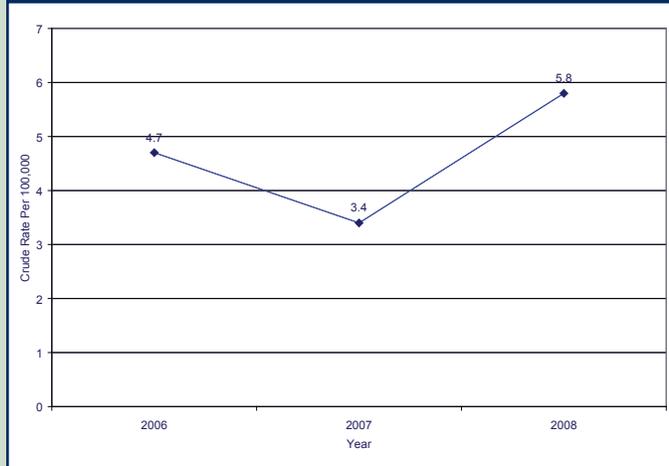
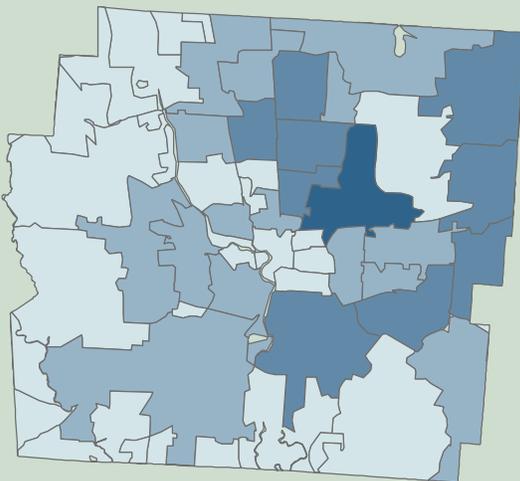
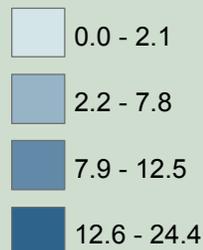


Figure 8
Franklin County Zip Codes
Incidence Rates



Number of New Cases per 100,000



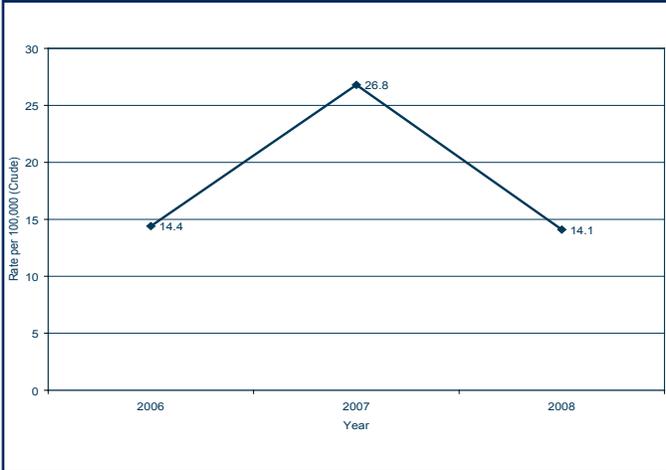
Source: Ohio Disease Reporting System
See technical notes for details.

BACKGROUND

Legionnaires' disease, a type of pneumonia (lung infection), is caused by a bacteria called Legionella. The bacteria got its name in 1976, when many people who went to a Philadelphia convention of the American Legion suffered from an outbreak of the disease. Although this type of bacteria has been around since before 1976, more illness from Legionnaires' disease is being detected now. This is because clinicians are now looking for this disease whenever a patient has pneumonia. Legionellosis infection normally occurs after breathing in a mist or vapor (small droplets of water in air) containing *Legionella* bacteria

Pertussis - 2008

Figure 9
Pertussis Cases in Franklin County
Incidence Rates per 100,000, 2006-2008



Number of cases: 159

Franklin County rate

14.1 per 100,000

Age of cases

Mean: 10.3 years

Median: 9 years

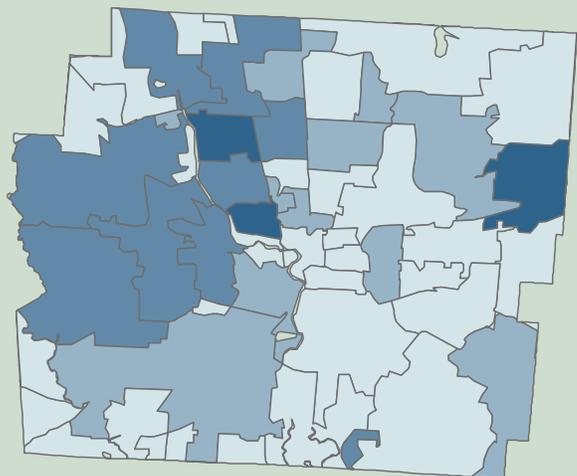
Range: 1 month – 54 years

Rate by sex

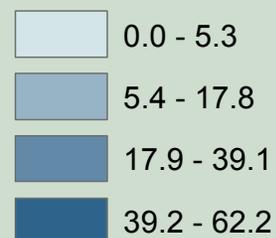
Female: 7.5 per 100,000

Male: 6.6 per 100,000

Figure 10
Franklin County Zip Codes
Incidence Rates



Number of New Cases per 100,000



Source: Ohio Disease Reporting System
 See technical notes for details.

BACKGROUND

Pertussis, also known as whooping cough, is a highly contagious bacterial infection of the respiratory tract caused by the bacterium *Bordetella pertussis*. Pertussis causes violent spells of coughing that may be followed by difficulty in breathing, vomiting, or “whooping”. Transmission of pertussis occurs primarily by aerosol droplet and is most easily transmitted in the period starting 7 days after exposure to three weeks after the onset of spasmodic coughing. Seventy to ninety percent of susceptible household and other close contacts of a person with pertussis will develop the disease within 7 to 14 days, commonly 5 to 10 days. The disease may last up to 3 months and be complicated by pneumonia, seizures, or encephalopathy.

In recent years, the median age of cases has been on the rise. This is in part because immunity induced by vaccine wanes 6 to 10 years after complete childhood vaccination. Therefore, adolescents and adults are susceptible to infection and transmission. Since 2005, a booster shot has been recommended for individuals starting at age 11. Adolescents and adults need to be revaccinated, even if they were completely vaccinated as children. This is especially important for families with new infants.

Salmonellosis - 2008

Number of cases: 131

Franklin County rate

11.6 per 100,000

Age of cases

Mean: 28.1 years

Median: 26 years

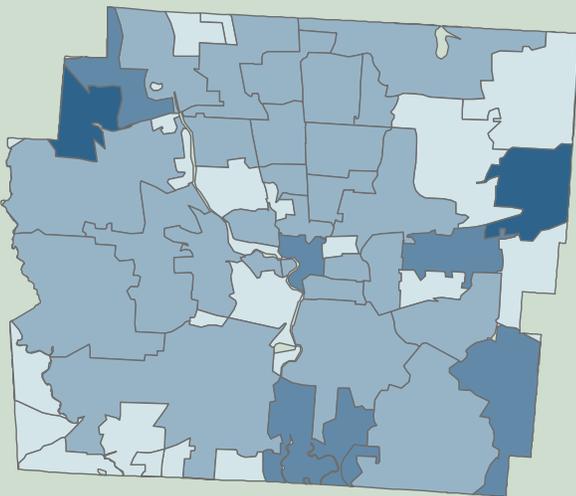
Range: 3 months – 83 years

Rate by sex

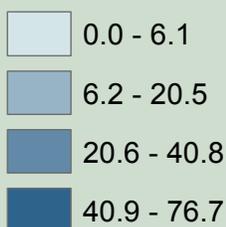
Female: 6.1 per 100,000

Male: 5.5 per 100,000

Figure 12
Franklin County Zip Codes
Incidence Rates

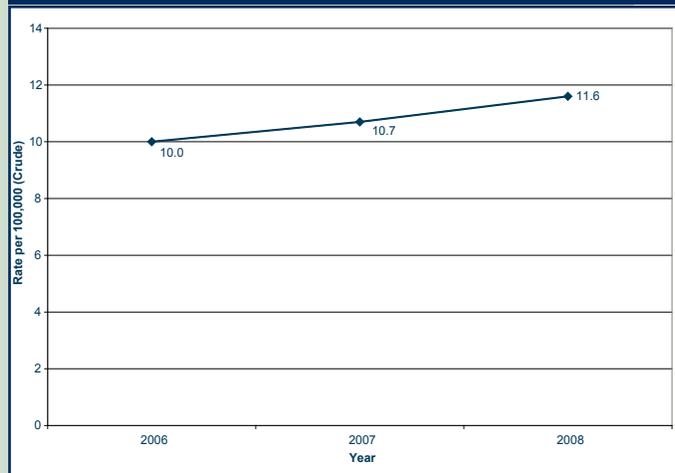


Number of New Cases per 100,000



Source: Ohio Disease Reporting System
See technical notes for details.

Figure 11
Salmonellosis Cases in Franklin County
Incidence Rates per 100,000, 2006-2008



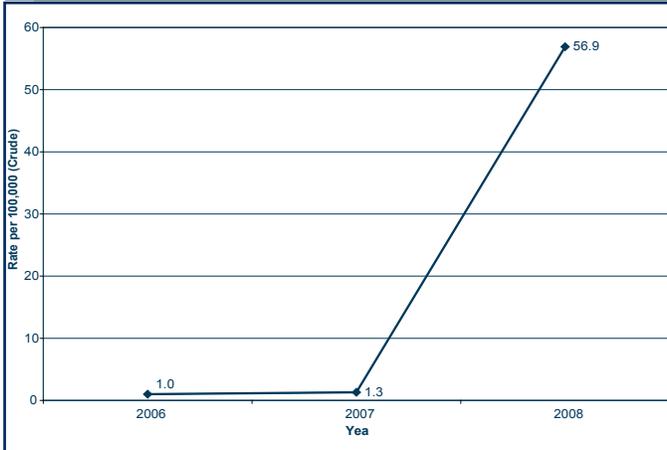
BACKGROUND

Salmonellosis is a bacterial illness characterized by acute abdominal pain, diarrhea, and often fever that begins 12 hours to 5 days after infection. The majority of human infections are thought to result from the ingestion of fecally contaminated food or water. Undercooked or raw products of animal origin such as eggs, milk, meat, and poultry have been implicated as common sources of human salmonellosis. A wide range of domestic and wild animals are carriers of *Salmonella*, including poultry, swine, cattle, rodents, iguanas, tortoises, turtles, terrapins, chicks, dogs and cats. Though uncommon, person-to-person spread can occur in humans — via acutely ill patients, convalescent carriers and, especially mild and unrecognized cases. The incidence of infection is highest in infants and young children.

Salmonella contamination can be prevented by thoroughly cooking all animal-derived foods, especially those from poultry. Cross-contamination can be avoided by hand washing after handling animals or raw poultry and thoroughly washing cutting boards and utensils with soap after contact with food.

Shigellosis - 2008

Figure 13
Shigellosis Cases in Franklin County
Incidence Rates per 100,000, 2006-2008



Number of cases: 642

Franklin County rate

56.9 per 100,000

Age of cases

Mean: 13.5 years

Median: 6 years

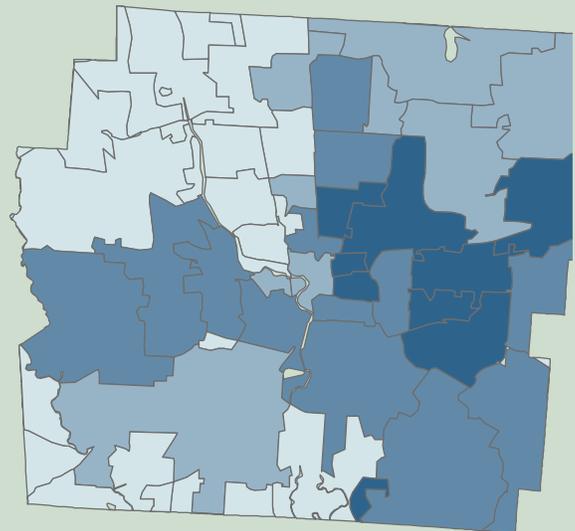
Range: 5 months – 63 years

Rate by sex

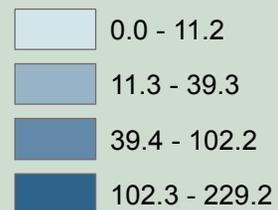
Female: 30.1 per 100,000

Male: 26.7 per 100,000

Figure 14
Franklin County Zip Codes
Incidence Rates



Number of New Cases per 100,000



Source: Ohio Disease Reporting System
 See technical notes for details.

BACKGROUND

Shigellosis is an infectious disease caused by a group of bacteria called *Shigella*. Most that are infected with *Shigella* develop diarrhea, fever, and stomach cramps starting a day or two after they are exposed to the bacteria. The diarrhea is often bloody. Shigellosis usually resolves in 5 to 7 days. A severe infection with high fever may be associated with seizures in children less than 2 years old. However, persons with shigellosis in the United States rarely require hospitalization. Some persons who are infected may have no symptoms at all, but may still pass the *Shigella* bacteria to others.

***E. coli* O157:H7 Multi-State Outbreak-Summer 2008**

On Monday, June 9, 2008, two *E. coli* O157:H7 cases, residing in Columbus, Ohio, were reported to the Columbus and Franklin County Communicable Disease Reporting System (CDRS) with onset dates of June 2nd and 4th, 2008. During this time, additional cases of *E. coli* O157:H7 were also reported in three neighboring central Ohio jurisdictions (Franklin County, Delaware County, and Fairfield County). On June 11th, the pilot EpiCenter community health monitoring system issued an alert for the Franklin County area based on hospital emergency department (ED) visits crossing the threshold for diarrhea symptoms during this time. The sudden

increase in *E. coli* O157:H7 reported cases within a limited geographic area and time span, plus the possibility of linked cases prompted both the Columbus Public Health (CPH) and the Franklin County Board of Health (FCBH) to activate the Outbreak Team to investigate the local cases and participate in a regional outbreak investigation. The goals of the local and regional outbreak investigation included, but were not limited to, identifying any linkages between local and regional cases, identifying the source of infection, and reducing the risk of infection due to *E. coli* O157:H7.

As part of this multi-state outbreak, there were six confirmed, Pulse Field Gel Electrophoresis (PFGE) matched cases of *E. coli* O157:H7 residing in City of Columbus jurisdiction and a total of five confirmed in Franklin County jurisdiction. PFGE is a technique used in DNA fingerprinting. Six additional *E. coli* O157:H7 cases were investigated, but did not fit the case definition and were ruled out as part of the outbreak. The ages of the cases ranged from 4 to 78 years old, with a mean of 26.3 years and a median of 19 years. Fifty-five percent of the cases were female. The onset dates ranged from June 2-20, 2008. Among those with symptom information, the most prevalent symptoms included diarrhea (10/10, 100%), abdominal cramps (9/10, 90%), and headache (6/10, 60%). Six of the eleven cases had hospitalizations associated with their illnesses. Incubation period calculations could not be made due to the inability to identify exact ground beef exposure dates. Additionally, duration of illness calculations were hampered by long hospitalizations and the absence of well dates.

Through epidemiologic and laboratory evidence, the *E. coli* O157:H7 illnesses were linked to consuming tainted ground beef supplied and distributed by Nebraska Beef, Ltd. and sold/purchased at Kroger® stores. The epidemiologic and laboratory evidence led to two separate national recalls of ground beef products: one from Kroger® on June 25th, and one from Nebraska Beef, Ltd. on June 30th, both of which were expanded at later dates.

E. coli O157:H7 is an enterohemorrhagic strain of the bacterium *Escherichia coli* and a cause of foodborne illness. A major source of infection is undercooked ground beef; other sources include consumption of unpasteurized milk and juice, raw produce (e.g. sprouts or lettuce), salami, and contact with infected live animals. *E. coli* O157:H7 infection often causes severe, acute bloody diarrhea (although non-bloody diarrhea is also possible) and abdominal cramps. Usually little or no fever is present, and the illness resolves in 5 to 10 days. It can also be asymptomatic. The incubation period is usually 3-5 days; however, the range can be from 10 hours to 9 days.

Timeliness of Disease Reports

According to the Ohio Infectious Disease Manual, "Surveillance is a comprehensive process which includes suspicion of an infectious disease, confirmation of disease, disease reporting, case investigation, prevention and control to limit the spread of disease. The ultimate goal of the process is to protect and improve the health of the public, using the knowledge of incident cases to prevent the spread of disease and ultimately, eliminate some diseases entirely."

Timeliness of disease reports is a key factor in achieving the goal. In order to reduce the burden of disease in our community and to implement appropriate interventions, the public health system relies on healthcare providers and laboratories for identification of infectious diseases. Timeliness requirements for each reportable disease vary based on the communicability of the disease.

In the Ohio Disease Reporting System (ODRS) application, it is possible to query the date when a healthcare provider diagnoses an illness and when the local health department was able to receive notification of the illness, i.e., the date a case was entered into ODRS.

Table 2 lists selected diseases and how long it took (using median and mean number of days) for a disease to be reported to the local health department after a healthcare

Table 2. Franklin County Reportable Disease Lag Time between the Healthcare Provider Diagnosis and Date Entered into ODRS for Selected Diseases, 2008

Reportable Condition	Reporting Requirement	Number of Confirmed Cases	Median (days)	Mean (days)	Missing Diagnosis Dates
E. coli O157:H7	By end of next business day	29	3	3	83%
Hepatitis A	By end of next business day	10	2	4	60%
Measles	Immediately	0	n/a	n/a	n/a
Meningococcal disease	Immediately	3	3	8	67%
Mumps	By end of next business day	0	n/a	n/a	n/a
Pertussis	By end of next business day	159	2	4	60%
Rubella	Immediately	0	n/a	n/a	n/a
Salmonellosis	By end of next business day	131	4	6	80%

Notes:

Reporting Lag = (ODRS Entry Date - Diagnosis Date)

"Diagnosis Date" defaulted to the following date fields (in order) if blank: lab specimen collect date, lab result date, onset date, LHD report date, ODH report date.

Timeliness of Disease Reports

provider diagnosis. In 2008, E. coli, Hepatitis A, Mumps, Pertussis and Salmonellosis were Class A (2) reportable conditions required to be reported by the end of the next business day after the existence of a case is known. Measles, Meningococcal disease and Rubella were Class A (1) reportable conditions, due to their severity and the potential for epidemic spread; therefore, they are required to be reported immediately via telephone if a case, suspect case or a positive laboratory result exists.

Analyses of the reporting lag (i.e., time between the diagnosis date and the ODRS entry date) show that reporting requirements were not met for any of the selected diseases in Table 2. From 2007 to 2008, it should be noted that the median and mean lags for Franklin County improved for some diseases (*E.coli* O157:H7 and Hepatitis A), while lag times for other diseases were unchanged (Meningococcal, Pertussis and Salmonellosis).

As shown in the notes for Table 2, the reporting lag is defined as the difference between the diagnosis date and when the case was entered into ODRS. If the diagnosis date field was empty, a proxy date was used. These fields were used (in this order) as the proxy: lab specimen collect date, lab result date, onset date, date reported to the local health department, and date reported to ODH. The diagnosis date field was blank (and a proxy date needed) for a minimum of 60% of cases up to a maximum of 83% of cases.

CPH and FCBH will periodically monitor the reporting lag times for these diseases. Regular monitoring will help with two key issues: late reporters and missing data. If specific reporters are found to be contributing to longer lags, this information will be shared with them, challenges to timely reporting will be identified and addressed, and closer monitoring of reports will follow. Additionally, filling in missing or incorrect dates is easier if caught before a data year is finalized.

Technical Notes

The Ohio Administrative Code 3701-3-02, 3701-5-05, and 3701-3-12 requires by law that communicable diseases be reported to local health departments. Reportable diseases are grouped by class. All the diseases in this summary are class A, which is defined as: Disease of major public health concern because of the severity of disease or potential for epidemic spread.

Case criteria and definitions

For nationally reportable diseases, case definitions are determined by the Council of State and Territorial Epidemiologists (CSTE) in conjunction with the CDC and are published in the MMWR [1997; 46(RR-10)].

In Ohio, case definitions can be found in the Infectious Disease Control Manual (<http://www.odh.ohio.gov/healthresources/infectiousdiseasemanual.aspx>)

Diseases not included in the table

There were no confirmed cases in Franklin County of the following Class A reportable diseases; therefore, they were not included in the table: Creutzfeldt-Jakob disease, coccidioidomycosis, Q fever, rabies, Reye syndrome, rheumatic fever, rubella (not congenital), *Staph aureus* (VRSA, VISA), toxic shock syndrome (TSS), toxoplasmosis, and trichinosis. Class B and C reportable diseases are also not included in the table.

Notes on reporting systems

Data are from the Ohio Department of Health and the Communicable Disease Reporting system (CDRS, a joint effort between Columbus Public Health Department and the Franklin County Board of Health). Cases of sexually transmitted diseases, tuberculosis, AIDS, and HIV have separate reporting systems. Cases may have been excluded due to the reporting time, onset date, or when the supplemental information was received.

The ODRS was developed to make disease reporting more timely and efficient for disease reporters (e.g. hospitals, laboratories and physicians), and to improve communication about infectious diseases between disease reporters, local health departments, and ODH. Currently, only Local Health Departments and ODH have the ability to enter and update case and laboratory reports into ODRS. As of June 2007, infection control practitioners, laboratories and physician offices are able to enter case and lab reports into ODRS, and the system uses the patient's address to determine the correct local health jurisdiction in which to electronically send the report for follow-up and investigation. On May 2006, some laboratories and hospitals were given the ability to electronically up-load batches of reports from their databases into ODRS, minimizing paperwork and re-entry. If a disease report is inadvertently assigned to an incorrect health jurisdiction, the health department receiving the report can re-direct it to the correct one. Updates to information can be made to the record in the database, and eventually all fields in the ODH and CDC reporting forms will be included in ODRS.

Notes on Mapped Data

ZIP code-level incidence rates are highly variable and should be interpreted with caution.

References

Centers for Disease Control and Prevention -National Center for Immunization and Respiratory Diseases, National Center for Emerging and Zoonotic Infectious Diseases, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention

The Ohio Department of Health Infectious Disease Control Manual:

<http://www.odh.ohio.gov/healthResources/infectiousDiseaseManual.aspx>

Evaluation of Reporting Timeliness of Public Health Surveillance Systems for Infectious Diseases:

Ruth Ann Jajosky and Samuel L Groseclose

Published online at BioMed Central, 2004 July 26. doi: 10.1186/1471-2458-4-29. PMCID: PMC50925

<http://www.biomedcentral.com/content/pdf/1471-2458-4-29.pdf>