IOWA DEPARTMENT OF PUBLIC HEALTH

DIVISION OF ACUTE DISEASE PREVENTION AND EMERGENCY RESPONSE
DIVISION OF ENVIRONMENTAL HEALTH
DIVISION OF BEHAVIORAL HEALTH

Iowa Surveillance of Notifiable and Other Diseases

Annual Report 2012

Iowa Department of Public Health
Promoting and Protecting the Health of Iowans

Mariannette Miller-Meeks, BSN, MEd, MD
Director

Gerd W. Clabaugh, MPA
Deputy Director/ADPER Director

Patricia Quinlisk, MD, MPH
State Medical Director/State Epidemiologist

Ann Garvey, DVM, MPH
State Public Health Veterinarian/Deputy State Epidemiologist

Primary Authors
The following Center for Acute Disease Epidemiology staff are the primary authors of this report:
Yumei Sun, PhD
Diana Von Stein, MPH
Ann Garvey, DVM, MPH

Contributing Authors and Editors

Iowa Department of Public Health
Medical Director/State Epidemiologist
Patricia Quinlisk, MD, MPH

Division of Acute Disease Prevention and Emergency Response (ADPER)
Deputy Director/Division Director
Gerd W. Clabaugh, MPA

Bureau of Immunization and TB
Don Callaghan (Bureau Chief)
* Allan Lynch

Center for Acute Disease Epidemiology
Gerd W. Clabaugh, MPA (Bureau Chief)
Carrie Stief, A.A.S.
John Satre, BS
Mary Rexroat, RN, BS
Chris Galeazzi, MPH
Matt Hobson, MA
Rob Ramaekers, MPH, CPH
Denyse Gipple, MPH, CIC, CPH
Shawnice Cameron
Chris Tate, MPH
Kemi Oni, MPH
Nancy Wilde, BS, LPN

Division of Environmental Health
Division Director
Ken Sharp, MPA

Bureau of Environmental Health Services
Carmily Stone, MPH, CP-FS (Bureau Chief)
* Tim Wickam, MPH

Bureau of Lead Poisoning Prevention
Ken Sharp, MPA (Bureau Chief)
* Rita Gergely, M.Ag.
* Kathy Leinenkugel, MPA, REHS, MT

Division of Behavioral Health
Division Director
Kathy Stone, MBA

Bureau of HIV, STD, and Hepatitis
Randy Mayer, MS, MPH (Bureau Chief)
* Jerry Harms, MPH, CART
* George Walton, MPH, MLS (ASCP)^{cm}
* Alagie Jatta, MS
* Shane Scharer, MS

Document Review
Louise Lex, PhD

***Denotes direct program-specific data and text contribution and editorial review**

Contents

FIGURES

TABLES

Executive Summary

Promoting and protecting the health of Iowans is the mission of the Iowa Department of Public Health (IDPH). Surveillance of notifiable health conditions is essential in establishing what, how, and when events impact the public's health. Multiple divisions and bureaus are dedicated to accomplishing the goals of surveillance. In 2012, in addition to 850 cases reported with no lab results, there were more than 79,000 laboratory results of infectious diseases and conditions submitted to IDPH disease surveillance programs. IDPH also investigates non-infectious conditions related to lead, occupational, and environmental hazards like carbon monoxide. Approximately 100,000 blood lead test results were reported to IDPH in 2012.

Crucial partners contributing to the surveillance and reduction of disease include the State Hygienic Laboratory (SHL) at the University of Iowa, city and county public health agencies, and health professionals.

In 2012, the number of the vaccine-preventable diseases decreased when compared to the previous three-year average (2009-2011); however, the number of pertussis cases increased significantly. In 2012, there were 1,736 cases of pertussis reported to IDPH, a 344 percent increase over the three-year average of 391 cases. In addition, the 2012-2013 influenza season in Iowa began earlier than usual and was more severe than in 2011-12 (a particularly late and mild season).

Enteric diseases like salmonellosis, shigellosis, *E. coli* and other shiga-toxin-producing bacterial infections increased when compared to the previous three year average, while campylobacteriosis, giardiasis, cryptosporidiosis, and listeriosis decreased.

Diseases spread via insects and other vectors continue to impact Iowans. In 2012, there was a notable number of these diseases reported to IDPH including Dengue fever, ehrlichiosis/anaplasmosis, hantavirus, Lyme disease, malaria, Rocky Mountain spotted fever, and West Nile virus. Of these diseases detected, Lyme disease and West Nile virus had significant increases when compared to the previous three year average.

While the number of gonorrhea diagnoses remains relatively stable, diagnoses of syphilis and chlamydial infections have increased. There were 120 Iowans diagnosed with human immunodeficiency virus (HIV) in 2012, three more cases than the average of 117 for the previous five years. The increase in HIV diagnoses is primarily among males, who account for 83 percent of all diagnoses since 2007. Half of all new HIV diagnoses occur in persons ages 25 through 44 years. However, it is important to note that diagnoses among persons 15 to 24 years of age have numbered 20 or more for the last four years. Twenty-two persons ages 15 to 24 years were diagnosed in 2012, a slight drop of five (19%) from the 27 diagnoses in 2011, and three times the diagnoses recorded in 2003. The data also continue to show a disproportionate number of diagnoses among non-Hispanic African-Americans and Hispanics. Non-Hispanic African-Americans were about three percent of Iowa's general population, but accounted for 25 percent of new HIV diagnoses. While making up five percent of Iowa's general population, Hispanics accounted for seven percent of new HIV diagnoses. The number of Iowans living with HIV or AIDS (HIV disease prevalence) continues to increase. As of December 31, 2012, there were 2,023 Iowans living with HIV or AIDS, a prevalence of 66 per 100,000 people. This compares to 1,939 on the same date in 2011, a prevalence of 64 per 100,000.

Great strides continue to be made in improving surveillance, which has affected public health policy changes. For example, childhood blood lead surveillance data continue to support the requirement for a child to have at least one blood lead test prior to kindergarten entry.

Table 1. Summary of common notifiable diseases 2009-2012 and percent change in number of cases reported compared to a three-year average

	2009	2010	2011	3-yr average 2009-2011	2012	Percent change†
	Number of cases ‡					
Campylobacteriosis	552	751	747	683	534	-21.9%
Chlamydia	9406	10542	10928	10292	11139	8.2%
Cryptosporidiosis	232	397	364	331	328	-0.9%
E. coli and other shiga-toxin producing	163	173	189	175	181	3.4%
Giardiasis	291	284	271	282	251	-11.0%
Gonorrhea	1658	1804	1966	1809	1982	9.5%
Hepatitis A	38	11	8	19	7	-63.2%
Hepatitis B, acute	38	15	15	23	12	-47.1%
HIV (new diagnoses)	125	115	119	120	120	0.3%
lead poisoning (child)	1434	1405	1244	1361	1089	-20.0%
lead poisoning (adult)	694	736	832	754	818	8.5%
Legionellosis	24	16	11	17	13	-23.5%
Listeriosis	4	3	5	4	3	-25.0%
Lyme disease	108	87	100	98	165	67.8%
Meningococcal invasive disease	16	10	14	13	2	-85.0%
Mumps	15	38	8	20	6	-70.5%
Pertussis (whooping cough)	235	705	232	391	1736	344.4%
Salmonellosis	408	530	448	462	622	34.6%
Shigellosis	53	57	18	43	91	113.3%
Syphilis	65	68	70	68	138	103.9%

†The percent change is calculated by subtracting the 3-year average from the total cases for 2012 and dividing by the absolute value of the 3-year average.

‡ Table includes all confirmed and probable cases.

There were also 53 outbreaks reported and investigated that affected more than 800 people in 2012. The most common implicated pathogen was norovirus, and the typical places where the outbreaks occurred include restaurants, long-term care/assisted living facilities, schools, and homes.

Approximately 540 Iowa Disease Surveillance System (IDSS) users reported diseases through IDSS in 2012; a system that receives electronic laboratory results on a daily basis. Iowa's surveillance systems are becoming increasingly streamlined, electronically and web-based, and interconnected.

The Iowa Department of Public Health would like to take this opportunity to thank all of its partners including those who work at local public health agencies, clinical laboratories, hospitals, clinics, long-term health care facilities, schools, as well as healthcare providers, infection preventionists and other health professionals for their continued support of disease surveillance in Iowa.

Introduction

The purpose of this report is to provide an overall snapshot of the types and trends of notifiable and other diseases that occur in Iowa. When possible, details specific to the disease are provided, including information on which serotypes, strains or groups were prevalent and which caused outbreaks. Comparisons to national rates are provided whenever possible. Aggregated county-level data are provided in a table at the end of the report. The report is intended for use by the public, media, public health, and health care.

The report is divided into the following sections: respiratory and vaccine-preventable diseases, sexually-transmitted diseases, human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS), hepatitis C, enteric diseases, zoonotic diseases, rare and unusual diseases, and environmental health conditions.

The Iowa Department of Public Health (IDPH) has six divisions and of those, three contributed disease data to this report, including Behavioral Health (BH), Acute Disease Prevention and Emergency Response (ADPER), and Environmental Health (EH). Two bureaus within ADPER are responsible for infectious disease investigation. They are the Center for Acute Disease Epidemiology (CADE) and the Bureau of Immunization and Tuberculosis (BIT).

CADE conducts surveillance for common and emerging infectious diseases, agents of bioterrorism, disease outbreaks, and occurrence of rare and unusual acute diseases. BIT conducts surveillance for tuberculosis and perinatal hepatitis B, as well as coordinates the immunization program for the state. Specific disease conditions are reportable to the department per Iowa Administrative Code 641, Chapter 1. The urgency tied to reporting varies by disease[1].

The Division of Environmental Health has three bureaus: Radiological Health, Lead Poisoning Prevention (LPP), and Environmental Health Services (EHS). Each bureau has distinct goals and objectives and is comprised of very diverse programs. Certain health conditions of environmental origin are required to be reported to IDPH per Iowa Administrative Code 641, Chapter 1. The content in this report includes data from EHS, which includes disease/outbreak surveillance with the EHS-Net program, as well as surveillance on carbon monoxide poisoning and methemoglobinemia. Data from the LPP include all reports of childhood and adult blood lead levels, reports of other heavy metal poisonings, pesticide poisonings, and fatal work-related injuries.

The Division of Behavioral Health includes the Bureau of HIV, Sexually Transmitted Disease (STD), and Hepatitis. This bureau prevents, identifies, monitors, and supports persons with HIV/AIDS, STDs, and viral hepatitis. Disease reporting and tracking are a large component of the work accomplished by this bureau, as is locating, counseling, and testing partners of persons with sexually transmitted diseases.

Public health emergency response planning plays a major role in preparing IDPH to respond to events of public health significance. Recently, the department used the incident management system in several events, including the severe weather in 2008 and the 2009 H1N1 pandemic. Preparedness planning at both the state and local levels has greatly improved the way public health responds to large-scale disease outbreaks.

This report provides an overview of disease investigations and represents only a fraction of work accomplished by IDPH staff each year. The time invested in each disease report varies greatly by disease

and nature of the report. Some reports require a quick database query and update of an electronic file. Others require hours of staff time in contact tracing, mentoring and assisting other health investigators, and communication, education, and implementation of interventions.

Support for the initiatives of the ADPER and EH divisions come from a variety of federal and state allocations and grants. The TB, STD, and HIV/AIDS surveillance programs are funded under separate cooperative agreements with the Centers for Disease Control and Prevention (CDC) and the National Center for HIV/AIDS, Viral Hepatitis, STD and TB Prevention.

Methods

Disease reports are submitted to IDPH via phone, fax, mail, or a secure electronic reporting system. Reporters include health care providers, hospitals, local public health agencies, laboratories, and the public. CADE tracks reports of disease in Iowa residents; however acquisition or exposure to some illnesses may have occurred in Iowa, in another state, or outside of the United States.

Reports received by CADE are tracked in the secure web-based Iowa Disease Surveillance System (IDSS). De-identified data are electronically exchanged between IDSS and CDC. Electronic laboratory reports are sent from the State Hygienic Laboratory (SHL) at the University of Iowa directly to IDPH via IDSS daily.

Cases of acute infectious disease are typically referred to local public health agencies for patient investigations and interviews. Agencies primarily use IDSS to report information back to IDPH. Local public health agencies are also critical in conducting outbreak investigations. These agencies work to identify, investigate, and contain outbreaks at the city and county level.

A few diseases require a secondary reporting system used by IDPH in transmitting data to program-specific staff at CDC. These diseases include influenza and West Nile virus. The National Outbreak Reporting System (NORS) is a CDC-sponsored system used by IDPH to report outbreaks.

Rates were calculated using the 2010 census population for the State of Iowa or the appropriate estimated census year. Five-year average values used in the graphs in the summary of enteric disease were calculated by adding two standard deviations to the five-year average. Calculations were performed with SPSS® 16, SAS® 9.3, and Microsoft® Excel. Maps were generated using ARC GIS ®.

CADE uses the most recent Council of State and Territorial Epidemiologists (CSTE)/CDC case definitions found at www.cdc.gov/epo/dphsi/casedef/case_definitions.htm. CSTE/CDC definitions are used to classify each case as confirmed, probable, suspect, not a case, or awaiting more information. Only confirmed and probable cases meeting the CSTE/CDC definitions are included in this report.

Disease case counts and Iowa-specific case demographics were retrieved from IDSS, which is maintained within CADE. The specific file used for this report was created in April 2012. Case reports and additional information received after this date that may have altered the disease counts were not included in this report. In addition, the data file was generated using MMWR (Morbidity Mortality Weekly Report) year 2012. Therefore, case counts in this report may vary slightly from counts generated using the calendar year of 2012.

Influenza surveillance data were collected from multiple sources, including outpatient health care providers, hospitals, public health, clinical laboratories, and schools. Laboratory-confirmed influenza cases were largely based on real-time polymerase chain reaction (RT-PCR) test results sent from SHL. Percent of outpatient visits attribute to influenza-like illness (ILI) were reported from health care

providers that participated in the U. S. outpatient Influenza-like Illness Surveillance Network (ILINet). Influenza-associated hospitalizations were reported from the sentinel hospitals that participated in the Iowa Influenza Surveillance Network (IISN).

Respiratory syncytial virus (RSV) rapid antigen test data are used to determine the weekly positive predictive value of the rapid antigen tests in Iowa. SHL surveyed clinical and reference labs throughout the state for the number of rapid-antigen tests performed and number positive weekly and sent the survey results to IDPH.

The surveillance case definitions for HIV, AIDS, STDs, and TB are those developed through the collaboration of the Council of State and Territorial Epidemiologists (CSTE) and the Centers for Disease Control and Prevention (CDC). Surveillance is conducted according to detailed guidelines developed by CDC. Several programs enter data into CDC-developed software programs. Programs transfer data via a secure data network on a weekly or monthly basis. HIV/AIDS data are collected in a CDC-developed software program called eHARS or the enhanced HIV and AIDS Reporting System.

For accuracy of analysis, and because jurisdiction for HIV and AIDS cases is determined by the person's residence at the time of diagnosis, great care is taken both within and between states to maintain unduplicated databases for HIV and AIDS.

With regard to HIV/AIDS surveillance, reports are generated semi-annually, and as needed. An epidemiological profile is produced every three years, with annual interim updates[2]. HIV/AIDS data analysis for this report used a combination of CDC's eHARS software, Microsoft® Excel, SAS®, and SAS® Enterprise Guide.

In 2010, the STD program began using IDSS for surveillance of syphilis, Chlamydia, and gonorrhea. Prior to 2010, the STD program entered data in a CDC database called STD*MIS or the STD Management Information System.

Environmental Heath began using IDSS in 2010 for surveillance of heavy metals, carbon monoxide, and methemoglobinemia. The results of blood lead testing done on all Iowa citizens are required to be reported to the Bureau of Lead Poisoning Prevention. Data are entered into the CDC database STELLAR. LPP exports data from STELLAR to CDC on a quarterly basis per programming developed by CDC. IDPH also analyzes STELLAR data on a quarterly basis. The analyses and reports are produced in Microsoft® Access and Microsoft® Excel.

Most disease-specific data are transmitted to CDC electronically on a routine basis after being de-identified. Some disease information is communicated at the request of CDC. The statistics reported by ADPER programs to CDC are used to develop a composite picture of disease burden in the US.

Summary of respiratory and vaccine-preventable diseases

HAEMOPHILUS INFLUENZAE B

Cases of *Haemophilus influenzae* type B (Hib), invasive disease are rare in Iowa and the US today. In 1991, Hib vaccine was recommended for all infants after age two months. Since then, the incidence of Hib in children less than five years of age has declined by greater than 99 percent. There were three cases of *Haemophilus influenzae* type B reported to IDPH in 2011, but there were no cases reported in 2012.

HEPATITIS A

See Summary Enteric Disease Section.

HEPATITIS B (ACUTE AND CHRONIC)

Hepatitis B is caused by infection with the Hepatitis B virus. Hepatitis B is usually spread when blood, semen, or another body fluid from a person infected with the Hepatitis B virus enters the body of someone who is not infected. This can happen through sexual contact with an infected person or sharing needles, syringes, or other drug-injection equipment. Hepatitis B can also be passed from an infected mother to her baby at birth.

Hepatitis B can be either acute or chronic. Acute hepatitis B virus infection is a short-term illness that occurs within the first six months after someone is exposed to the virus. Chronic hepatitis B virus infection is a long-term illness that occurs when the virus remains in a person's body. Chronic hepatitis B is a serious disease that can result in long-term health problems and even death.

A total of 12 cases or 0.4 cases for every 100,000 persons of acute hepatitis B were reported to CADE in 2012. Sixty-seven percent of the cases were males. Nationally, acute hepatitis B infections occur 1.8 times more often in men than in women.

The Centers for Disease Control and Prevention (CDC) estimates there were 43,000 new hepatitis B infections in the U.S. in 2007, and between 800,000 and 1.4 million people living with chronic hepatitis B disease in the US.

There were 227 confirmed or probable chronic hepatitis B cases reported in 2012 in Iowa. Fifty-five percent of the cases were females and 45 were males.

INFLUENZA

The Iowa Influenza Surveillance Network (IISN) tracks influenza activity, age groups impacted, outbreaks, virus type and strain, and severity of seasonal influenza. During the 2012-2013 season, over 250 surveillance sites reported to IISN, including medical clinics, hospitals, laboratories, schools, local public and health departments. IDPH analyzed the data reported from the surveillance sites and published the influenza weekly report during the season. To see the weekly report, visit www.idph.state.ia.us/IdphArchive/Archive.aspx?channel=FluReports

The 2012-2013 influenza season in Iowa started earlier and was more severe than in 2011-12 (a particular late and mild season). The first case of seasonal influenza was confirmed by the State Hygienic Laboratory (SHL) in September, 2012. Influenza activity increased in November and December and peaked in late December, 2012 (Figure 1-3). Flu seasons typically don't peak in Iowa until well after New Years. SHL identified three seasonal influenza viruses circulating in Iowa for the season - influenza A

(H3N2), influenza A (2009 H1N1) and influenza B. Influenza A (H3N2) viruses were predominant in Iowa, accounting for 76 percent of all positive influenza specimens tested. Nearly 1,000 hospitalizations were reported from 23 sentinel hospitals for the season and 52% of the hospitalizations were among people older than 64 years of age. The 2012-13 season had the highest number of hospitalizations since reporting began in 2006-2007. By comparison, there were only 119 hospitalizations during the mild flu season Iowa experienced in 2011-12.

Figure 1. Laboratory-confirmed cases of influenza reported to IDPH, 2012-2013

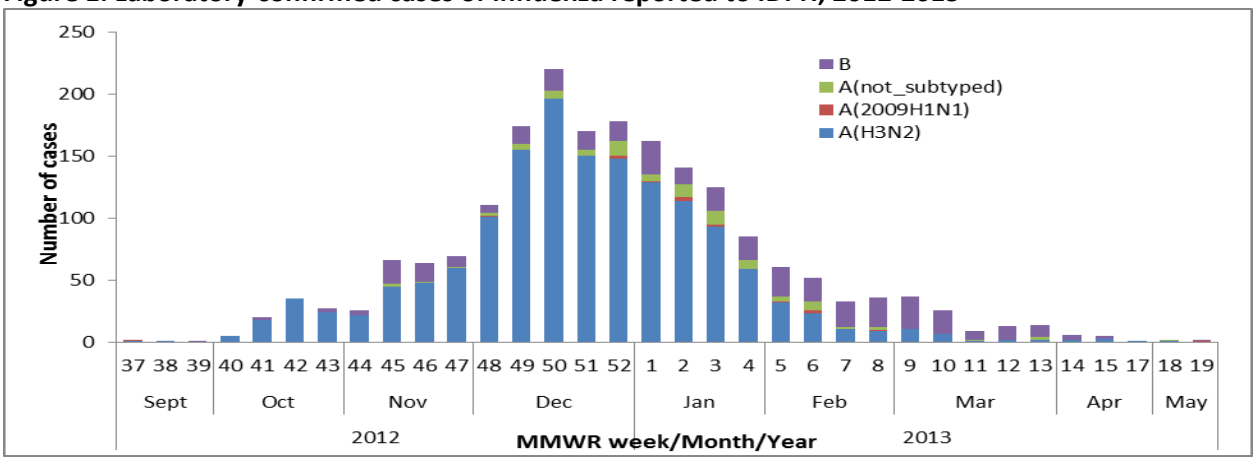


Figure 2. Percent of outpatient visits attribute to ILI reported from ILINet sites , 2009-2013

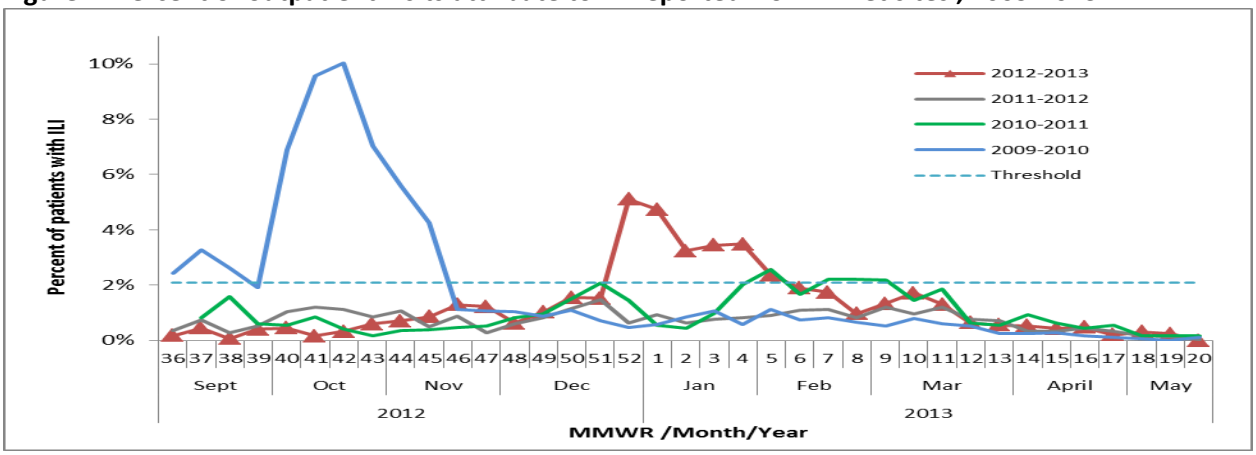
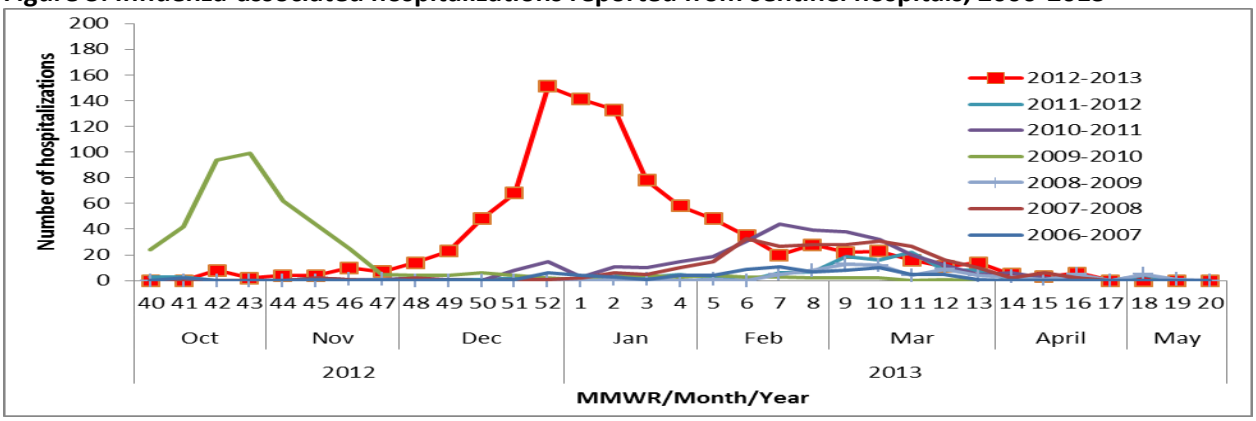


Figure 3. Influenza-associated hospitalizations reported from sentinel hospitals, 2006-2013



LEGIONELLOSIS

The average number of *Legionella* cases for the past three years is 17 cases. There were 13 cases of legionellosis reported to IDPH in 2012. More than half of the cases occurred in the eastern region of the state. Cases ranged from ages 24 to 73 with a median age of 56 years. All of the 13 cases were hospitalized and one died from the disease.

MEASLES

There was one confirmed case reported in 2011, but there were no cases of measles reported to IDPH in 2012.

MENINGOCOCCAL INVASIVE DISEASE

There were two confirmed cases of meningococcal invasive disease reported to IDPH in 2012, compared to 14 cases in 2011. One was 32 years old, and the other was 69 years old. Nationally, there are 0.36 cases for every 100,000 persons.

Of the two cases, one was group B and the other was undetermined (Table 2).

Table 2. Cases of meningococcal disease by serogroups, 2012

A	B*	C	W135	Y	Unk
0	1	0	0	0	1

*Serogroup B is not covered by the meningococcal vaccine

CDC defines a community-based outbreak of meningitis as the occurrence of three or more confirmed or probable cases during a period of less than or equal to three months among persons residing in the same area, are not close contacts of each other, and do not share a common affiliation, with a primary attack rate of at least 10 cases per 100,000 population[3]. There were no outbreaks in Iowa in 2012.

Meningococcal invasive disease is fatal in 10-14 percent of cases; however, no Iowa case was fatal in 2012. There are two types of meningococcal-vaccines currently licensed for use in the US: 1) a polysaccharide vaccine and 2) a conjugated vaccine.

MUMPS

In 2012, there were six cases of mumps or 0.2 cases per 100,000 persons, a 71 percent decrease over the previous three year average of 20. Case ages in 2012 ranged from one to 54 years with a median age of 33 years. There were no outbreaks in Iowa in 2012.

In 2006, Iowa was the center of the largest mumps outbreak in 20 years in the US with 1,963 confirmed and probable cases. Prior to 2006, most cases were typically imported from countries with endemic disease.

PERTUSSIS (WHOOPING COUGH)

Pertussis is caused by *Bordetella pertussis* and before the vaccine era typically causes epidemics every three to five years. In 2012, there were 1,736 confirmed and probable cases reported to IDPH or 57 cases for every 100,000 persons in Iowa, which accounts for a 344 percent increase in activity from the previous three-year average of 391 and had been at the highest level since 2003 (Figure 4).

Seventy percent of 2012 cases occurred in children ages 0 to 14 years. Three percent of pertussis cases were hospitalized, and no deaths were reported. The highest rates occurred in Fayette, Howard, Cerro Gordo, and Worth (Figure 5).

The most common symptoms are paroxysms (fits of coughing, 64%), followed by posttussive vomiting (29%), whooping (14%), and apnea (15%). Rare, but serious secondary conditions reported included pneumonia, encephalopathy, and seizures.

Figure 4. Number of pertussis cases reported to IDPH by month and year, 2003-2012

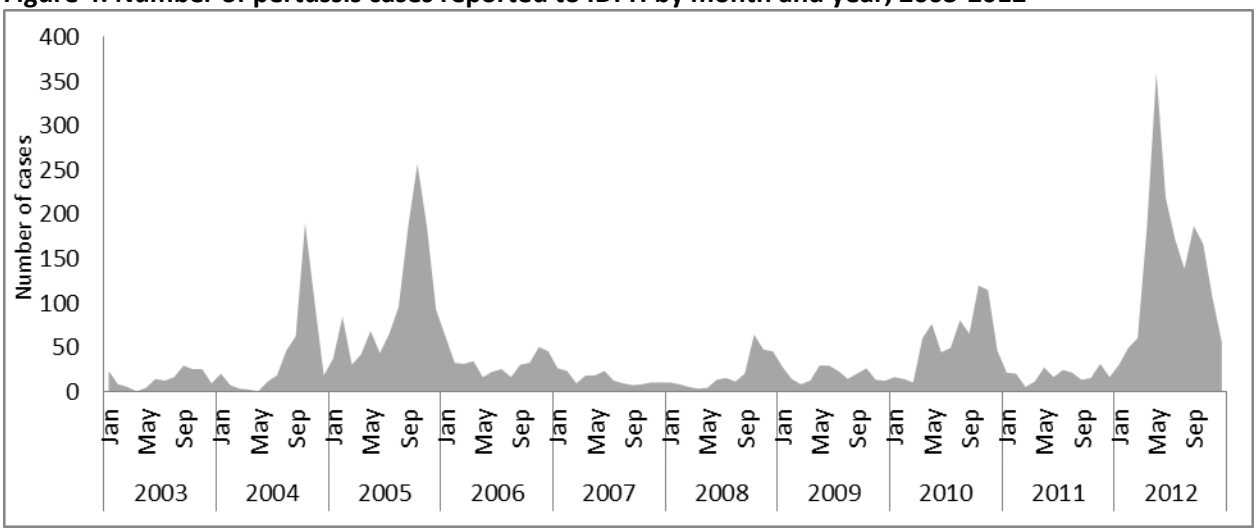
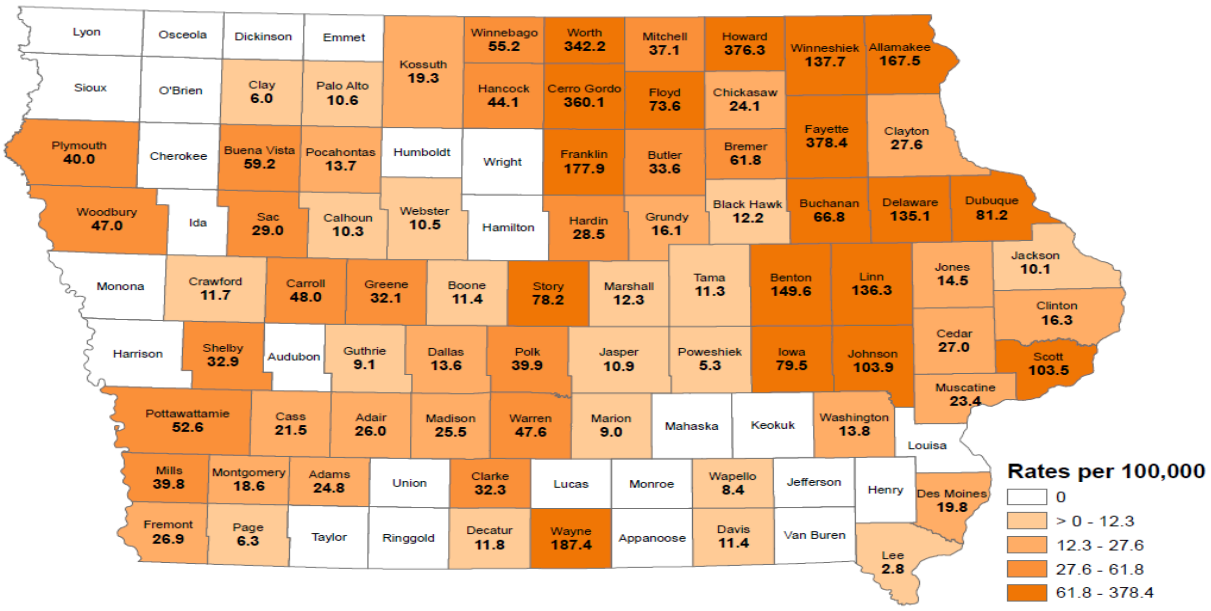


Figure 5. Pertussis rates by county, 2012

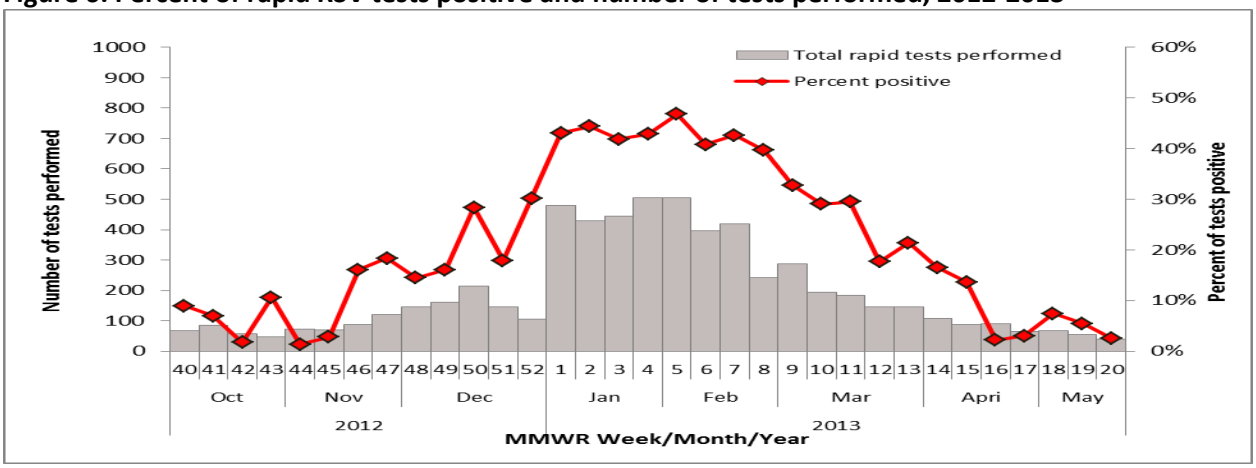


RESPIRATORY SYNCYTIAL VIRUS (RSV)

Sentinel surveillance for respiratory syncytial virus began in 2008. IDPH and SHL solicit rapid RSV test results from clinical and reference labs throughout the state to determine the percentage of positive test results of those performed (Figure 6). In addition, various labs including SHL report polymerase chain reaction (PCR) or culture confirmation of RSV as a means to verify the presence of RSV in Iowa. The CDC considers RSV widespread in the population when the percent of rapid antigen tests that are positive exceeds 10 percent. During the 2012-2013 season in Iowa, this occurred in mid-November, and the activity peaked in early February.

Nationally, RSV surveillance is conducted by CDC using data from the National Respiratory and Enteric Virus Surveillance System. Data are reported from sentinel laboratories throughout the US on a voluntary basis. Recent research has highlighted variability among different regions and states in the US[4].

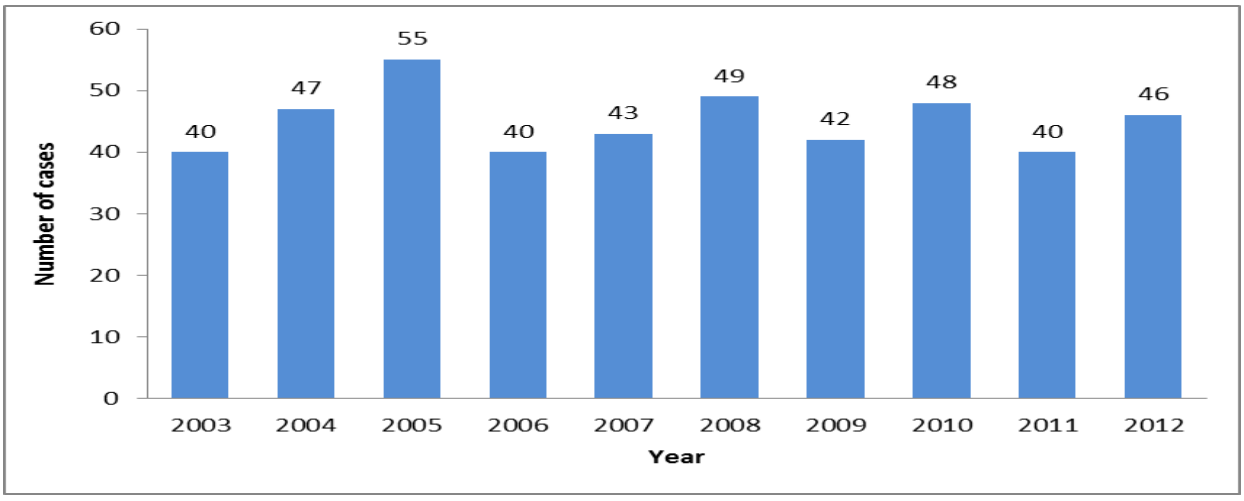
Figure 6. Percent of rapid RSV tests positive and number of tests performed, 2012-2013



TUBERCULOSIS (TB)

In 2012, Iowa reported 46 cases of active TB disease. Since 2003, Iowa averaged almost 45 cases of TB each year (Figure 7). Although case rates are declining, many cases have existing co-morbidities that make TB treatment considerably more complex and require extensive care, including the use of second line drugs. Treatment with second-line drugs is complicated and expensive, requiring expert consultation and extended treatment durations.

Figure 7. Number of Iowa TB cases by year, 2002-2012



Counties with larger population centers such as Polk, Woodbury, and Black Hawk report the majority of TB cases. However, as Figure 8 illustrates, many (52/99) Iowa counties reported TB cases during calendar years 2003-2012.

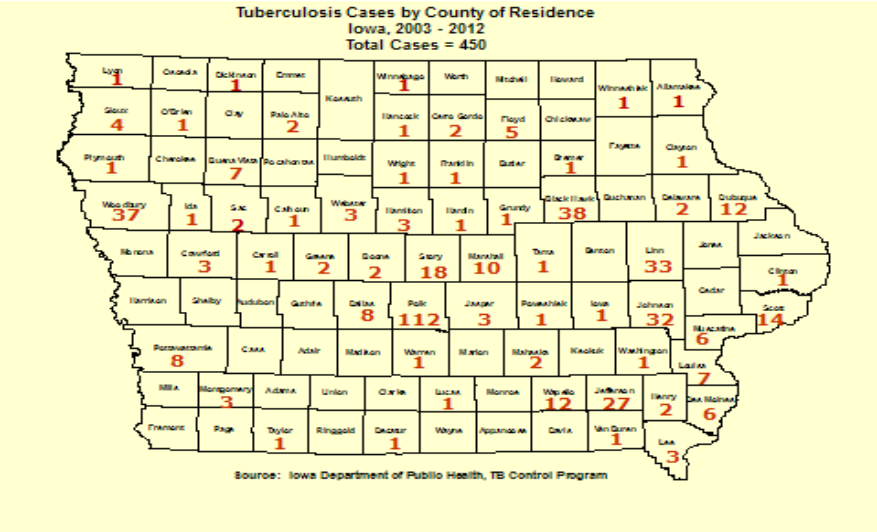


Figure 8. Iowa counties with TB cases 2003-2012

The 2012, TB case rate for Iowa is 1.5 cases per 100,000 persons. This is significantly lower than the national average of 3.2 cases per 100,000 persons. Iowa owes its low TB case rate in part to proficient contact investigations, health care providers' observance of treatment guidelines, adherence to the Directly Observed Therapy for active disease cases, and the provision of medication for latent TB infections to thousands of Iowans annually.

The proportion of reported TB cases in non-US-born persons has increased significantly in the past two decades. In 1995, for example, non-U.S. born persons accounted for 38 percent of reported TB cases Iowa. From 2003-2012, non-US born persons accounted for 67 percent of reported TB cases Iowa (Figure 9). Non-US-born persons account for only four percent of the Iowa population, highlighting the disparity. The decreasing numbers of US-born cases are due, in part, to effective TB control practices in this country.

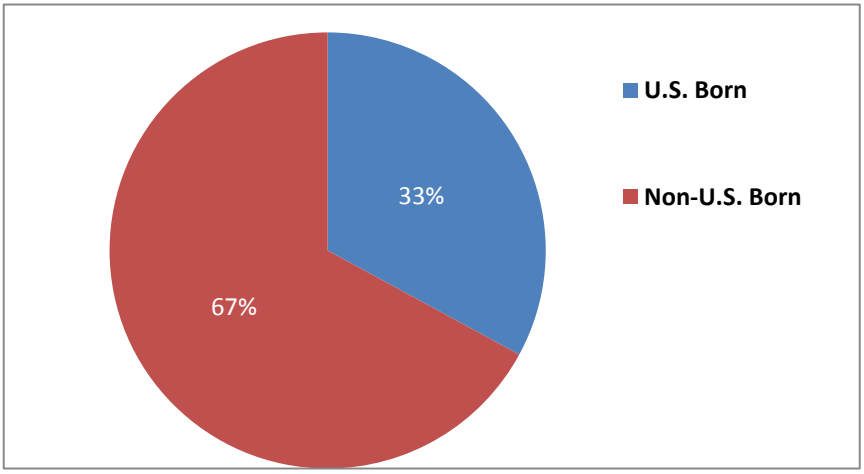


Figure 9. Percent of US-born versus non-US-born TB cases in Iowa, 2002-2012

In many parts of the developing world, TB is still widespread and remains a leading cause of death. Immigration of people from these countries to the United States illustrates that what happens in one part of the world directly impacts other parts of the world. Effective targeted testing programs for newly arriving refugees, immigrants, and students play a major role in identifying and treating these populations.

Country of Origin Data

For 2012, 34 individuals emigrating from 17 countries (excludes US) developed TB in Iowa. Figure 10 represents 304 individuals, emigrating from 54 countries (excludes US) who developed TB disease after their arrival to Iowa 2002-2010. As the map illustrates, TB anywhere is TB everywhere. Approximately 95 percent of all patients with active TB disease live in the developing world, where 99 percent of all TB deaths occur. TB is a good example of the global nature of public health. It is important to implement consistent and aggressive public health measures to halt TB disease, which left untreated, kills half of its victims.

Figure 10: Iowa TB cases by country of origin 2003-2012

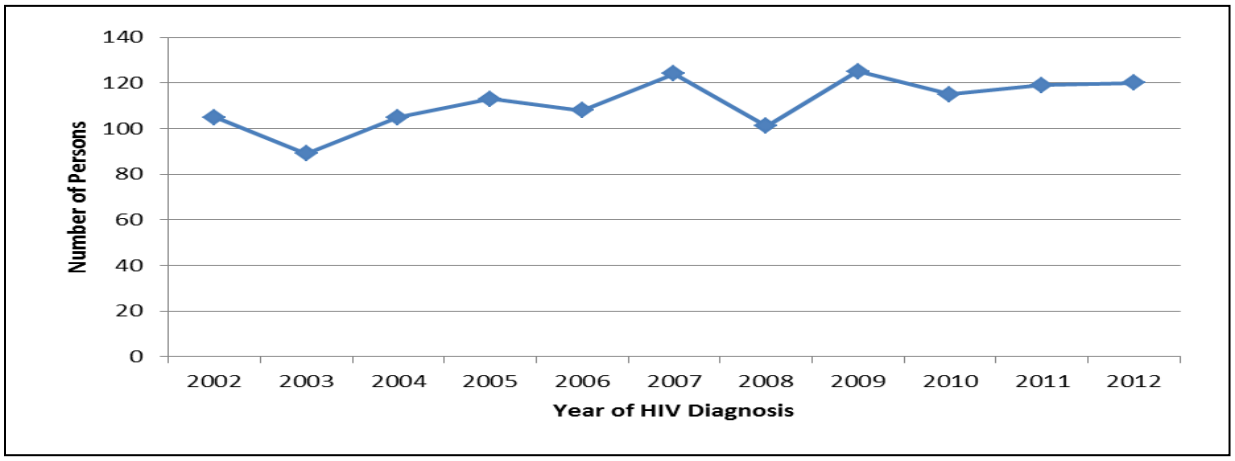
For a detailed overview of TB, see the www.idph.state.ia.us/ImmTB/TB.aspx?prog=Tb&pg=TbHome

Summary of sexually transmitted diseases, HIV and AIDS, and hepatitis C

HUMAN IMMUNODEFICIENCY VIRUS (HIV) AND ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS)

Although there has been some year to year fluctuation, HIV diagnoses have been increasing at a rate of about 2.2 each year since 2000. There were 120 HIV diagnoses in 2012, an increase of 1 (0.8%) from the 119 diagnoses reported in 2011 and also higher than the average of 117 for the previous five years. In 2012, as in 2011, there were 3.9 HIV diagnoses per 100,000 population, compared to 3.8 HIV diagnoses per 100,000 population in 2010 and 4.1 HIV diagnoses per 100,000 population in 2009. Figure 11 charts the number of HIV diagnoses by year for the years 2002 through 2012.

Figure 11. Number of Iowans diagnosed with HIV by year, 2002-2012



Diagnoses of HIV among the foreign-born have declined from the 10-year high recorded in 2002 when 32 (30%) of the 105 persons diagnosed with HIV were foreign born. By comparison, 22 (18%) of the 120 persons diagnosed in 2012 were born in a country other than the United States (or one of its dependencies).

While males have always accounted for the majority of HIV diagnoses, the disproportion has become even more pronounced since 2003. Diagnoses among males had increased steadily, from 56 in 2003 to 104 in 2007. From 2008 through 2012, they have fluctuated, ranging from 82 to 105, with an average of 96.2 per year. Males, with 99 diagnoses, accounted for 83% of HIV diagnoses in 2012. In contrast, diagnoses among females decreased from 33 in 2003 to 20 in 2007, and have averaged 19.8 per year since. There were 21 females diagnosed in 2012. Beginning in 2007, there have been about five male diagnoses for every one female diagnosed. This is in contrast to three males to one female from 2003 through 2006.

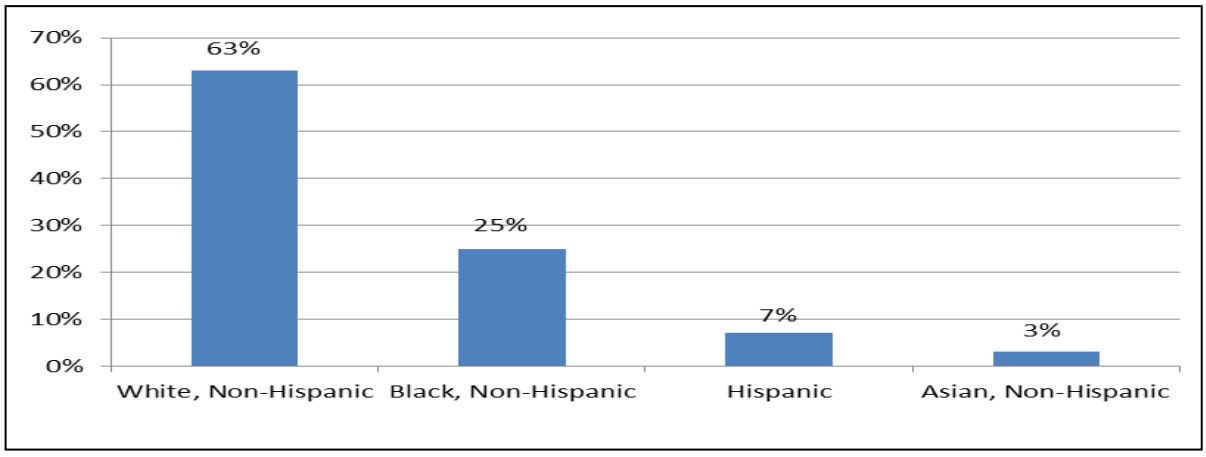
The gradual increase in HIV diagnoses since 2002 is largely attributed to increases in diagnoses among males and, in particular, among those 15 to 24 years of age and 45 years of age and older. For the past four years, diagnoses among persons 15 to 24 years of age have numbered 20 or more. Twenty-two persons between the ages of 15 to 24 years were diagnosed in 2012, a slight drop of 5 (19%) from the 27 diagnoses in 2011, and three times the diagnoses recorded in 2003. While this is concerning, it is important not to lose sight of the fact that diagnoses among persons 25 to 44 years of age accounted for half of all diagnoses, with 61 (51%) persons diagnosed in 2012. The number of diagnoses among persons 45 years and older, which had increased steadily from 18 in 2003 to a peak of 39 in 2007, then declined slowly to 30 in 2011 and increased again to 35 in 2012. There were two pediatric HIV diagnoses in

2012, children born to HIV-infected mothers. Both children were foreign-born adoptees who had first been diagnosed and treated in their respective countries of birth. Regardless of those circumstances, present CDC surveillance guidelines require these children to be counted as Iowa diagnoses.

For persons 13 years of age and older (adults and adolescents), the median age at diagnosis in 2012 was 38 years. Adult/adolescent males with a median age at diagnosis of 38 years, tended to be substantially older than females whose median age at diagnosis was 32 years.

There were 30 diagnoses in 2012 among non-Hispanic Black persons, an increase of 6 (25%) from 24 diagnosis in 2011, and 8 more than the five-year average of 22 from 2007 through 2011. While non-Hispanic Black persons made up almost 3 percent of Iowa's population in 2012, they accounted for 25 percent of the new HIV diagnoses. This equates to 33.4 diagnoses per 100,000 non-Hispanic Blacks and African-Americans. Hispanics were also overrepresented among persons diagnosed with HIV. While making up five percent of Iowa's population, Hispanics accounted for seven percent of new HIV diagnoses in 2012. Eight Hispanic persons were diagnosed in 2012, equating to 5.1 per 100,000 Hispanic persons. Despite the disparities in diagnoses among non-Hispanic Blacks and among Hispanics, the largest proportion of new diagnoses continued to be among non-Hispanic White persons, who accounted for 63 percent of new HIV diagnoses in 2012. Seventy-five non-Hispanic White persons were diagnosed in 2012, equating to 2.8 per 100,000 non-Hispanic Whites. When the numbers of persons diagnosed per 100,000 population are compared, non-Hispanic Blacks were 12 times more likely to have been diagnosed with HIV in 2012 than non-Hispanic Whites. Similarly, Hispanic persons were 1.8 times more likely to have been diagnosed than non-Hispanic Whites. While non-Hispanic Asians accounted for three percent of HIV diagnoses in 2012, their numbers are too small to calculate a statistically reliable rate. Figure 12 shows the percentage distribution of new HIV diagnoses by race and ethnicity.

Figure 12. Percentage distribution of Iowa HIV diagnoses by race and ethnicity, 2012



Men who have sex with men (MSM) remained the leading category for mode of exposure to HIV infection. Diagnoses among MSM in 2012 numbered 66, consistent with the five-year average of 66 from 2007 to 2011. In 2012, MSM accounted for 55% of all diagnoses, consistent with the five-year average of 57%. It is important to note that 16 (80%) of the 20 diagnoses in young men between the ages of 15 and 24 were among MSM.

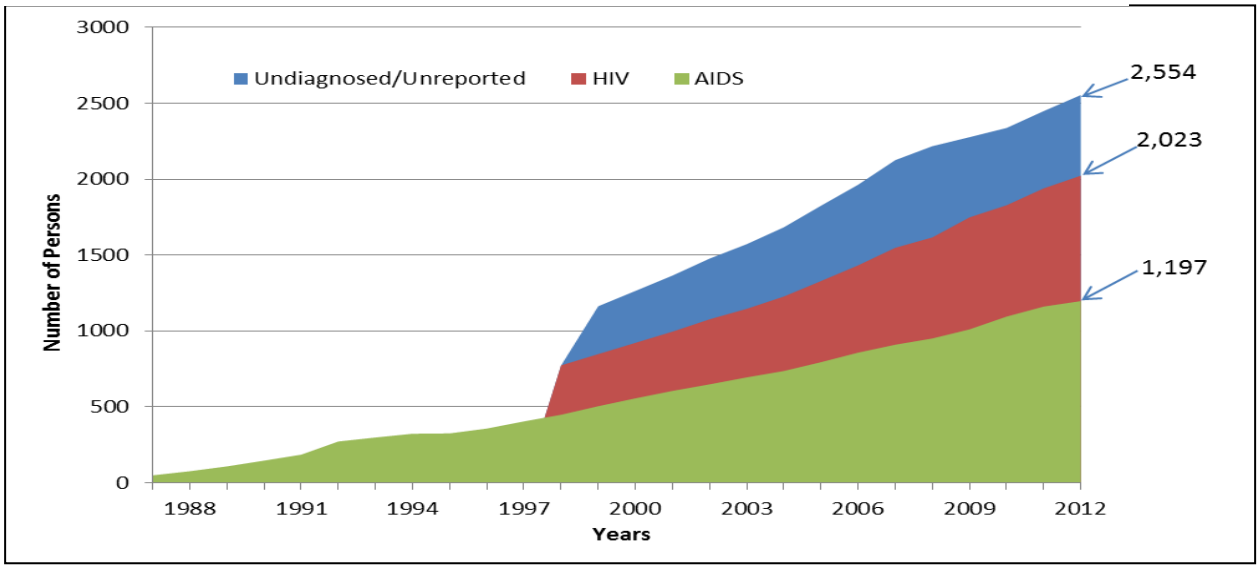
Numbers (and proportions) of other modes of HIV exposure in 2012 were as follows: injection drug use (IDU), 7 (6%); men-who-have-sex-with-men and inject drugs (MSM/IDU), 7 (6%); heterosexual contact, 8 (7%); and no identified risk (NIR), 30 (25%). The seemingly high proportion of persons with unidentified risk is not unusual at this stage of case investigation. By the end of 2013, risk will have been ascertained

for upwards of 85% of persons diagnosed in 2012. As noted above, two infections were passed from mother to child during pregnancy or labor and delivery, but initial diagnosis and treatment of these infections occurred outside the U.S. prior to the adoption and immigration of the two children. Such infections are termed "perinatal" or "vertical" transmission.

Seventy-two persons were diagnosed with AIDS in 2012, compared to 74 in 2011 and down from 91 (the highest number since 1996) in 2009. The 72 diagnoses in 2012 are slightly less than the average of 74 for the five years from 2007 through 2011. Of those diagnosed with AIDS in 2012, 46 (64%) were also newly diagnosed with HIV and received a concurrent diagnosis of AIDS or progressed to AIDS by the end of 2012. This finding is more an indication of prevention failures than it is of treatment failure or access to care.

The number of Iowans living with HIV or AIDS continues to increase. As of December 31, 2012, there were 2,023 persons living with HIV or AIDS who were Iowa residents at time of diagnosis of HIV or AIDS, a prevalence of 66 per 100,000 people. This compares to 1,939 persons living with HIV/AIDS on the same date in 2011, a prevalence of 64 per 100,000. Figure 13 depicts the upward trend in the estimated number of persons living with HIV or AIDS, as documented at the end of each calendar year. The top tier of the graph represents the estimated numbers of undiagnosed/unreported persons, based on the surveillance program's estimate of the completeness of case reporting and on CDC's estimate of the number of persons who are infected but have not been diagnosed. When the number of 2,023 is adjusted for underreporting (1%) of diagnosed HIV and AIDS and for CDC's estimated percentage of undiagnosed HIV infections (20%), there may have been as many as 2,554 Iowans living with HIV or AIDS at the end of 2012.

Figure 13. Estimated number of Iowans living with HIV or AIDS as of December 31 of each year, 1987 through 2012.



HEPATITIS C

Hepatitis C is the most common chronic blood-borne pathogen in the United States. According to the Centers for Disease Control and Prevention (CDC) there were an estimated 3.2 million people chronically infected with hepatitis C in the United States. According to the 2010 census population estimate for Iowa, there were 3,046,355 people residing in the state. CDC estimates that 1.8 percent of the state's population or 54,834 Iowans have potentially been infected with the hepatitis C virus. To date, approximately 9,459 cases of hepatitis C have been identified by IDPH.

Hepatitis C data are collected using IDSS, the state's web-based reporting system, to allow for collection of risk information, test results, referral information, and data on whether immunizations were offered.

SEXUALLY TRANSMITTED DISEASES

The Bureau of HIV, STD, and Hepatitis is responsible for tracking the incidence of sexually transmitted diseases, including chlamydia, gonorrhea, and syphilis. In addition to disease surveillance, IDPH supports targeted voluntary screening at 70 public sites throughout Iowa. IDPH also works with private health care providers to increase screening.

IDPH provides free treatment to individuals at public testing sites who test positive for chlamydia, gonorrhea, syphilis, or trichomoniasis. Sexual partners may be treated as well. In 2008, *Iowa Code 139A* was updated to allow for expedited partner therapy (EPT). This statute allows health care practitioners to give medications or prescriptions for the treatment of chlamydia or gonorrhea to their patients to pass along to exposed partners, particularly when the partner is unable or unwilling to come in to a clinic for examination. These medications may also be distributed to exposed partners via public health professionals.

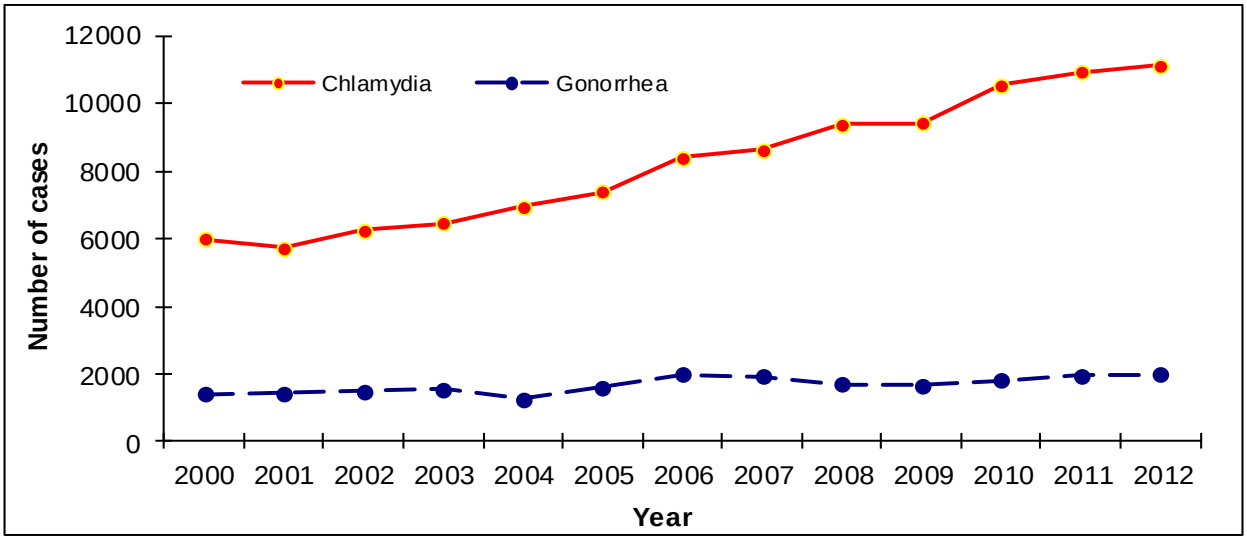
Chlamydia

Genitourinary infections caused by *Chlamydia trachomatis* are extremely common in some populations. In fact, chlamydial infections account for the greatest number of cases of any reportable disease in the United States and in Iowa. Diagnoses of chlamydia have increased steadily during the past few decades. The reasons for this increase are varied. One important reason is that testing technology has improved, allowing for more sensitive tests and more convenient ways to test. The use of nucleic acid amplification tests (NAATs) for the detection of *Chlamydia trachomatis* became widespread in Iowa in the mid-2000s. This method of detection is much more sensitive than the previously used method of cell culture. NAATs also permit the use of a greater variety of specimen types. Urine and vaginal specimens (which can be collected much less invasively than the traditional specimen types of cervical and urethral) can be used for NAATs. Because most chlamydial infections cause no symptoms, there is a large pool of undiagnosed chlamydia in certain populations. As testing methodology has improved and as screening has increased, the number of cases reported has also increased.

In 2012, 11,139 cases of chlamydia were reported to IDPH (Figure 14). This equates to 366 cases per 100,000 population. Iowa is lower than the U.S. average of 426 cases per 100,000 population. Both nationally and in Iowa, adolescents and young adults are the most impacted populations. In Iowa, 87 percent of reported infections occurred in persons 15 to 29 years of age.

Chlamydia also disproportionately affects people of color in Iowa. Although African-Americans and other Black persons accounted for three percent of the population in Iowa, 17 percent of chlamydial infections were diagnosed in this population. In fact, according to national data from CDC[6], Iowa ranks number two in the nation for the rate of chlamydia among the African-American/Black population in the US.

Figure 14. Number of cases of chlamydia and gonorrhea by year, 2000-2012



Gonorrhea

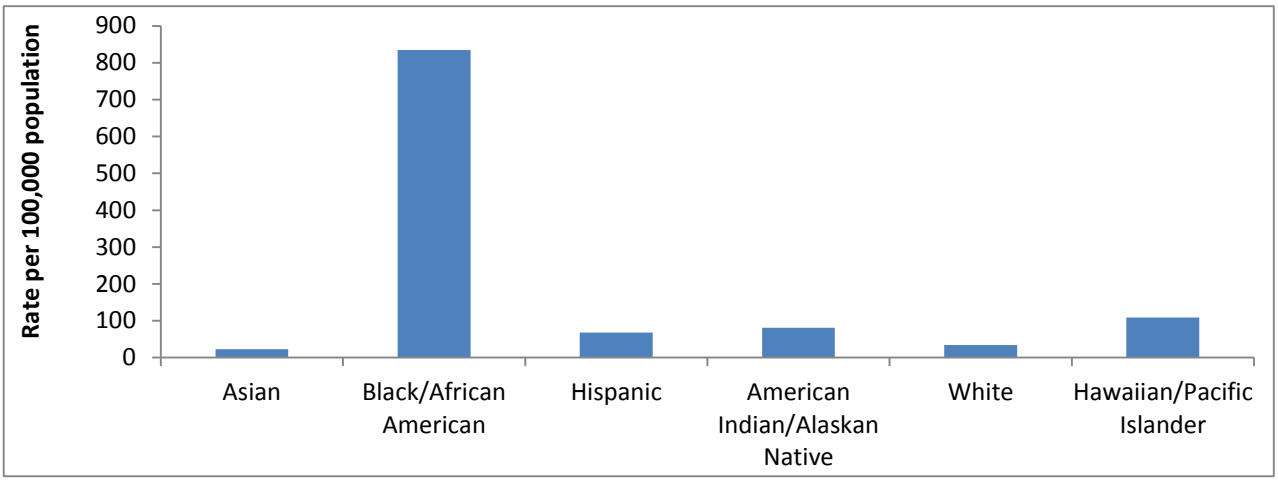
Nationally, the number of reported cases of gonorrhea has remained fairly steady over the past decade. However, Iowa has experienced a gradual increase in the number of reported cases in recent years. NAATs have been utilized for gonorrhea as they have been for chlamydia. The most widely used tests incorporate gonorrhea and chlamydia testing into a single specimen collection. Thus, patients are typically tested for both infections simultaneously.

In 2012, 1,982 cases of gonorrhea were reported to IDPH (Figure 14), which equates to 65 cases per 100,000 population. This is well below the national average of 104.2 cases per 100,000 population. Gonorrhea has many similarities with chlamydia, chief of which is the population (i.e., adolescents/young adults) that it predominately affects. Seventy-six percent of reported cases in Iowa were among persons 15 to 29 years of age. African-Americans/Blacks are even more disproportionately affected by gonorrhea than they are by chlamydia in Iowa. Thirty-seven percent of reported cases were among African-Americans (Figure 15). Iowa ranks number one for its rate of gonorrhea among African-Americans in the US.

Antimicrobial resistance is of continuing concern with *Neisseria gonorrhoeae*. The only class of antimicrobials still effective in the treatment of gonococcal infection is the cephalosporins. All other classes of antimicrobials possess insufficient efficacy to cure the infection on their own. Current guidelines recommend dual therapy of ceftriaxone with azithromycin or doxycycline. [7] Dual therapy is recommended because individuals infected with gonorrhea are often co-infected with chlamydia. Additionally, dual therapy may slow the development of resistance to cephalosporins. Treatment failures with the last remaining effective oral cephalosporin have been confirmed in North America.[8] It is anticipated that *N. gonorrhoeae* will soon develop resistance to all cephalosporins, at which time treatment will become much more difficult. No new antimicrobials are available to treat gonorrhea. Researchers are investigating the use of drug combinations to cure gonococcal infections but their efficacies are unsubstantiated at this time.

The significant disparities among African-Americans, the likelihood of further antimicrobial resistance by *N. gonorrhoeae*, and the steady number of cases make improving gonorrhea prevention a priority for IDPH and CDC.

Figure 15. Gonorrhea rates in Iowa by race, 2012



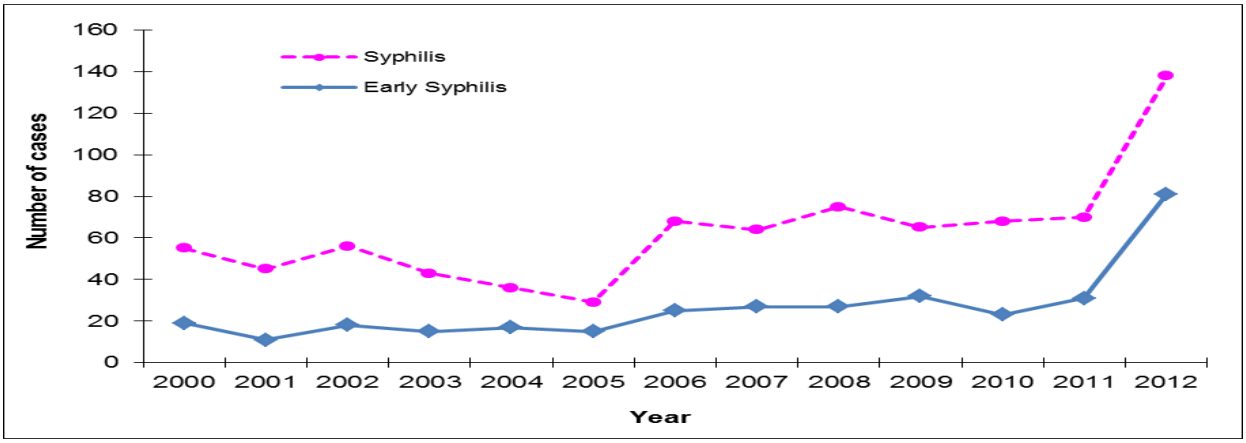
Syphilis

Iowa is a low-morbidity state for syphilis; however, the number of reported cases spiked in 2012 when compared to previous years (Figure 16). In 2012, 138 cases of syphilis were reported to IDPH. Of these, 81 were cases of early syphilis (primary, secondary, or early latent), which are of greatest concern to the public's health because these are the infectious stages of the disease. In 2012, the rate of early syphilis in Iowa was 2.7 per 100,000 population. This is approximately half the U.S. average of 4.5 per 100,000 population. The preponderance of syphilis cases occurred in men. In terms of early syphilis, 91.4 percent of cases were among men. Of these, the majority were men who have sex with men (MSM). Co-infection with HIV is a concern with this population, so concurrent testing for HIV is recommended for persons at risk for syphilis.

African-Americans/Blacks in Iowa are disproportionately affected by syphilis. Twelve percent of reported cases of early syphilis were among this population, equating to a rate of 11.4 cases per 100,000 population.

Elimination of syphilis from Iowa has proven difficult due to sporadic clusters of cases and the spread from other states. Investigations into the increase that occurred in 2012 are ongoing. IDPH follows up on every case of syphilis in Iowa and ensures that partner services and treatment are offered whenever they are appropriate and possible.

Figure 16. Number of cases of syphilis by year 2000-2012



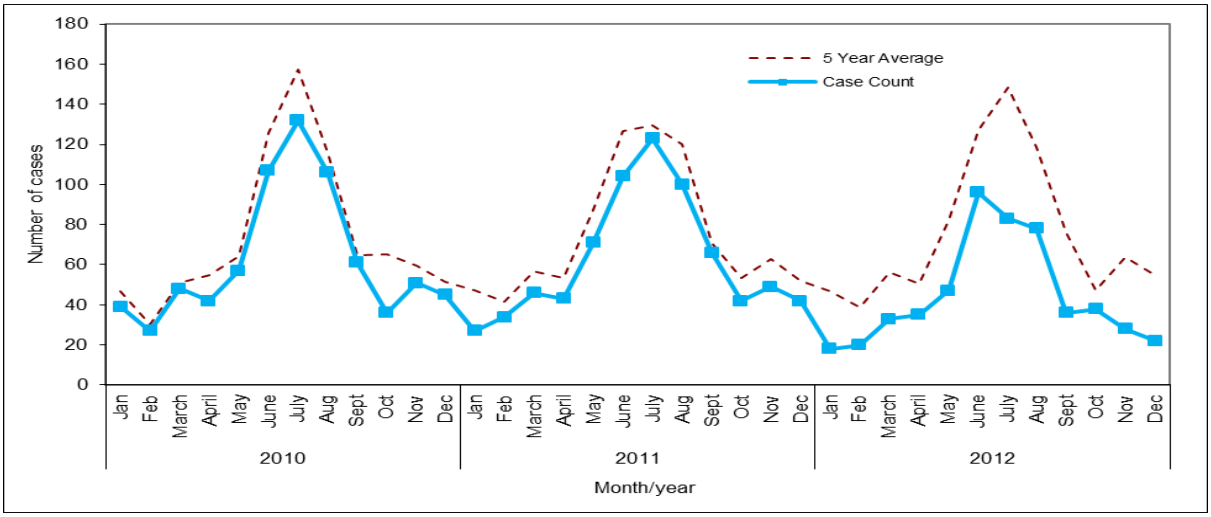
Summary of enteric diseases

CAMPYLOBACTERIOSIS

The total number of campylobacteriosis cases reported in 2012 was 534. Campylobacteriosis incidence was 17.5 cases for every 100,000 people in 2012.

Campylobacteriosis activity typically peaks in early summer. Consumption of raw, undercooked meat, raw milk, contaminated water, and contact with infected animals are common sources of campylobacter infection. In 2012, IDPH interviewed all reported cases of Campylobacter in an attempt to identify clusters. One cluster related to a wedding held in eastern Iowa was identified.

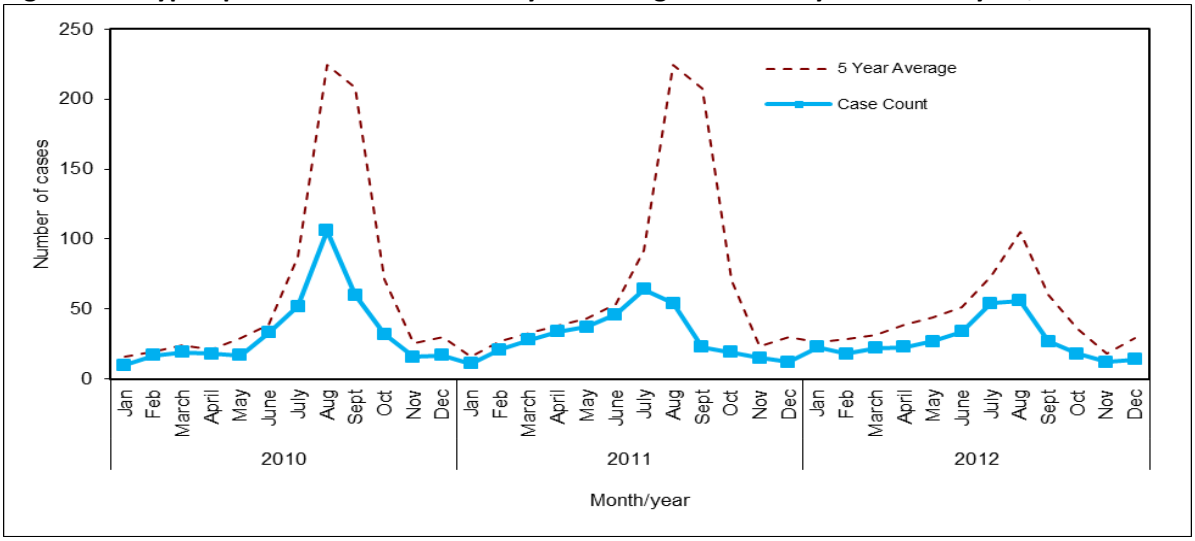
Figure 17. Campylobacteriosis cases versus 5 year average baseline by month and year, 2010-2012



CRYPTOSPORIDIOSIS

Cryptosporidiosis activity in 2012 decreased from activity in 2011. There were 13.2 cases for every 100,000 Iowans in 2011, compared to 10.8 in 2012. Most cases reported either child care attendance or recreational water exposure. One outbreak was investigated that involved children swimming at a local pool.

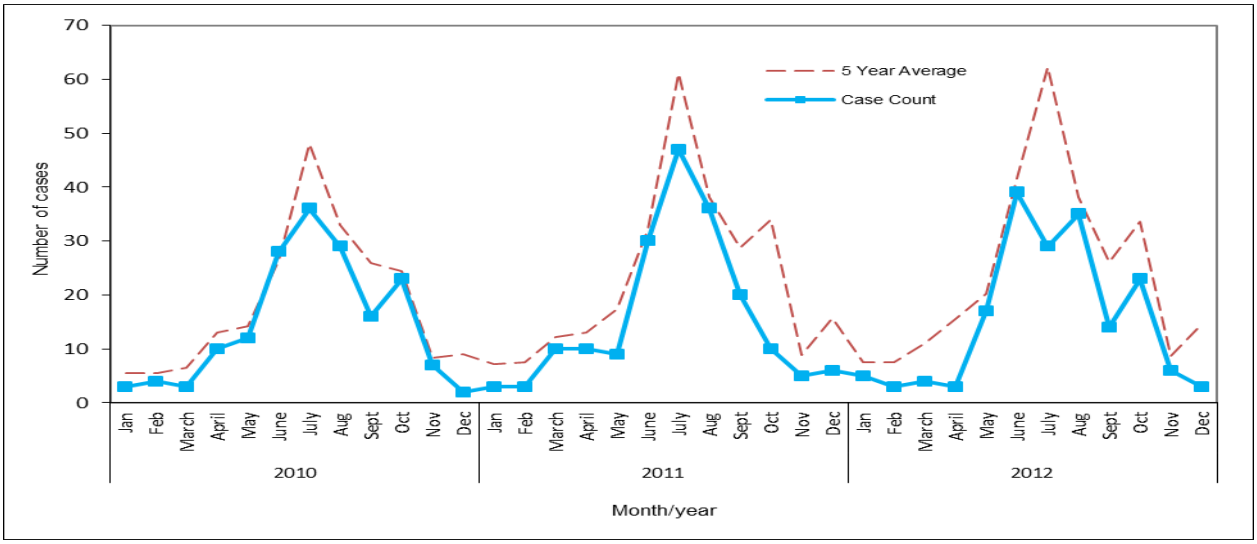
Figure 18. Cryptosporidiosis cases versus 5 year average baseline by month and year, 2010-2012



E. COLI O157:H7 AND OTHER SHIGA-TOXIN PRODUCING STRAINS

The incidence of *E. coli* shiga-toxin cases in Iowa decreased slightly to 5.9 cases/100,000 persons in 2012 from 6.2 cases/100,000 persons in 2011. There were 181 cases reported in 2012. In 2012, IDPH assisted in a national outbreak investigation involving sprouts eaten on deli sandwiches; five Iowans were associated with this investigation.

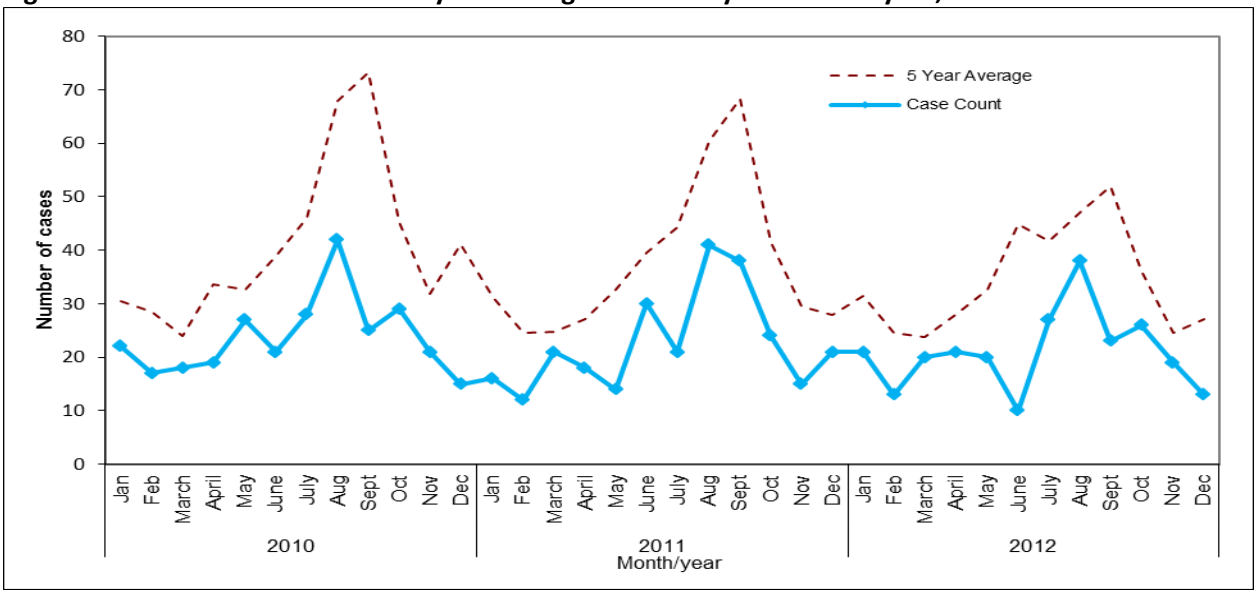
Figure 19. *E. coli* O157:H7 and other shiga-toxin producing strains cases versus 5 year average baseline by month and year, 2010-2012



GIARDIASIS

Giardiasis is one of the leading waterborne diseases. It typically peaks in late summer or early fall. In 2012, there were 251 cases in Iowa. Diapered children and those in childcare are most likely to become infected with giardia. Twenty-three percent of cases were ages of five and under. There were 8.2 cases for every 100,000 Iowans compared to 8.9/100,000 in the previous year.

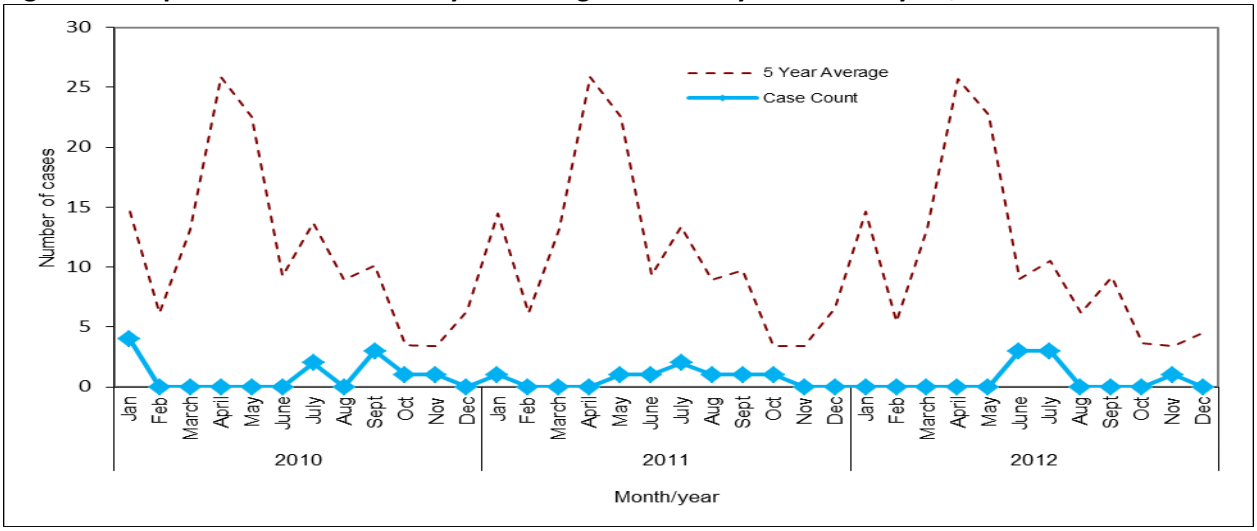
Figure 20. Giardiasis cases versus 5 year average baseline by month and year, 2010-2012



HEPATITIS A

In 2012, there were seven cases of hepatitis A reported in Iowa. This represents a 63 percent reduction over the previous three-year average of 19. Cases ranged from 19 to 53 years of age, with only one case younger than 25. Fifty-seven percent of cases were male. None of the illnesses were associated with outbreaks.

Figure 21. Hepatitis A cases versus 5 year average baseline by month and year, 2010-2012



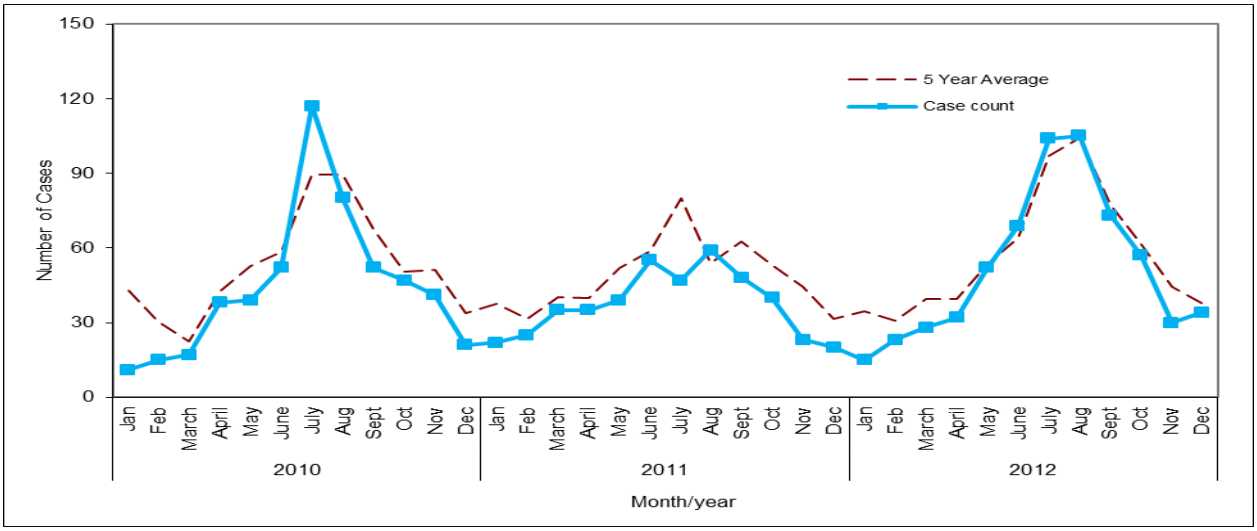
LISTERIOSIS

There were three cases of *Listeria monocytogenes* infection reported in 2012. None were associated with a national outbreak.

SALMONELLOSIS

Salmonellosis incidence in 2012 increased to 20.4 cases per 100,000 persons from 14.7 cases per 100,000 persons in 2011. The total number of cases reported was 622. Most of these individuals were infected at home by handling poultry or eggs. IDPH participated in two state outbreaks; one associated with pork, the other with a local restaurant. One national outbreak involving cantaloupe was also investigated.

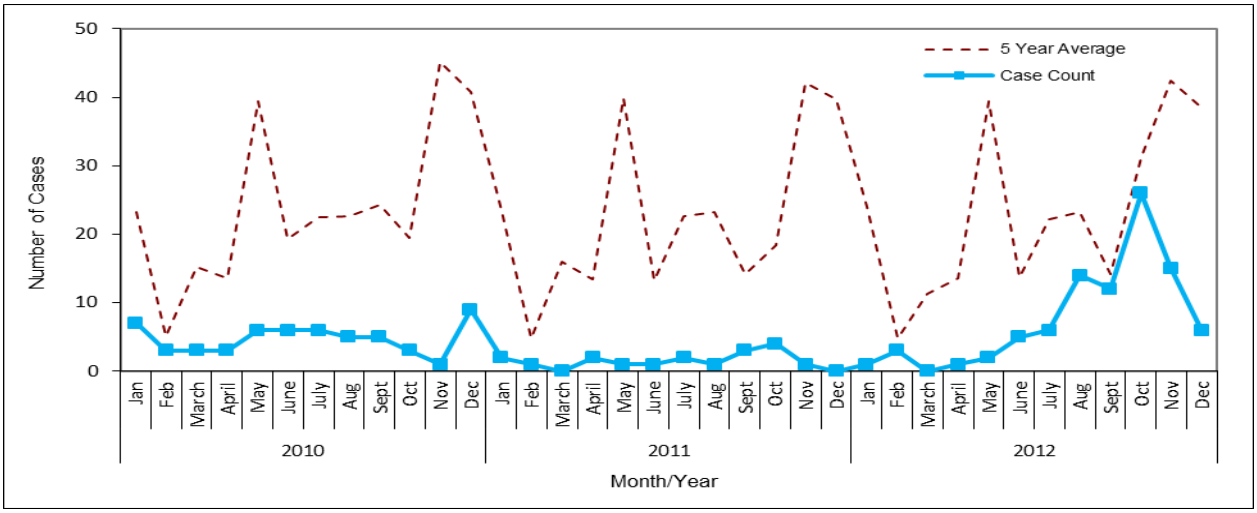
Figure 22. Salmonellosis cases versus 5 year average baseline by month and year, 2010-2012



SHIGELLOSIS

In 2012, there were 91 cases of *Shigella* in Iowa. This was an approximately 113 percent increase over the average number of cases for the past three years. Approximately 38 percent of the cases were under 5 years old; approximately 29 percent were in persons aged 24-64 years. This corresponds to children and their parents or caretakers being at most risk of infection.

Figure 23. Shigellosis cases versus 5 year average baseline by month and year, 2010-2012



Summary of zoonotic diseases

DENGUE FEVER

In 2012, two cases of Dengue fever were reported to IDPH, a decrease of three from the five cases reported in 2011. Of the two cases, one was female and the other was male. Both were related to international travel to countries where the Dengue virus is endemic.

EHRLICHIOSIS/ANAPLASMOSIS

There are at least three species of bacteria responsible for ehrlichiosis/anaplasmosis in the United States: *Ehrlichia chaffeensis, Anaplasma phagocytophilum*, and *Ehrlichia ewingii*. The clinical signs of disease that result from infection with these agents are similar.

In 2012, there were six cases of ehrlichiosis/anaplasmosis reported to IDPH, a decrease of two from the eight cases reported in 2011. Cases ranged from ages 43 to 79 with a median age of 59 years and were located in northeast part of the state.

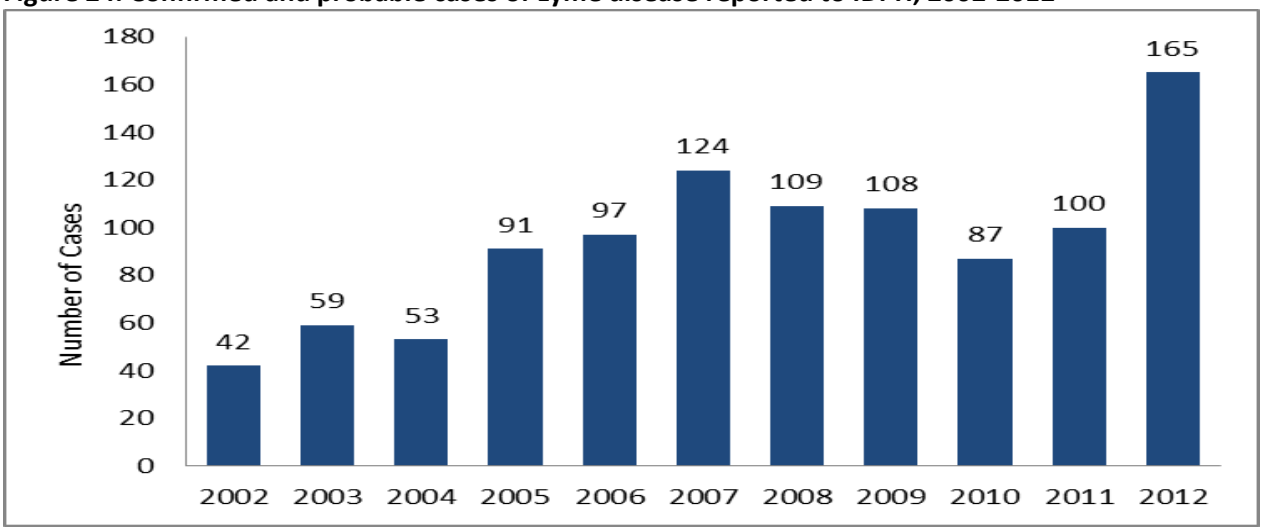
HANTAVIRUS

There was one report of hantavirus pulmonary syndrome (HPS) case in Iowa in 2012. There have been nine cases of HPS reported in Iowa since the disease was first identified in 1993. Substantial rodent exposure was identified in most cases.

LYME DISEASE

Lyme disease is caused by the bacterium *Borrelia burgdorferi* and is transmitted to humans by the bite of an infected tick, primarily the blacklegged tick. Symptoms of Lyme disease can include fever, headache, fatigue, and a "bull's-eye" skin rash also known as erythema migrans. There were 165 cases of Lyme disease reported to IDPH in 2012, a 68% increase over the previous three-year average and the highest number of cases recorded since 2002 (Figure 24). The 2012 Iowa case rate for Lyme disease was 5.4 cases per 100,000 persons. Cases ranged from ages two to 86 with a median age of 44 years.

Figure 24. Confirmed and probable cases of Lyme disease reported to IDPH, 2002-2012



MALARIA

Six cases of malaria were identified in Iowa in 2012, a decrease of 16 from the 22 cases reported in 2011. Cases ranged from ages 3 to 67 with a median age of 39 years and all patients had recently

immigrated to the United States. One case was determined to have *Plasmodium vivax*; five cases had *Plasmodium falciparum* infections.

RABIES, ANIMAL

In 2012, 31 cases of animal rabies were reported in Iowa, which is a slight decrease from 2011 (Table 4). Rabies was identified most frequently in wildlife species, including 17 bats and 9 skunks. Four cases were diagnosed in cows and one cat also tested positive.

During 2012, 1,557 animals in Iowa were tested for rabies and 31 were confirmed positive (1.99%). The percent positive varies greatly by species (Table 3). It is important to note that these data are greatly influenced by the number of animals tested. Many animals are tested because they have contact with humans or domestic animals and they exhibit unusual behavior or clinical signs making them more likely to be infected with the rabies virus. For these reasons, the percentages should not be considered representative of the true distribution of disease within the animal population in Iowa.

Table 3. Number of animals positive for rabies virus by species, 2012

Species	Positive	Total Tested	% Positive
Cow	4	96	4.17%
Cat	1	361	0.28%
Bat	17	520	3.27%
Skunk	9	34	26.47%

There are two rabies strains that commonly circulate in Iowa - bat and skunk. Many different species can be infected with these strains. In animal samples that are strongly positive for rabies, SHL can differentiate the rabies strain that infected the animal. In 2012, SHL was able to identify the rabies strain in 23 of the 31 positive rabies cases. Fourteen cases were bat strain and nine were skunk strain. Bat-strain rabies was identified in 14 bats. Skunk strain rabies was identified in eight skunks and one cat. For more information about rabies, visit www.idph.state.ia.us/Cade/DiseaseIndex.aspx?disease=Rabies.

Table 4. Number of animals positive for rabies by species and by year, 2001-2012

Species	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bat	31	27	47	47	60	28	13	11	11	10	12	17
Skunk	28	27	38	28	33	13	5	7	13	13	7	9
Cat	10	7	8	11	5	7	7	9	3	1	3	1
Cow	10	12	3	10	7	4	0	1	5	1	3	4
Dog	2	3	6	3	2	2	5	1	2	1	0	0
Horse	3	2	3	0	1	3	1	0	0	0	0	0
Fox	1	0	0	1	0	0	0	0	0	1	0	0
Squirrel	0	0	0	0	0	0	0	0	1	0	0	0
Badger	0	0	1	0	0	0	0	0	0	0	0	0
Total	**85**	**78**	**106**	**100**	**108**	**57**	**31**	**29**	**35**	**27**	**25**	**31**

RABIES, HUMAN

Iowa's most recent human rabies case occurred in 2002 and was caused by bat strain rabies. Prior to that, the last reported human case in Iowa occurred in 1951.

While the exact number of people who receive rabies post-exposure prophylaxis each year in the United States is unknown, it is estimated to be about 40,000 people. Based upon Iowa's population, it is estimated that approximately 390 Iowans receive rabies preventive treatment each year.

ROCKY MOUNTAIN SPOTTED FEVER (RMSF)

In 2012, there were eight cases of Rocky Mountain spotted fever (RMSF) reported in Iowa. American dog ticks are carriers of *Rickettsia rickettsii*, the bacterium that causes RMSF. The American dog tick is the most common species of tick in Iowa and can be found in every county in the state. The tick is most active late March through August. Iowa RMSF cases in 2012 had symptom onset dates from March to November. Cases ranged from ages four to 70, with a median age of 39. Sixty-three percent of cases were female. Five of the eight cases were hospitalized.

WEST NILE VIRUS

There were 31 human cases of West Nile virus reported to IDPH in 2012. Fifteen of the 31 cases were hospitalized, and no deaths were reported. Cases ranged from age 8 to 88, with a median age of 52. Seventeen cases were male and 14 were female. The highest numbers of cases were reported in the northwest region of the state. For more information about this disease, visit www.idph.state.ia.us/CADE/DiseaseIndex.aspx?disease=West Nile Virus.

Table 5. Iowa West Nile virus activity by species and outcome, 2002-2012

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Human cases	54	147	23	37	37	30	5	5	9	9	31
Human deaths	2	6	2	2	0	3	1	0	2	0	0
Sentinel chickens	31	15	9	19	18	18	3	6	14	14	17
Mosquito pools	8	27	0	7	15	5	5	9	7	5	14
Horses	1142	96	18	15	12	10	4	3	2	1	35

Summary of Rare and Unusual Diseases

Toxic Shock Syndrome

There was one case of Toxic Shock Syndrome reported to IDPH in 2012, which occurred in a 16 year-old male.

Tularemia

There was one case of tularemia reported to IDPH in 2012, which occurred in a 45 year-old male.

There were no cases of human illness reported for the following diseases:

Hansen's disease (Leprosy)
Hepatitis E
Psittacosis
Tetanus
Yellow Fever

Summary of environmental health conditions

CARBON MONOXIDE (CO) POISONING SURVEILLANCE

Each year, according to the CDC, more than 400 Americans die from unintentional CO poisoning; additionally more than 20,000 visit the emergency room; and more than 4,000 are hospitalized due to CO poisoning. Fatalities are highest among Americans 65 and older. IDPH collects reports of CO poisoning and CO exposure from health care providers and facilities, and the Iowa Statewide Poison Control Center. CO poisoning is defined in Iowa as:

- A blood carbon monoxide level equal to or greater than 10 percent carboxyhemoglobin or its equivalent with a breath analyzer test; **or**
- A clinical diagnosis of carbon monoxide poisoning regardless of any test result.

Information collected includes basic demographics (age, gender, county of residence), diagnosis, blood carboxyhemoglobin test results, exposure (circumstance, source, location), and severity of health impact. Reports are reviewed to identify clusters and possible occupational exposures for further investigation and intervention.

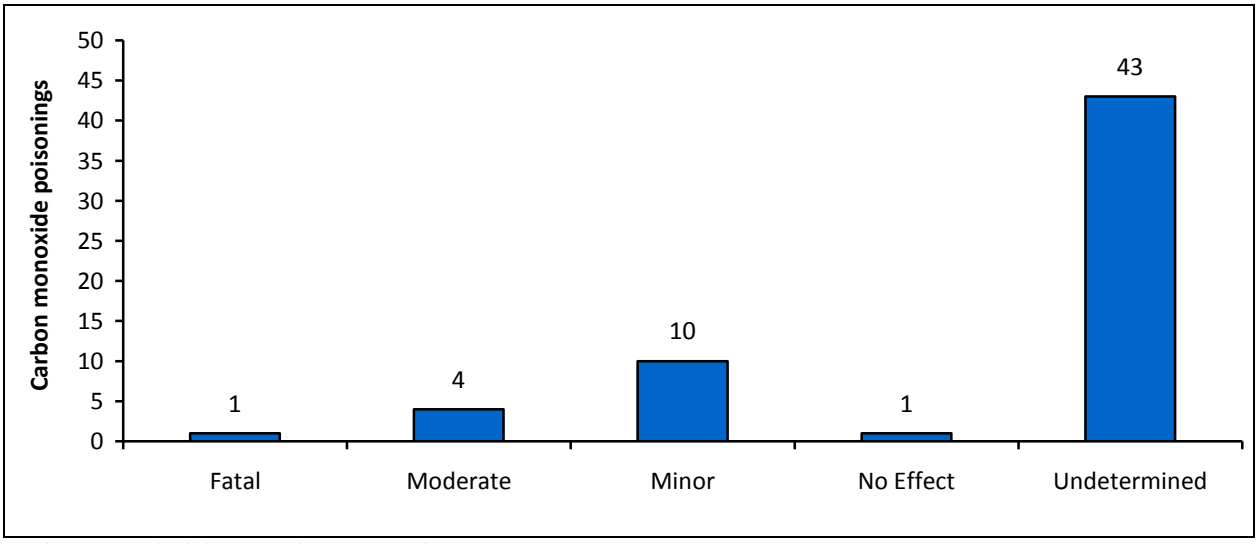
In 2012, there was one reported death from CO exposure in Iowa. Fifty-nine individual reports of CO exposure were received by IDPH. Thirty-nine of these reports met the case definition for carbon monoxide poisoning.

Table 6. Gender of cases with carbon monoxide poisoning meeting case definition, 2011

	Number of cases
Male	19
Female	20
Total	39*

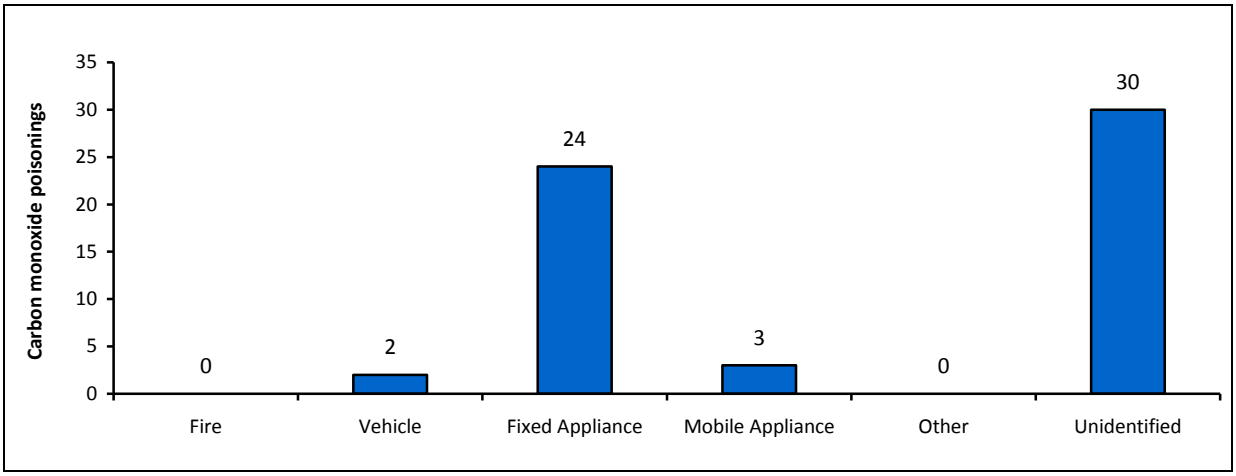
*Gender was not specified for 3 cases.

Figure 25. Severity of health impact among case patients with CO poisoning, 2012



Fatal – Patient died due to Carbon monoxide poisoning
Moderate – Patient experienced moderate symptoms such as nausea, vomiting, confusion
Minor – Patient experienced minor symptoms such as headache, dizziness
No Effect – Patient experienced no symptoms consistent with CO exposure

Figure 26. Sources of exposure among case patients with CO poisoning, 2012



Vehicles include automobiles and other fuel-powered recreational vehicles (e.g., boats, four-wheelers, Zamboni Ice Resurfacing machines, etc).
Fixed appliances include fuel-burning equipment that is typically stationary (e.g., furnaces, gas water heaters, gas stoves or fireplaces).
Mobile appliances include generators, space heaters, and other small power equipment (e.g., power washers, lawn mowers, chainsaws, etc)

METHEMOGLOBINEMIA

Methemoglobinemia is a blood disorder caused when nitrite interacts with the hemoglobin in red blood cells, reducing the ability to carry sufficient oxygen to individual body cells. Infants under six months of age are the primary population at risk, and the condition is also known as 'Blue Baby Syndrome.' Sources of nitrite include nitrate in drinking water or from preservatives in food, some drugs, or other sources.

In 2012, there was one case of methemoglobinemia reported in Iowa; it was not an infant.

HEAVY METAL POISONING (NON-LEAD)

IDPH conducts surveillance for three other heavy metals in addition to lead: arsenic, cadmium, and mercury. Cases of poisoning from these three heavy metals are rare in Iowa, and many exposures are related to industrial or hobby/small market work in industries that use these metals. Outside of industrial use, the possibility of arsenic contamination of moonshine, herbal preparations, and nutritional supplements also must be considered as a source of exposure. Other potential sources of mercury exposure include consumption of large amounts of contaminated fish and seafood; or from broken thermometers, barometers, fluorescent light bulbs, or electrical switches. In 2012, there were two cases of mercury poisoning and arsenic, respectively, and no cases of cadmium poisoning reported.

An individual walked into a bar in Armstrong, IA, on or about the night of July 20, 2012 with approximately 12 pounds of mercury. The mercury was subsequently spilled in the bar. An attempt was made to remove the mercury using a wet-dry vacuum but the removal was only partially successful. The individual who brought the mercury took the collected mercury from the vacuum and temporarily stored it overnight in an outdoor child's sand box at his home. The following day, 3-4 children aged 1-7 found the mercury, opened the container, and played with the mercury in the sand box. A subsequent investigation and cleanup was completed by the U.S. Environmental Protection Agency. Individuals exposed to the mercury vapor were seen by health care providers. All exposed individuals did not exhibit symptoms of mercury poisoning.

CHILDHOOD LEAD POISONING

Lead has adverse effects on nearly all organ systems in the body. It is especially harmful to the developing brains and nervous systems of children under the age of six. At very high blood lead levels,

children can have severe brain damage or even die. Since 1991, a child has been considered to be lead-poisoned at a blood lead level of 10 µg/dL or higher. However, recent research suggests that there is no level of lead exposure at which adverse health and developmental effects do not occur. At blood lead levels as low as 1 microgram per deciliter (µg/dL), children's intelligence, hearing, and growth are affected. This damage can be minimized if a child's lead exposure is reduced. However, the damage cannot be reversed. For the purpose of this report, a child is considered to be lead-poisoned at a blood lead level of 10 µg/dL or higher.

In 2002, researchers estimated that the average decrease in lifetime earnings of a child with a blood lead level of 10 µg/dL would be at least $40,000 and that the average decrease for a child with a blood lead level of 20 µg/dL would be at least $80,000. Recent research indicates that decreases of average lifetime earnings also occur at much lower blood lead levels.

Iowa's children are most commonly poisoned by lead-based paint found in homes built before 1950. Lead-based paint in a home becomes a lead hazard as it deteriorates and lead-based paint chips end up on the floors and in window wells throughout the home, as well as in the soil around the exterior of a home. Since 1992, IDPH has recommended that all children under the age of six be tested for lead poisoning through a blood test, and the results of all blood lead testing are required to be reported to IDPH. State and federal laws mandate lead testing for children receiving Medicaid. Since 2008, Iowa law has required that all children have proof of a blood lead test when enrolling in kindergarten.

IDPH reports the rate of blood lead testing among children and the prevalence of lead poisoning by birth cohort (a group of children born during a specific year). IDPH has complete data for children born from 1991 through 2006. During that time period, the percentage of children tested for lead poisoning has increased from 26 percent to 98.6 percent.

In Iowa, the prevalence of lead poisoning among children under the age of six years is 2.7 percent. At the national level, the prevalence of blood lead levels greater than or equal to 10 µg/dL is estimated to be 0.7 percent. Data collected by IDPH include the following: the number and percentage of children born in 2006 who were tested for lead poisoning; the number and percentage of all children tested who were identified as lead-poisoned; the number and percentage of children who were tested for lead poisoning and identified as lead-poisoned by Medicaid status (see Table 15).

ADULT LEAD POISONING

A total of 5,438 blood lead test (BLL) results on 3,005 Iowans were recorded by the Iowa Adult Blood Lead Epidemiology and Surveillance (ABLES) program. This data includes persons 16 years or older as of the date of collection with a residence in Iowa tested in calendar year 2012. All blood lead test results for Iowa residents are reportable to IDPH under *Iowa Administrative Code* 641, Chapter 1.

Blood lead tests of 10 micrograms per deciliter (µg/dL) or higher are currently defined as an elevated blood lead level (EBL). Based on the highest BLL for each person tested in 2012, there were 818 people (27% of those tested) who had blood lead levels of 10 µg/dL or higher: 22 people with levels 40 µg/dL or higher, 174 people with levels 25-39 µg/dL, and 622 people with levels 10-24 µg/dL.

Of the 818 adults with EBLs, 211 (26%) were classified as new cases; that is, they did not have a blood lead levels of 10 µg/dL or higher in 2010 per records in the Iowa ABLES database. The average blood lead level for new cases was 19 µg/dL with a range of 10-91 µg/dL. Of the new cases, 181 were known to be work-related exposures, and 165 of the work-related exposures were classified by their occupational industry (91% of 181). The lead battery manufacturing industry accounted for 88 (42%) of the new cases.

Females accounted for 11.2% (92) of the 818 EBLs in 2012, with an average blood lead level of 19 µg/dL. The blood lead levels for EBL females ranged from 10-53 µg/dL. Lead exposure to women during pregnancy poses increased health risks for unborn babies and may impact the ability to carry the pregnancy to term. Women of child-bearing age (16-44 years of age i.e. those born in 1967 or later) accounted for 28 of the 92 female cases (30%), and 11 of the 92 EBLs females (12%) were 35 years of age or younger. It is unknown if any of these women were pregnant at the time of their exposure. Most of the females with EBLs (81 of 92, 88%) had work-related exposure to lead, with 71 of 81 (88%) working in the lead battery manufacturing industry and 60 of the 92 females (65%) having an elevated blood lead in both 2011 and 2012.

Ayurvedic product use was known as the reason for testing in 18 Iowans in 2012, with 12 EBL cases ranging in age from 58 to 73. Of the 12 cases, 11 had prior EBLs in 2011 as part of a cluster of 44 EBL cases linked to usage of ayurvedic products obtained from India. There was one new case in 2012 linked to this same source.

Lead exposure due to use of firearms, making or reloading of ammunition, or making fishing jigs was identified in 13 Iowans in 2012. Their EBLs ranged from 10 to 91 µg/dL, with an average of 28 µg/dL.

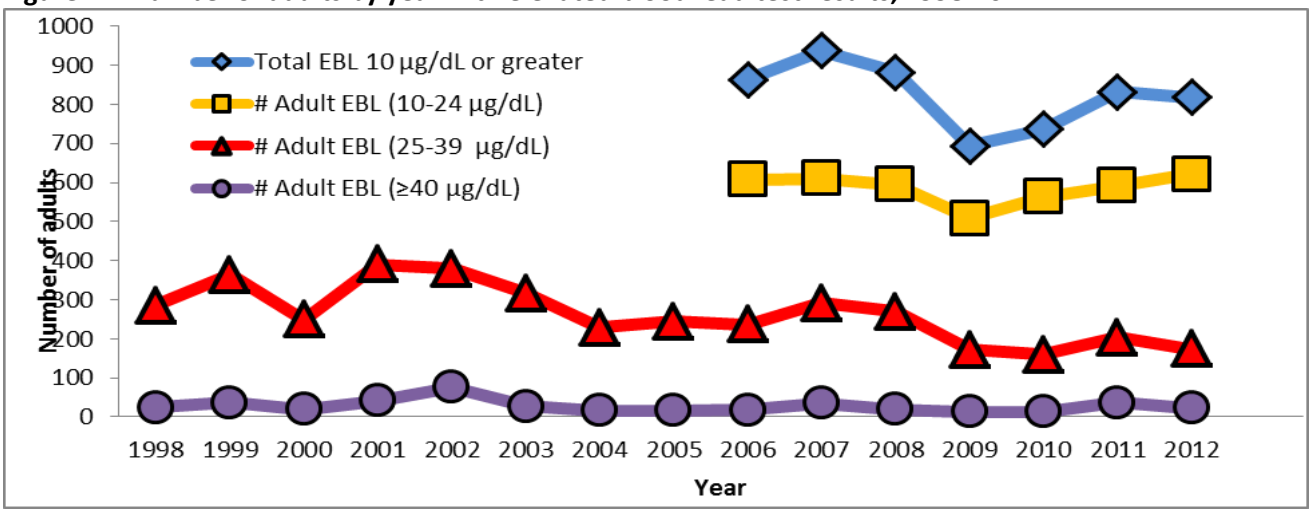
Iowa's high risk industries in 2012 remain consistent with data from previous years, with the majority (697 of 818 or 85%) of EBL adults working in manufacturing plants that use lead or metal products that contain lead. The next highest industry was construction with (35 of 818 or 4%) which includes commercial and residential projects including painting and renovation. Eleven employers accounted for 700 workers with EBLs or almost 86% of the 818 Iowans with elevated blood test results for 2012. These workers are also the most likely to be tested for lead exposure because of regulatory oversight or concerns about the risk of exposure. Other work-related cases in 2012 include worker exposures from indoor firing ranges, electronic and scrap metal recycling, materials wholesalers, automotive or radiator repair, and leaded glass workers. Other workers may have had lead exposure but were never tested during the year, especially those who are self-employed or working for smaller companies.

Table 7. Iowa adult blood lead test results, 2009-2012 and changes from 2011-2012

	Number of Iowa Adults Tested by Highest BLL/Year						Percent of all Iowa Adults Tested by BLL Range for Year			
IA ABLES DATA	**2012**	**Prior 3-yr Ave**	**2011**	**2010**	**2009**	**2012 change in numbers from 2011**	**2012**	**2011**	**2010**	**2009**
BLL 40 µg/dL or higher	22	21	37	14	13	-15	0.7%	1.1%	0.5%	0.5%
BLL 25-39 µg/dL	174	178	203	159	172	-29	5.8%	6.5%	5.5%	7.2%
BLL 10-24 µg/dL	622	555	592	563	509	+30	20.7%	18.8%	19.4%	21.2%
BLL 0-9 µg/dL	2187	2068	2323	2169	1711	-136	72.8%	73.6%	74.7%	71.1%
All BLL 10+ (Total EBLS)	818	754	832	736	694	-14	27.2%	26.4%	25.3%	28.9%
Total Individuals Tested	3005	2822	3155	2905	2405	-150				

Adults: Persons 16 years of age or older as of date of blood test.
Iowa Adult Data: Test results for persons with an Iowa residential address as of date of blood test. Blood lead test reports received without address data or with a residential address outside of Iowa are not included in this report. Report reflects data in database as of May 23, 2012. Later data entries are not included at this time.

Figure 27. Number of adults by year with elevated blood lead test results, 1998-2012



TRAUMATIC WORK-RELATED FATALITIES SURVEILLANCE

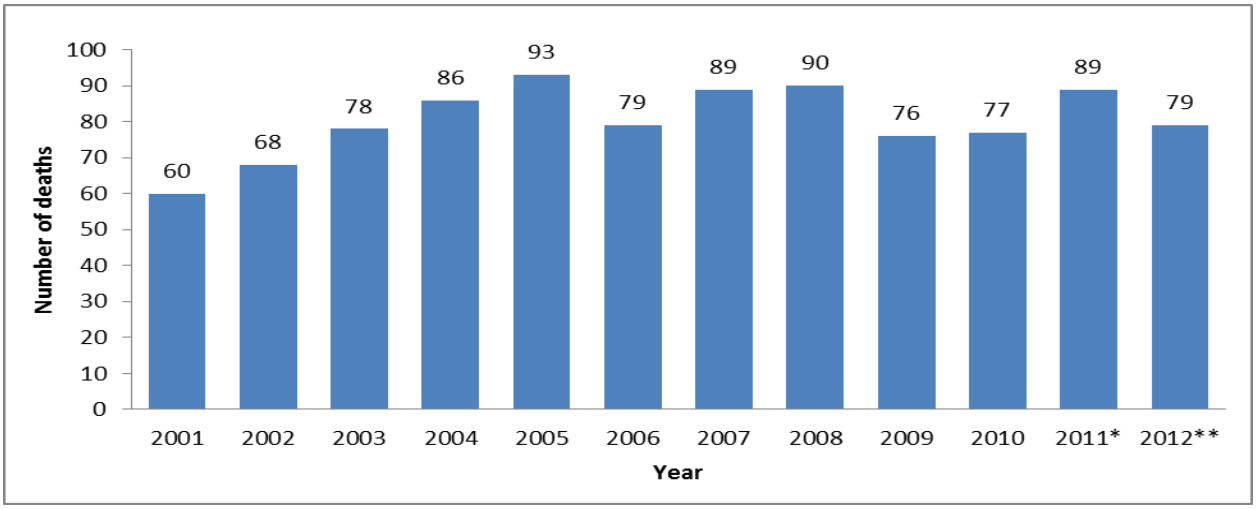
The IDPH Occupational Health and Safety Surveillance Program (OHSSP) includes the Iowa Fatality Assessment and Control Evaluation (FACE) program, with work subcontracted to the University of Iowa College of Public Health Injury Prevention Research Center (UI IPRC) and collaboration with the Iowa Office of the State Medical Examiner. The FACE program receives funding from the National Institute of Occupational Safety and Health (NIOSH).

Iowa FACE has identified 79 work-related fatalities for 2012 (preliminary data), which is below the ten-year average of 82.5 cases (2002-2011) and a decrease of 10 cases from 2011. Transportation incidents of all types are the largest single event causing work-related fatalities in Iowa (40 of 79, 51%) including 23 roadway fatalities and 15 off-roadway fatalities. Agriculturally-related (ag-related) activities involved 30 of the 79 deaths (38%), including 17 (43%) of the transportation incidents. Of the 17 ag-related transportation incidents, 9 involved tractors and 6 involved ATVs or 4-wheel utility vehicles. Ages for work-related traumatic fatalities ranged from 7 to 84 years of age with a median age of 54. Females accounted for 5% of the known work-related deaths. Self-employed, owner operator, or family workers accounted for 32 of the 79 fatalities (41 %) compared to 47 fatalities where workers were employed or working for wages (59%).

For fatalities to be included as a FACE "case", the incident causing the work-related death has to occur in Iowa (resident or non-resident), and be traumatic in nature. Cases include work-related deaths of persons regardless of compensation status, that is, volunteers or family members who are working regardless of payment. Deaths that occur while commuting to or from work do not qualify. Iowa workers killed while working out of state are not included.

Some potential cases may not be identified due to lack of surveillance data, especially for individuals killed in motor vehicle crashes when it is unknown that the person was traveling as part of their job duties (other than commuting). Some cases are not identified until months after the incident. Case definition may also vary between agencies involved in worker surveillance. For these reasons, total case numbers may differ between those reported by other programs, such as the US Bureau of Labor Statistics Census of Fatal Occupational Injuries (CFOI) or the Iowa Worker Memorial Day observance. Additional information can be found at www.public-health.uiowa.edu/face/.

Figure 28. Iowa FACE work-related death, 2001-2012



*Updated data
**Preliminary data

2012 Iowa summary of reported outbreak investigations

Table 8. Foodborne outbreaks, 2012

Type	Nature of Episode	Event/Place	Location of Food Preparation	Location of Food Consumption	Region	Month	Number Affected/Number Exposed (if known)	Food Vehicle of Transmission	Agent Involved
1.Foodborne	Diarrhea, Vomiting, Fever	Conference	Caterer	Conference	1	January	1	Unknown	*Salmonella* Enteriditis
2.Foodborne	Diarrhea, Vomiting, Fever	Restaurant	Restaurant	Restaurant	Multi-County	January	5	Raw Clover Sprouts	E.coli O26
3.Foodborne	Diarrhea, Vomiting	Restaurant	Restaurant	Restaurant	2	February	4	Unknown	Unknown
4.Foodborne	Diarrhea, Vomiting	Restaurant	Restaurant	Restaurant	6	March	35/49	Unknown	Norovirus
5.Foodborne	Diarrhea, Vomiting, Fever	Baptism	Home	Home	3	June	29/40	Pork	*Salmonella* I,4,5,12:i:-
6 Foodborne	Diarrhea, Vomiting	Workplace	Workplace	Workplace	6	June	2 lab confirmed, 3 epi-links	Raw milk	*Campylobacter*
7. Foodborne	Diarrhea, Abdominal Cramps, Chills	Restaurant	Restaurant	Restaurant/ Home	Multi-County	July - September	23 laboratory confirmed	Unknown	*Salmonella* Blockley
8. Foodborne	Diarrhea, Abdominal Cramps, Chills	Home	Home	Home	Multi-County	July	10 laboratory confirmed, 1 epi-link	Cantaloupe	*Salmonella* Typhimurium
9. Foodborne	Bloody Diarrhea, Abdominal Cramps, Nausea	Wedding	Caterer	Home	6	June	1 lab confirmed, 2 epi-links	Unknown	*Campylobacter*
10. Foodborne	Diarrhea, Abdominal Cramps, Chill	Home	Home	Home	Multi-County	May – August	6 confirmed	Unknown	*Salmonella* Thompson

11. Foodborne	Diarrhea, Vomiting, Fever	Restaurant	Restaurant	Restaurant	6	August	1 lab confirmed	Unknown	E.coli O157:H7
12. Foodborne	Diarrhea, Abdominal Cramps, Chills	Restaurant	Restaurant	Restaurant	5/Multi-State	August	6 lab confirmed, 2 epi-links	Unknown	*Salmonella* I,4,5,12:i:-
13. Foodborne	Diarrhea, Vomiting, Chills	Unknown	Unknown	Unknown	1	October	1	Unknown	E.coli O1
14. Foodborne	Diarrhea, Abdominal Cramps, Chills	Restaurant	Restaurant	Restaurant	6	December	1	Ground Beef	*Salmonella* Typhimurium
15. Foodborne	Diarrhea, Vomiting, Chills	Unknown	Unknown	Unknown	6	December	2	Unknown	*Salmonella* Mbandaka

Table 9. Non-foodborne or Unknown Cause Outbreaks, 2012

Type	Nature of Episode	Event/Place	Region	Month	Number Affected/Number Exposed (if known)	Vehicle of Transmission	Agent Involved, Number of Positive Tests, if known
1. Person-to-Person	Diarrhea, Vomiting	Birthday Party	1	January	5	Person-to-Person	Norovirus - 5
2. Person-to-Person	Diarrhea, Vomiting	School-Athletes	6	January	9	Person-to-Person	Norovirus - 2
3. Person-to-Person	Diarrhea, Vomiting	Restaurant	6	January	8	Person-to-Person	Norovirus - 3
4. Vaccine Preventable	Vomiting, Fever, Abdominal Cramps	Rehabilitation Facility	4	January	15	Vaccine Preventable	Influenza – AH3
5. Person-to-Person	Diarrhea, Vomiting	LTCF	6	January	3	Person-to-Person	Norovirus - 2

6.	Person-to-Person	Diarrhea, Vomiting	LTCF	6	January	3	Person-to-Person	Norovirus - 1
7.	Person-to-Person	Diarrhea, Vomiting	College	2	January	3	Person-to-Person	Suspect Norovirus
8.	Person-to-Person	Diarrhea, Vomiting	LTCF	6	January	3	Person-to-Person	Norovirus - 2
9.	Person-to-Person	Diarrhea, Vomiting	Funeral Luncheon	3	February	5	Person-to-Person	Norovirus - 4
10.	Person-to-Person	Diarrhea, Vomiting	School	6	February	62	Person-to-Person	Suspect Norovirus
11.	Person-to-Person	Diarrhea, Vomiting	LTCF	6	February	74	Person-to-Person	Suspect Norovirus
12.	Person-to-Person	Diarrhea, Vomiting	Hospital	6	March	62	Person-to-Person	Norovirus - 4
13.	Person-to-Person	Diarrhea, Vomiting	Restaurant	4	March	13	Person-to-Person	Suspect Norovirus
14.	Animal-to-Person	Diarrhea, Vomiting, Fever	Farm Store	4	March	1	Animal-to-Person	*Salmonella* Montevideo 1204MOJIX-1
15.	Waterborne	Nausea, Vomiting, Diarrhea	Waterpark	6	March	75	Person-to-Person	Norovirus -5
16.	Person-to-Person	Diarrhea, Nausea, Cramps	Restaurant	6	May	10	Person-to-Person	Suspect Norovirus
17.	Animal-to-Person	Diarrhea, Cramps	Unknown	Multi-County	May	2	Animal-to-Person	*Salmonella* Infantis 1204OHJFX-1
18.	Unknown	Nausea, Cramps, Diarrhea	Ice Cream Shoppe	6	June	8	Unknown	Unknown

19.	Person-to-Person	Nausea, Vomiting, Diarrhea	Long-Term Care	6	August	25% of staff	Unknown	Norovirus - 2
20.	Person-to-Person	Nausea, Vomiting, Diarrhea	Long-Term Care	1	August	8	Person-to-Person	Norovirus -1
21.	Person-to-Person	Diarrhea, Vomiting	Family Reunion	3	August	20/60	Unknown	Norovirus - 2
22.	Waterborne	Diarrhea, Cramps, Vomiting	Wading Pool	1	August	6/23	Waterborne	*Cryptosporidium* -6
23.	Person-to-Person	Diarrhea, Nausea, Vomiting	Hospital	4	August	8/37	Person-to-Person	Suspect Norovirus
24.	Person-to-Person	Bloody Diarrhea, Vomiting, Nausea	Camp	1	August	4	Person-to-Person	*E.coli* O157:H7-2
25.	Person-to-Person	Nausea, Vomiting, Diarrhea	Rehearsal Dinner	6	September	8/270	Person-to-Person	Norovirus - 3
26.	Person-to-Person	Nausea, Vomiting, Diarrhea	Child Care	6	September	2	Person-to-Person	Norovirus - 2
27.	Person-to-Person	Diarrhea, Cramps, Vomiting	Restaurant	1	October	7	Person-to-Person	Norovirus
28.	Person-to-Person	Diarrhea, Cramps, Vomiting	School	4	October	18/145	Person-to-Person	Suspect Norovirus
29.	Person-to-Person	Diarrhea, Nausea, Vomiting	Restaurant	3	October	6	Person-to-Person	Norovirus -2
30.	Person-to-Person	Vomiting	Restaurant	6	October	8	Person-to-Person	Suspect Toxin
31.	Person-to-Person	Nausea, Vomiting, Diarrhea	Long-Term Care	2	November	27	Person-to-Person	Norovirus -2

32.	Person-to-Person	Vomiting, Diarrhea, Fever	School	3	November	104/400	Person-to-Person	Norovirus -2
33.	Person-to-Person	Vomiting, Diarrhea,	Long-Term Care	2	December	48/109	Person-to-Person	Suspect Norovirus
34.	Person-to-Person	Vomiting, Diarrhea	Long-Term Care	3	December	16/32	Person-to-Person	Suspect Norovirus
35.	Person-to-Person	Vomiting, Diarrhea	Community Event	5	December	12/50	Person-to-Person	Suspect Norovirus
36.	Person-to-Person	Vomiting, Diarrhea, Fever	Restaurant	3	December	9/15	Person-to-Person	Norovirus – 1
37.	Person-to-Person	Vomiting, Diarrhea, Fever	Holiday Party	1	December	57/70	Person-to-Person	Suspect Toxin
38.	Vaccine Preventable	Fever, cough, sore throat	Long-Term Care	4	December	7/38	Person-to-Person	Influenza

Table 10. Cases and rates per 100,000 population for 2012 by age group

	0 to 4		5 to 19		20 to 29		30 to 39		40 to 64		>64		Unk	Total	
Disease	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Cases	Rate
AIDS (diagnoses)	1	0.5	3	0.5	13	3.2	20	5.5	34	3.4	1	0.2	0	72	2.4
Botulism	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0	0.0
Campylobacteriosis	57	28.2	91	14.7	91	22.1	65	18.0	162	16.2	68	15.0	0	534	17.5
Chlamydia	3	1.5	2916	471.5	6851	1666.1	1125	310.9	241	24.1	3	0.7	0	11139	365.7
Cryptosporidiosis	67	33.1	74	12.0	47	11.4	39	10.8	66	6.6	35	7.7	0	328	10.8
Dengue fever	0	0.0	0	0.0	1	0.2	0	0.0	1	0.1	0	0.0	0	2	0.1
E. coli/other shgt producing	44	21.8	53	8.6	35	8.5	16	4.4	24	2.4	9	2.0	0	181	5.9
Ehrlichiosis/anaplasmosis	0	0.0	0	0.0	0	0.0	0	0.0	3	0.3	3	0.7	0	6	0.2
Giardiasis	48	23.7	46	7.4	27	6.6	44	12.2	69	6.9	17	3.8	0	251	8.2
Gonorrhea	1	0.5	399	64.5	1116	271.4	343	94.8	122	12.2	1	0.2	0	1982	65.1
Hemolytic uremic syndrome	3	1.5	6	1.0	1	0.2	0	0.0	0	0.0	0	0.0	0	10	0.3
Hepatitis A	0	0.0	1	0.2	0	0.0	1	0.3	5	0.5	0	0.0	0	7	0.2
Hepatitis B, acute	0	0.0	0	0.0	1	0.2	4	1.1	7	0.7	0	0.0	0	12	0.4
Hepatitis B, chronic	3	1.5	19	3.1	75	18.2	56	15.5	67	6.7	7	1.5	0	227	7.5
HIV (diagnoses)	0	0.0	8	1.3	34	8.3	24	6.6	52	5.2	2	0.4	0	120	3.9
Legionellosis	0	0.0	0	0.0	2	0.5	1	0.3	6	0.6	4	0.9	0	13	0.4
Listeriosis	0	0.0	1	0.2	0	0.0	0	0.0	0	0.0	2	0.4	0	3	0.1
Lyme disease	7	3.5	48	7.8	7	1.7	17	4.7	54	5.4	32	7.1	0	165	5.4
Malaria	1	0.5	1	0.2	0	0.0	1	0.3	2	0.2	1	0.2	0	6	0.2
Meningococcal Inv. Disease	0	0.0	0	0.0	0	0.0	1	0.3	0	0.0	1	0.2	0	2	0.1
Mumps	2	1.0	0	0.0	0	0.0	2	0.6	2	0.2	0	0.0	0	6	0.2
Pertussis (whooping cough)	260	128.6	1118	180.8	81	19.7	103	28.5	150	15.0	24	5.3	0	1736	57.0
Q fever	0	0.0	0	0.0	0	0.0	1	0.3	1	0.1	0	0.0	0	2	0.1
Rocky Mountain spotted fever	1	0.5	1	0.2	0	0.0	2	0.6	3	0.3	1	0.2	0	8	0.3
Salmonellosis	109	53.9	98	15.8	75	18.2	68	18.8	191	19.1	81	17.9	0	622	20.4
Shigellosis	24	11.9	34	5.5	14	3.4	8	2.2	6	0.6	5	1.1	0	91	3.0
Syphilis	0	0.0	5	0.8	40	9.7	30	8.3	57	5.7	6	1.3	0	138	4.5
Tuberculosis	1	0.5	3	0.5	13	3.2	9	2.5	16	1.6	4	0.9	0	46	1.5
Typhoid fever	0	0.0	0	0.0	2	0.5	1	0.3	0	0.0	0	0.0	0	3	0.1
West Nile virus	0	0.0	2	0.3	0	0.0	3	0.8	16	1.6	10	2.2	0	31	1.0

Table 11. Cases and rates per 100,000 population for 2012 by sex, Iowa

	Sex						
	Female		Male		Unk	Total	
Disease	Cases	Rate	Cases	Rate	Cases	Cases	Rate
AIDS (diagnosis)	17	1.1	55	3.6	0	72	2.4
Botulism	0	0	0		0	0	0
Campylobacteriosis	216	14.0	316	21.0	2	534	17.5
Chlamydia	8015	521.1	3124	207.1	0	11139	365.7
Cryptosporidiosis	163	10.6	163	10.8	2	328	10.8
Dengue fever	1	0.1	1	0.1	0	2	0.1
E. coli and other shiga-toxin producing	87	5.7	93	6.2	0	180	5.9
Ehrlichiosis/anaplasmosis	3	0.2	3	0.2	0	6	0.2
Giardiasis	119	7.7	131	8.7	1	251	8.2
Gonorrhea	1161	75.5	821	54.4	0	1982	65.1
Hemolytic uremic syndrome	7	0.5	3	0.2	0	10	0.3
Hepatitis A	3	0.2	4	0.3	0	7	0.2
Hepatitis B, acute	4	0.3	8	0.5	0	12	0.4
Hepatitis B, chronic	124	8.1	103	6.8	0	227	7.5
HIV (diagnoses)	21	1.4	99	6.6	0	120	3.9
Legionellosis	5	0.3	8	0.5	0	13	0.4
Listeriosis	1	0.1	2	0.1	0	3	0.1
Lyme disease	72	4.7	93	6.2	0	165	5.4
Malaria	2	0.1	4	0.3	0	6	0.2
Meningococcal invasive disease	0	0.0	2	0.1	0	2	0.1
Mumps	2	0.1	4	0.3	0	6	0.2
Pertussis (whooping cough)	882	57.3	835	55.4	19	1736	57.0
Q fever	1	0.1	1	0.1	0	2	0.1
Rocky Mountain spotted fever	5	0.3	3	0.2	0	8	0.3
Salmonellosis	307	20.0	313	20.8	2	622	20.4
Shigellosis	53	3.4	38	2.5	0	91	3.0
Syphilis	22	1.4	116	7.7	0	138	4.5
Tuberculosis	16	1.0	30	2.0	0	46	1.5
Typhoid fever	1	0.1	2	0.1	0	3	0.1
West Nile virus	14	0.9	17	1.1	0	31	1.0

Table 12. Notifiable diseases by year, 1992-2012

Notifiable diseases	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
AIDS (diagnosis)	157	103	110	104	97	75	60	77	80	80	75	75	70	78	79	68	66	91	73	73	72
Anthrax																					
Botulism								1					1		1	1	1	0			
Brucellosis	1	2	1	2	4	4	1	6		2	1			1	2	0	2	2		1	0
Campylobacteriosis	260	292	280	274	339	425	455	467	499	467	427	458	559	537	449	524	591	552	751	747	534
Chlamydia	6125	5214	5412	5088	4165	4906	5173	5511	5989	5716	6241	6462	6958	7390	8399	8643	9372	9406	10542	10928	11139
Cholera			1					1													
Cryptosporidiosis			71	21	75	71	66	56	77	82	49	122	90	122	230	610	284	232	397	364	328
Cyclospora					3	1	3			1								1		1	0
Dengue Fever														1	1	6	5	2	2	5	2
Diphtheria																					
Ehrlichiosis											1	1		4	7	7	7	8	2	8	6
Encephalitis (arboviral except WNV)	3	4	1	13	19	3	3	3	4	3	3		2		1						
E. coli/other shiga-toxin producing	20	27	54	64	123	114	93	114	180	81	122	103	124	108	161	185	208	163	173	189	181
Hemolytic uremic syndrome*																				13	10
Giardiasis	351	340	339	391	410	358	429	377	420	345	315	277	301	280	302	301	326	291	284	270	251
Gonorrhea	1653	1824	1645	1723	1144	1309	1615	1365	1394	1424	1496	1544	1249	1606	1981	1928	1700	1658	1804	1966	1982
Haemophilus influenzae Type B	7	5	6	3	4	6	5	2					1		2	1	2	1	1	3	0
Hansen's disease (Leprosy)							1		2	1				1	1		1		1		
Hantavirus syndromes						2	1	2				1					1			1	1
Hepatitis A (viral, infectious)	53	58	64	106	346	490	400	161	67	41	72	40	50	22	13	48	109	38	11	8	7
Hepatitis B (serum) acute /chronic	33	36	27	46	74	44	54	44	38	24	20	27	17	32	21/35	269	25/226	293	15/183	15/182	12/227
Hepatitis B (perinatal)															1		1		1		
Hepatitis C or unspecified	12	12	25	1	43						1	1						262	156	48	297

Notifiable diseases	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
HIV (diagnosis)						70	73	64	92	95	105	89	105	113	108	124	101	125	115	119	120
Legionellosis	18	19	34	21	11	12	11	17	15	8	13	12	8	8	13	12	21	24	16	11	13
Listeria monocytogens					1		2	6	2	3	5		3	7	6	8	1	4	3	5	3
Lyme disease	33	8	17	16	19	8	27	24	34	36	42	58	56	91	97	124	109	108	87	100	165
Malaria	5	5	5	3	3	10	8	11	2	9	4	6	5	9	2	3	12	10	14	22	6
Measles (Rubeola)	1		7		1								3					1		1	0
Meningococcal invasive disease	18	28	25	31	56	47	46	42	37	32	29	28	17	19	20	15	19	16	10	14	2
Mumps	13	11	16	11	3	10	11	8	8	1	1	2	2	6	1,963	27	24	15	38	8	6
Pertussis (whooping cough)	11	38	23	11	32	207	78	111	67	167	230	182	1066	1106	342	150	257	235	705	232	1736
Plague																					
Poliomyelitis																					
Psittacosis	2	2								3				1							
Rabies, animal	175	78	90	141	237	160	153	159	81	83	74	105	100	108	57	31	29	35	27	25	31
Rabies, human											1										
Rocky Mountain spotted fever	3	7	1		1	2	2	1	2	5	7	3	2	7	5	17	8	5	5	7	8
Rubella (German Measles)	3							30		1											
Salmonellosis	339	242	404	433	335	296	375	260	373	339	509	413	435	410	475	477	425	408	530	448	622
Shigellosis	46	68	338	351	151	90	69	74	569	367	122	93	64	103	134	109	214	53	57	18	91
Syphilis	154	175	235	171	91	65	25	31	55	45	56	43	36	29	68	64	75	65	68	70	138
Tetanus	1	1	1			1	1		1		1			1					1		
Toxic Shock Syndrome	7	7	8	5	4	3	4	4	4	1	3	5	5	5			1	2	1	1	1
Trichinosis			1	6						3				1							
Tuberculosis	49	58	66	67	70	74	55	58	37	42	31	40	47	55	40	43	46	42	48	40	46
Tularemia																		1		3	1
Typhoid fever	1				1	1		1				2				1	6		3	4	3
West Nile virus											54	147	23	37	37	30	5	5	9	9	31
Yellow Fever																		2			

* includes cases starting 2011

Table 13. *Salmonella* serotypes reported, 2012

	Serotype	Cases		Serotype	Cases
Salmonella	Agbeni	1	*Salmonella*	Montevideo	25
Salmonella	Agona	7	*Salmonella*	Muenchen	11
Salmonella	Altona	1	*Salmonella*	Newport	31
Salmonella	Anatum	4	*Salmonella*	Ohio	3
Salmonella	Baildon	1	*Salmonella*	Oranienburg	9
Salmonella	Bareilly	1	*Salmonella*	Oslo	1
Salmonella	Barranquilla	1	*Salmonella*	Panama	1
Salmonella	Berta	8	*Salmonella*	Paratyphi B	2
Salmonella	Blockley	23	*Salmonella*	Paratyphi B var Java	4
Salmonella	Bonariensis	2	*Salmonella*	Poona	2
Salmonella	Bovismorbificans	7	*Salmonella*	Reading	1
Salmonella	Braenderup	9	*Salmonella*	Saintpaul	3
Salmonella	Brandenburg	1	*Salmonella*	Sandiego	1
Salmonella	Carrau	1	*Salmonella*	Schwarzengrund	1
Salmonella	Corvallis	1	*Salmonella*	Seftenberg	1
Salmonella	Derby	1	*Salmonella*	Singapore	1
Salmonella	Enteritidis	61	*Salmonella*	Stanley	1
Salmonella	Hadar	2	*Salmonella*	Thompson	25
Salmonella	Hartford	13	*Salmonella*	Typhi	3
Salmonella	Heidelberg	10	*Salmonella*	Typhimurium	121
Salmonella	Hvittingfoss	1	*Salmonella*	Uganda	2
Salmonella	Idikan	1	*Salmonella*	Virchow	1
Salmonella	Infantis	15	*Salmonella*	Worthington	2
Salmonella	Javiana	5	*Salmonella*	Species	1
Salmonella	Johannesburg	1	*Salmonella*	Subspecies I	92

Salmonella	Litchfield	1	*Salmonella*	Subspecies IIIb	1
Salmonella	Manhattan	2		Unknown	90
Salmonella	Mbandaka	5	Total		622

Table 14. *Shigella* serogroups, 1991-2012

Shigella Serogroups	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Boydii		1			1	1				4	6	2		3	1	1	0	1	1	2	1	0
Dysenteriae	1	1				1										1	0	0	0	0	0	0
Flexneri	8	8	8		3	13	12	6	7	10	7	11	5	8	7	15	9	11	7	6	4	5
Group B						3		1	1						3		2	0	0	0	0	0
Group C				1													2	0	0	0	0	0
Group D		1		4	3	5		1					1				1	1	0	0	0	10
Sonnei	24	33	50	199	119	116	62	44	55	514	306	63	62	41	58	110	97	136	45	49	10	73
Unknown										41	46	46	25	12	7	7	0	0	0	0	3	3
TOTAL CASES	33	46	68	338	351	151	90	69	74	569	365	122	93	64	78	134	109	214	53	57	18	91

Table 15. Iowa children born in 2006 and tested for blood lead levels before the age of six years by county (as of 12/31/2012)

COUNTY	2006 BIRTHS	TESTED	%TESTED	>=10µg/dL	%>=10µg/dL	COUNTY	2006 BIRTHS	TESTED	%TESTED	>=10µg/dL	%>=10µg/dL
Adair	97	97	100.0	4	4.1	Des Moines	557	557	100.0	30	5.4
Adams	64	62	96.9	6	9.7	Dickinson	173	183	105.8	0	0.0
Allamakee	207	228	110.1	5	2.2	Dubuque	1208	1110	91.9	11	1.0
Appanoose	154	138	89.6	8	5.8	Emmet	146	146	100.0	8	5.5
Audubon	57	57	100.0	2	3.5	Fayette	230	230	100.0	12	5.2
Benton	310	310	100.0	11	3.5	Floyd	220	201	91.4	2	1.0
Black Hawk	1776	1776	100.0	72	4.1	Franklin	124	124	100.0	12	9.7
Boone	329	329	100.0	11	3.3	Fremont	81	81	100.0	4	4.9
Bremer	297	288	97.0	9	3.1	Greene	128	128	100.0	5	3.9
Buchanan	340	287	84.4	5	1.7	Grundy	138	135	97.8	2	1.5
Buena Vista	260	260	100.0	10	3.8	Guthrie	122	122	100.0	7	5.7
Butler	170	170	100.0	3	1.8	Hamilton	184	184	100.0	5	2.7
Calhoun	108	96	88.9	3	3.1	Hancock	131	131	100.0	4	3.1
Carroll	302	302	100.0	10	3.3	Hardin	196	196	100.0	8	4.1
Cass	159	164	103.1	10	6.1	Harrison	175	163	93.1	1	0.6
Cedar	203	199	98.0	6	3.0	Henry	221	221	100.0	4	1.8
Cerro Gordo	501	501	100.0	14	2.8	Howard	127	127	100.0	3	2.4
Cherokee	119	119	100.0	3	2.5	Humboldt	125	125	100.0	2	1.6
Chickasaw	156	156	100.0	4	2.6	Ida	92	91	98.9	4	4.4
Clarke	126	126	100.0	7	5.6	Iowa	206	201	97.6	3	1.5
Clay	205	205	100.0	4	2.0	Jackson	229	229	100.0	10	4.4
Clayton	226	226	100.0	15	6.6	Jasper	402	402	100.0	7	1.7
Clinton	653	653	100.0	26	4.0	Jefferson	142	141	99.3	3	2.1
Crawford	249	249	100.0	7	2.8	Johnson	1615	1615	100.0	7	0.4
Dallas	893	893	100.0	10	1.1	Jones	212	242	114.2	6	2.5
Davis	138	97	70.3	1	1.0	Keokuk	139	133	95.7	7	5.3
Decatur	97	95	97.9	1	1.1	Kossuth	166	166	100.0	4	2.4
Delaware	216	196	90.7	2	1.0	Lee	454	454	100.0	20	4.4

COUNTY	2006 BIRTHS	TESTED	%TESTED	>=10µg/dL	%>=10µg/dL	COUNTY	2006 BIRTHS	TESTED	%TESTED	>=10µg/dL	%>=10µg/dL
Linn	2869	2869	100.0	62	2.2	Poweshiek	187	159	85.0	6	3.8
Louisa	147	134	91.2	3	2.2	Ringgold	59	52	88.1	2	3.8
Lucas	125	119	95.2	0	0.0	Sac	119	119	100.0	10	8.4
Lyon	175	125	71.4	1	0.8	Scott	2247	2247	100.0	65	2.9
Madison	205	240	117.1	3	1.3	Shelby	121	131	108.3	3	2.3
Mahaska	322	343	106.5	11	3.2	Sioux	522	525	100.6	10	1.9
Marion	422	443	105.0	7	1.6	Story	999	988	98.9	10	1.0
Marshall	624	645	103.4	35	5.4	Tama	226	237	104.9	11	4.6
Mills	179	165	92.2	3	1.8	Taylor	79	74	93.7	8	10.8
Mitchell	119	104	87.4	2	1.9	Union	170	179	105.3	15	8.4
Monona	120	132	110.0	6	4.5	Van Buren	89	69	77.5	2	2.9
Monroe	96	104	108.3	2	1.9	Wapello	496	496	100.0	22	4.4
Montgomery	137	145	105.8	4	2.8	Warren	515	503	97.7	5	1.0
Muscatine	633	814	128.6	18	2.2	Washington	316	280	88.6	8	2.9
O'Brien	170	169	99.4	6	3.6	Wayne	88	85	96.6	4	4.7
Osceola	70	73	104.3	2	2.7	Webster	485	485	100.0	16	3.3
Page	177	169	95.5	9	5.3	Winnebago	142	142	100.0	0	0.0
Palo Alto	126	112	88.9	0	0.0	Winneshiek	190	190	100.0	8	4.2
Plymouth	306	328	107.2	7	2.1	Woodbury	1697	1697	100.0	100	5.9
Pocahontas	68	71	104.4	3	4.2	Worth	86	86	100.0	2	2.3
Polk	6911	6915	100.1	114	1.6	Wright	176	176	100.0	8	4.5
Pottawattamie	1227	884	72.0	16	1.8	TOTALS	40592	40043	98.6	1089	2.7

Table 16. 2012 Iowa adult blood testing summary by county

COUNTY	# tested	# BLL result ≥ 10 µg/dL	COUNTY	# tested	# BLL result ≥ 10 µg/dL	COUNTY	# tested	# BLL result ≥ 10 µg/dL
Adair	<5	0	Floyd	<5	0	Monona	6	<5
Adams	6	<5	Franklin	14	<5	Monroe	14	7
Allamakee	5	0	Fremont	13	5	Montgomery	45	26
Appanoose	46	32	Greene	<5	0	Muscatine	55	<5
Audubon	10	5	Grundy	8	<5	O'Brien	<5	0
Benton	15	<5	Guthrie	5	0	Osceola	<5	0
Black Hawk	83	6	Hamilton	11	0	Page	26	9
Boone	14	0	Hancock	<5	0	Palo Alto	9	0
Bremer	19	0	Hardin	9	0	Plymouth	6	0
Buchanan	79	36	Harrison	<5	0	Pocahontas	<5	<5
Buena Vista	13	<5	Henry	15	0	Polk	248	9
Butler	8	0	Howard	7	<5	Pottawattamie	37	<5
Calhoun	6	0	Humboldt	5	0	Poweshiek	8	<5
Carroll	14	<5	Ida	<5	0	Ringgold	<5	0
Cass	32	14	Iowa	9	0	Sac	7	0
Cedar	22	<5	Jackson	23	7	Scott	235	17
Cerro Gordo	22	0	Jasper	9	0	Shelby	7	<5
Cherokee	0	0	Jefferson	57	19	Sioux	5	0
Chickasaw	8	0	Johnson	110	<5	Story	52	<5
Clarke	7	<5	Jones	21	5	Tama	8	0
Clay	6	0	Keokuk	21	5	Taylor	9	0
Clayton	67	50	Kossuth	6	0	Union	<5	0
Clinton	59	<5	Lee	41	<5	Van Buren	11	<5
Crawford	5	<5	Linn	205	22	Wapello	35	10
Dallas	20	0	Louisa	7	0	Warren	25	<5
Davis	7	<5	Lucas	40	23	Washington	14	0
Decatur	9	6	Lyon	5	0	Wayne	118	94
Delaware	252	217	Madison	7	0	Webster	22	<5
Des Moines	38	<5	Mahaska	40	12	Winnebago	<5	0
Dickinson	12	<5	Marion	18	<5	Winneshiek	12	<5
Dubuque	206	106	Marshall	19	<5	Woodbury	63	6
Emmet	<5	0	Mills	15	<5	Worth	6	0
Fayette	39	10	Mitchell	6	0	Wright	12	0
Based on highest test result in 2012 per adult (16 yo at time of test) residing in Iowa. Numbers 1-4 are suppressed and shown as <5. An elevated blood lead level (EBL) is considered a venous result greater than or equal to 10 micrograms per deciliter (µg/dL).						**Total** including suppressed data	**3005**	**818**

Table 17. Common notifiable diseases by county, 2012

	AIDS (diagnosis)	HIV (diagnosis)	CAMPY	CHLAMYDIA	CRYPTOSPORA	*E.COLI* SHGT	EHRLICH (HME)	GIARDIA	GONORRHEA	HUS	HEP A	HEP B, ACUTE	HEP B, CHRON	LEGION	LISTERIA	LYME	MENINGO.INF	MUMPS	PERTUSSIS	RABIES (ANIMAL)	RMSF	SALM	SHIGELLA	SYPHILIS	TB	WEST NILE VIRUS
ADAIR	0	0	3	5	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0
ADAMS	0	0	0	10	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
ALLAMAKEE	0	0	11	20	3	3	1	3	0	0	0	0	2	0	0	11	0	0	24	0	0	2	0	0	0	0
APPANOOSE	0	0	1	23	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
AUDUBON	0	0	1	21	0	1	0	0	2	1	0	0	0	0	0	0	0	0	0	1	0	2	0	1	0	0
BENTON	0	5	8	52	5	3	1	2	1	0	0	0	0	0	0	0	0	0	39	0	0	5	0	0	0	0
BLACK HAWK	0	*	11	868	0	3	0	4	181	0	1	0	16	3	0	5	0	0	16	0	1	28	0	4	4	0
BOONE	0	*	3	60	1	0	0	3	8	0	0	0	1	0	0	3	0	0	3	1	0	5	0	1	0	1
BREMER	0	0	4	46	0	0	0	4	8	0	0	0	0	0	0	1	0	0	15	0	0	5	1	1	0	0
BUCHANAN	0	0	8	46	1	7	0	2	3	2	0	0	1	1	0	1	0	0	14	0	0	2	0	0	0	0
BUENA VISTA	0	*	5	56	2	0	0	1	2	0	0	0	4	0	0	0	0	0	12	0	0	6	0	1	2	0
BUTLER	0	0	3	31	0	1	0	1	0	0	0	0	0	0	0	0	0	0	5	0	0	2	0	1	0	0
CALHOUN	0	0	0	18	6	0	0	2	1	0	0	0	2	1	0	0	0	0	1	0	0	2	0	0	0	0
CARROLL	*	*	1	42	5	5	0	4	5	0	0	0	1	0	0	0	0	0	10	0	0	3	0	0	0	0
CASS	0	0	2	41	0	4	0	0	2	0	0	1	0	0	0	0	0	0	3	1	0	1	0	0	0	1
CEDAR	0	0	7	41	0	1	1	0	6	0	0	0	0	0	0	0	0	0	5	0	1	7	0	0	0	0
CERRO GORDO	*	*	8	90	0	0	0	4	6	0	0	0	1	0	0	0	0	0	159	1	0	8	0	0	0	0
CHEROKEE	0	0	0	15	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	5	0	0	0	1
CHICKASAW	0	0	0	14	3	0	0	0	0	0	0	0	2	0	0	2	0	0	3	0	0	4	0	0	0	0
CLARKE	0	0	2	29	0	6	0	1	2	0	0	0	0	0	0	0	0	0	3	0	0	9	0	1	0	0
CLAY	0	0	3	39	4	1	0	4	0	0	0	0	0	1	0	0	0	0	1	1	0	2	3	1	0	0
CLAYTON	*	0	9	19	3	2	2	3	0	0	0	0	1	0	0	12	0	0	5	0	0	1	0	0	0	0
CLINTON	*	*	7	175	1	4	0	1	31	0	0	0	3	0	0	3	0	0	8	1	1	7	0	0	0	0
CRAWFORD	0	0	2	64	2	0	0	2	1	0	0	0	1	0	0	0	0	0	2	0	0	2	0	0	0	0
DALLAS	*	*	6	135	9	2	0	7	26	0	0	0	7	0	0	1	0	0	9	1	1	14	4	2	1	0

	AIDS (diagnosis)	HIV (diagnosis)	CAMPY	CHLAMYDIA	CRYPTOSPORA	*E.COLI* SHGT	EHRLICH (HME)	GIARDIA	GONORRHEA	HUS	HEP A	HEP B, ACUTE	HEP B, CHRON	LEGION	LISTERIA	LYME	MENINGO.INF	MUMPS	PERTUSSIS	RABIES (ANIMAL)	RMSF	SALM	SHIGELLA	SYPHILIS	TB	WEST NILE VIRUS
DAVIS	0	0	0	21	2	4	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	1	0	0	0	0
DECATUR	*	0	2	28	1	0	0	1	6	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
DELAWARE	0	0	7	25	1	3	0	0	2	0	0	0	0	0	0	2	0	0	24	0	0	6	0	1	0	0
DES MOINES	*	0	7	179	4	1	0	4	27	1	0	0	3	0	0	0	0	0	8	0	0	3	1	0	0	1
DICKINSON	0	0	3	22	3	0	0	1	3	0	0	0	1	0	1	0	0	0	0	1	0	0	2	0	0	2
DUBUQUE	*	6	29	376	29	7	0	9	55	0	0	1	1	1	0	9	0	0	76	1	0	12	1	3	1	0
EMMET	0	0	0	37	1	1	0	0	1	0	0	0	2	0	0	0	0	0	0	1	0	2	0	0	0	0
FAYETTE	0	0	8	35	2	1	0	0	7	0	0	1	0	1	0	4	0	0	79	0	1	5	0	0	0	0
FLOYD	0	0	3	39	7	3	0	1	1	0	0	0	1	0	0	1	0	0	12	0	0	2	0	0	0	1
FRANKLIN	0	0	6	29	0	0	0	1	1	0	0	0	0	0	0	0	0	0	19	0	0	4	0	1	0	0
FREMONT	0	0	4	12	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	1
GREENE	0	0	2	33	1	0	0	0	5	0	3	0	1	1	0	0	0	0	3	0	0	0	0	0	0	0
GRUNDY	0	0	1	25	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	1
GUTHRIE	*	*	4	17	1	0	0	1	4	0	0	0	1	0	0	0	0	0	1	1	0	1	0	0	0	0
HAMILTON	0	0	6	53	0	0	0	1	2	0	0	0	1	0	0	1	0	1	0	0	0	5	0	0	2	0
HANCOCK	0	0	1	5	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5	0	0	1	0	0	0	0
HARDIN	0	0	3	32	0	0	0	0	1	0	0	0	0	0	0	1	0	0	5	0	0	4	0	0	0	0
HARRISON	0	0	2	31	1	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
HENRY	0	0	3	75	1	1	0	2	4	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
HOWARD	0	0	1	11	2	0	0	1	0	0	0	0	0	0	0	0	0	0	36	0	0	6	0	0	0	0
HUMBOLDT	0	0	1	21	2	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0
IDA	0	0	1	13	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0
IOWA	0	0	3	31	0	2	0	0	1	0	0	0	0	0	0	1	0	0	13	0	0	5	0	0	0	0
JACKSON	*	*	17	52	14	2	0	0	2	0	0	0	1	0	0	3	0	0	2	0	0	9	0	0	0	0
JASPER	*	*	3	108	14	5	0	2	9	0	0	0	0	0	0	1	0	0	4	0	0	5	0	0	0	0

	AIDS (diagnosis)	HIV (diagnosis)	CAMPY	CHLAMYDIA	CRYPTOSPORA	*E.COLI* SHGT	EHRLICH (HME)	GIARDIA	GONORRHEA	HUS	HEP A	HEP B, ACUTE	HEP B, CHRON	LEGION	LISTERIA	LYME	MENINGO.INF	MUMPS	PERTUSSIS	RABIES (ANIMAL)	RMSF	SALM	SHIGELLA	SYPHILIS	TB	WEST NILE VIRUS
JEFFERSON	0	0	1	27	5	1	0	6	0	0	0	0	0	0	0	1	1	0	0	0	0	2	0	0	1	0
JOHNSON	8	17	26	701	9	16	1	7	109	2	0	2	15	1	0	26	0	1	136	0	0	23	2	14	4	0
JONES	0	0	11	37	8	1	0	4	6	0	0	0	0	0	0	1	0	0	3	0	0	7	0	1	0	0
KEOKUK	0	0	2	25	2	2	0	1	3	0	0	0	0	0	0	1	0	0	0	0	0	3	0	0	0	0
KOSSUTH	0	0	1	18	0	1	0	0	0	0	0	0	0	1	0	0	0	0	3	1	0	2	0	0	0	0
LEE	*	*	5	155	1	1	0	0	8	0	0	0	0	0	0	1	0	0	1	0	0	18	0	0	0	0
LINN	8	13	45	986	16	10	0	24	230	0	0	0	17	1	1	13	0	1	288	0	0	29	2	7	4	1
LOUISA	0	*	2	37	1	0	0	0	0	0	0	0	1	0	0	3	0	0	0	0	0	0	0	0	2	0
LUCAS	0	0	5	21	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	2	0	0
LYON	0	0	9	11	4	3	0	5	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0	0	0	3
MADISON	*	*	1	27	1	2	0	0	4	0	0	0	0	0	0	0	0	0	4	0	0	3	0	0	0	1
MAHASKA	0	0	0	61	0	2	0	1	11	1	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0
MARION	*	*	3	75	4	2	0	0	9	0	0	0	0	0	0	4	0	0	3	0	0	11	0	0	0	1
MARSHALL	*	*	10	196	0	0	0	3	11	0	0	0	8	0	0	2	0	0	5	2	0	7	0	0	1	0
MILLS	0	*	0	25	1	0	0	1	1	0	0	0	2	0	0	0	0	0	6	1	0	5	0	0	0	0
MITCHELL	0	0	5	7	2	0	0	0	0	0	0	0	0	0	0	1	0	0	4	3	0	2	0	0	0	0
MONONA	0	0	3	16	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
MONROE	0	0	1	18	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0
MONTGOMERY	*	*	3	25	0	1	0	0	1	0	0	0	0	0	0	1	0	0	2	0	0	4	0	0	1	1
MUSCATINE	0	0	5	148	2	1	0	2	20	0	0	1	3	0	0	7	0	0	10	0	0	8	0	1	1	0
O'BRIEN	0	0	9	18	1	1	0	3	2	0	0	0	1	0	0	0	0	0	0	0	0	3	0	2	0	0
OSCEOLA	0	0	2	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	1	0	0	0
PAGE	0	0	2	60	2	0	0	0	5	0	0	0	1	0	0	0	0	0	1	0	0	3	0	0	0	2
PALO ALTO	0	0	0	9	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	3	2	0	0	1
PLYMOUTH	0	0	4	66	15	0	0	4	1	0	0	0	0	0	0	0	0	0	10	0	0	11	0	0	1	2
POCAHONTAS	*	*	3	9	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0

	AIDS (diagnosis)	HIV (diagnosis)	CAMPY	CHLAMYDIA	CRYPTOSPORA	*E.COLI* SHGT	EHRLICH (HME)	GIARDIA	GONORRHEA	HUS	HEP A	HEP B, ACUTE	HEP B, CHRON	LEGION	LISTERIA	LYME	MENINGO.INF	MUMPS	PERTUSSIS	RABIES (ANIMAL)	RMSF	SALM	SHIGELLA	SYPHILIS	TB	WEST NILE VIRUS
POLK	21	37	35	2,035	29	16	0	48	593	2	2	1	65	1	0	10	0	1	172	2	0	89	36	61	12	1
POTTAWATTAMIE	*	*	7	387	10	3	0	6	92	0	0	1	3	0	0	0	0	0	49	0	1	23	32	1	0	2
POWESHIEK	0	0	2	76	3	0	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	2	0	0	0	0
RINGGOLD	0	0	0	6	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAC	0	0	8	10	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	7	0	0	0	0
SCOTT	4	9	28	932	10	11	0	9	271	1	0	1	13	0	0	11	1	0	171	0	0	22	0	8	0	0
SHELBY	*	0	0	15	3	1	0	1	4	0	0	0	1	0	0	0	0	0	4	0	0	5	0	0	0	0
SIOUX	0	0	11	45	13	11	0	10	4	0	0	0	3	0	0	1	0	0	0	3	0	16	0	1	0	1
STORY	*	*	13	321	1	5	0	7	32	0	0	0	21	0	0	2	0	1	70	2	0	22	0	10	3	0
TAMA	0	0	3	63	0	0	0	3	2	0	0	0	0	0	0	0	0	0	2	0	0	4	0	0	0	2
TAYLOR	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNION	0	0	0	43	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
VAN BUREN	0	0	1	11	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WAPELLO	*	*	7	169	16	0	0	6	17	0	0	1	2	0	0	2	0	0	3	1	0	14	2	1	3	0
WARREN	0	0	2	91	4	1	0	2	12	0	0	1	1	0	0	0	0	0	22	0	0	9	0	1	0	0
WASHINGTON	*	0	2	55	1	4	0	0	10	0	0	0	0	0	0	1	0	0	3	0	0	5	0	0	0	0
WAYNE	0	0	1	11	0	0	0	0	0	0	0	1	0	0	0	0	0	0	12	0	0	0	0	0	0	0
WEBSTER	*	*	2	163	2	1	0	4	35	0	0	0	3	0	0	2	0	0	4	1	0	4	0	1	1	0
WINNEBAGO	0	0	1	20	0	0	0	0	0	0	0	0	0	0	0	1	0	0	6	0	0	0	0	0	0	0
WINNESHIEK	0	*	9	24	2	0	0	4	0	0	0	0	0	0	0	8	0	0	29	0	0	6	0	1	1	0
WOODBURY	*	*	14	559	15	3	0	10	58	0	0	0	10	0	0	0	0	0	48	1	0	27	0	6	1	3
WORTH	0	0	2	8	0	0	0	0	2	0	0	0	0	0	0	0	0	0	26	0	0	1	0	0	0	0
WRIGHT	0	0	6	25	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	0	1	0	0
Total	72	120	534	11139	328	181	6	251	1982	10	7	12	227	13	3	165	2	6	1736	31	8	622	91	138	46	31

*in the 'HIV (diagnoses)' column indicates only 1-3 HIV diagnoses reported for that county

References

[1] Diseases reportable to Iowa Department of Public Health. Iowa Administrative Code [641] Chapter 1.
[2] HIV/AIDS Program Information. http://www.idph.state.ia.us/adper/hiv_aids_programs.asp#surveillance
[3] Recommendations of the Advisory Committee on Immunization Practices. Prevention and Control of Meningococcal Disease. MMWR, May 27, 2005, 54(RR07);1-21.
[4] Panozzo CA. *Pediatrics.* 2010;126:e116-e123.
[5] The Respiratory Syncytial Virus (RSV) Surveillance: http://www.cdc.gov/surveillance/nrevss/rsv/default.html
[6] National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention Atlas. http://gis.cdc.gov/GRASP/NCHHSTPAtlas/main.html
[7] 2010 STD Treatment Guidelines. MMWR, Dec 17, 2010, 59(RR12). http://www.cdc.gov/std/treatment/2010/STD-Treatment-2010-RR5912.pdf
[8] JAMA. 2013 Jan 9;309(2):163-70. doi: 10.1001/jama.2012.176575.