

Iowa Surveillance of Notifiable and Other Diseases

Annual Report 2015



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

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Introduction

The purpose of this report is to provide a 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 also 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 Center for Acute Disease Epidemiology (CADE) conducts surveillance for common and emerging infectious diseases, agents of bioterrorism, disease outbreaks, and occurrence of rare and unusual acute diseases¹.

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 & EH division comes 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. Reports of diseases or exposures occurring outside of Iowa can be reported by other states or CDC to IDPH via the Epi-X system. CADE tracks reports of disease in Iowa residents; however, acquisition or exposure to some illnesses may have occurred in Iowa, 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 is electronically exchanged between IDSS and CDC.

The Iowa Department of Public Health is in the midst of implementing statewide electronic laboratory reporting (ELR). ELR from the State Hygienic Laboratory (SHL) has been in place since March 2010. The large national/regional reference labs (ARUP, Center for Disease Detection, LabCorp, MAYO, PAML,

QUEST – Wood Dale, and Tamarac) are all sending laboratory results by ELR. In total, 38 ELR connections have been established, all of which represent 160 different laboratory or hospital locations in Iowa, Minnesota, Nebraska, South Dakota, Wisconsin and many other states. Ongoing implementation plans include establishing 23 more ELR connections representing 38 different Iowa laboratories or hospitals. In addition, IDPH efforts to implement ELR with other state public health jurisdictions are ongoing; Iowa has live connections with Michigan, Nebraska, and Wisconsin. There are open projects with Illinois and South Dakota. ELR dramatically improves public health response time by slicing 3 to 9 days off of the lag time that occurs with mail and fax reporting methods.

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 unique reporting system used by IDPH for transmitting de-identified 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. The enteric disease five-year averages were calculated by taking the average of the previous five years' case counts for each disease. This is in contrast to previous methods utilized in this report, which included adding the five-year average to two times the standard deviation (5-year average + 2(SD)). All case counts include cases that were and were not considered to be part of an outbreak investigation. This also differs from previous methods utilized in this report. Calculations were performed with EPI INFO® 7.1.5.2, and Microsoft® Excel. Maps were generated using ARC GIS® 10.0.

CADE uses the most recent Council of State and Territorial Epidemiologists (CSTE)/CDC case definitions found at www.cdc.gov/nndss/conditions/notifiable/2015/. 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 2016. 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 2015. Therefore, case counts in this report may vary slightly from counts generated using the calendar year of 2015.

Influenza surveillance data was collected from multiple sources, including sentinel outpatient health care providers, sentinel hospitals, public health, clinical laboratories, and schools. Laboratory-confirmed influenza cases were based on real-time polymerase chain reaction (RT-PCR) test results sent from SHL. SHL also surveyed clinical and reference labs throughout the state for the weekly number of rapid influenza tests performed and number of positives. 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.

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 & EH programs to CDC are used to develop a composite picture of disease burden in the US.

Iowa 2010 Population by Age Group, Gender, Race and Ethnicity	Number	Percent
Total population	3,046,355	100.0
Under 5 years	202,123	6.6
5 to 9 years	200,646	6.6
10 to 14 years	200,904	6.6
15 to 19 years	216,837	7.1
20 to 24 years	213,350	7.0
25 to 29 years	197,843	6.5
30 to 34 years	184,740	6.1
35 to 39 years	177,148	5.8
40 to 44 years	187,400	6.2
45 to 49 years	216,482	7.1
50 to 54 years	223,244	7.3
55 to 59 years	204,393	6.7
60 to 64 years	168,357	5.5
65 to 69 years	124,365	4.1
70 to 74 years	100,291	3.3
75 to 79 years	83,387	2.7
80 to 84 years	70,187	2.3
85 years and over	74,658	2.5

Gender	2010 Population
Female	1,538,036
Male	1,508,319
Race	2010 Population
White	2,781,561
Black	89,148
Asian	53,094
Other	122,552
Ethnicity	2010 Population
Non-Hispanic	2,894,811
Hispanic	151,544

Iowa County Boundaries



Section 1

Tables of Select Reportable Diseases/Conditions

Table 1. Common reportable diseases by county – Iowa 2015

	Infant botulism	Brucellosis	Campylobacteriosis	Cryptosporidiosis	Cyclosporiasis	Dengue fever	<i>E. coli</i> (STEC)	Ehrlichiosis / Anaplasmosis	Giardiasis	<i>Haemophilus influenzae</i> type b	Hemolytic Uremic Syndrome (HUS)	Hepatitis A	Hepatitis B (Acute)	Hepatitis B (Chronic)	Legionellosis	<i>Listeria monocytogenes</i>	Lyme disease	Malaria	Meningococcal invasive disease	Mumps	Pertussis	Q Fever	Rocky Mountain spotted fever	Salmonellosis	Shigellosis	Typhoid fever	West Nile Virus	Total
Adair			2					1											1					2				6
Adams			1				1							1													1	3
Allamakee			5	3			1	1									5				1			2				18
Appanoose			4	2				1				1									1			4	1			14
Audubon							2																	1	1			4
Benton			9	2			2	1	1					1	1		14							8	9			48
Black Hawk	1		7	3			4		6			1		26	2		8		1	25	6			23	55	1		169
Boone			5	1					1					1			5							5	2			20
Bremer			2	1					4						1					1				4	3			16
Buchanan			6	5		1	1							1	1		3							6	1			25
Buena Vista			7	2										3		1								12	3			28
Butler			3	4			4		3								1			1	1			5	3			25
Calhoun			3	2			2		1															1				9
Carroll			4	3		1	1		1					1										6	1			18
Cass			5	3			1		1												2			4				16
Cedar			6	1					4								1			3	1			4	1			21
Cerro Gordo			18	2					1					2			1			2	4			4				34
Cherokee			2	1																				2				5
Chickasaw			3	2					1															2				8
Clarke			5	2					2					2													1	12
Clay			6	2					1															2				11
Clayton			12	3			2	2	1								14				2			1	3			40
Clinton			3				2		2				1	5	2		5			1				12				33
Crawford			6	2			1		2			1		2										1				15
Dallas			9	14			4		10			1		6			4			1	2			19	12	1	1	83
Davis			4	2				1																				7
Decatur			1	1					1								1				1			1				6
Delaware			13	4			1		1					1			9							6				35
Des Moines			11	9					3					1			2				1			8	4			39
Dickinson				7					3								1							7				18
Dubuque			45	40			14		12			1		5	3		27		1	2				23	71	1		245

	Infant botulism	Brucellosis	Campylobacteriosis	Cryptosporidiosis	Cyclosporiasis	Dengue fever	E. coli (STEC)	Ehrlichioses / Anaplasmosis	Giardiasis	Haemophilus influenzae type b	Hemolytic Uremic Syndrome (HUS)	Hepatitis A	Hepatitis B (Acute)	Hepatitis B (Chronic)	Legionellosis	Listeria monocytogenes	Lyme disease	Malaria	Meningococcal invasive disease	Mumps	Pertussis	Q Fever	Rocky Mountain spotted fever	Salmonellosis	Shigellosis	Typhoid fever	West Nile Virus	Total
Emmet			3	1																				2				6
Fayette			12	2			2										2			1	2			1				22
Floyd			7		1		1																	4	1			14
Franklin			3				1																	1				5
Fremont			3						1																			4
Greene			2	1																				2	3			8
Grundy			2				2					1								1				1	1			8
Guthrie			7	1			1		1															1				11
Hamilton			5											1										2				8
Hancock			6	1																				1			1	9
Hardin			7				1		2	1											2			4				17
Harrison			1	1			3														2			3	1			11
Henry			1	1					2					2			1					1		3	1			12
Howard			4	1												1			1		1			1				9
Humboldt			2	3			2																					7
Ida				1													1							1				3
Iowa			5	3			3		1								1			1	3			4	1			22
Jackson			13	15			7		1						1		8							2				47
Jasper			13	9			2		2			1		2										6				35
Jefferson			3	7				1	1					1			3				9			2				27
Johnson			15	5			11	1	9				2	6	3		66			316	13			48	31	2		528
Jones			12	4			2		3		1						3							5	9			39
Keokuk			1	7			2		1		1						1							5	1			19
Kossuth			6	1			2		1															3				13
Lee			4				2	1	1		1				1		2			1	1		1	6			1	22
Linn			48	21			7		14			2	1	21	2		39	4		17	6			39	283	1		505
Louisa			2						1								1			1	1			2			1	13
Lucas			3				1														3			2				9
Lyon			10	3			4		8															8	1		1	35
Madison			6	1			2		1					1			2											13
Mahaska			3	2			1		1								4							7			2	19
Marion			11	3				1	2	1				1			6	1		1				7				34
Marshall			8				3		2					12	1		5			1	15			12				59
Mills			4	2				1	1					1									1	3	2			15
Mitchell			5	2										1														8

	Infant botulism	Brucellosis	Campylobacteriosis	Cryptosporidiosis	Cyclosporiasis	Dengue fever	E. coli (STEC)	Ehrlichioses / Anaplasmosis	Giardiasis	Haemophilus influenzae type b	Hemolytic Uremic Syndrome (HUS)	Hepatitis A	Hepatitis B (Acute)	Hepatitis B (Chronic)	Legionellosis	Listeria monocytogenes	Lyme disease	Malaria	Meningococcal invasive disease	Mumps	Pertussis	Q Fever	Rocky Mountain spotted fever	Salmonellosis	Shigellosis	Typhoid fever	West Nile Virus	Total
Monona			3	10					4			1								2			4				24	
Monroe			7	1			1		1								1							1				12
Montgomery			2														2		1					1	1			7
Muscatine			3	4			3		7				2			11			10					13	4			57
O'Brien			4	1			1																	6				12
Osceola			3																									3
Page							1										1						1	2	2			7
Palo Alto			5																									5
Plymouth			9	8			3		3											1	1			9	11		1	46
Pocahontas			3																					2				5
Polk	1	1	90	19	1	1	11		36			3	7	98	6	2	17	8		4	12		1	59	76		1	453
Pottawattamie			21	11	1		4	1	5			1	3	2		1					5		1	18	3			77
Poweshiek			5																					3				8
Ringgold			1	1																	2			1			1	5
Sac			8	1																1				7				17
Scott			23	5	1		3		8			3	1	16	5		14			3	42		2	14	53	1		194
Shelby			6	2			2		1			1			1									1	3			17
Sioux			16	26		1	6		9		2			2			3	1		1				24	4			95
Story			25	9			4		2			1	17				3	2		4	1			15	4			87
Tama			10	1										1							19			4			1	36
Taylor			2																									2
Union																					1							1
Van Buren			5	6			2							1	1									4				19
Wapello			11	18			2		3					3	1		3			1			1	7	1			51
Warren			11	4			1		1			1			1				7	3			8	3		1	41	
Washington			3				2		1								4			3				5	1			19
Wayne				3													1							2				6
Webster			8	2			2		1					1			1							4	1			20
Winnebago			3						1								2							3				9
Winneshiek			8	2			5	1	1								6				1			4				28
Woodbury			23	16			5		7					10	1			1			4			32	11			110
Worth			3																					1				4
Wright			4	2			1		1					1										1				10
Total	2	1	769	373	4	4	164	11	213	2	5	16	16	266	36	3	318	17	5	411	173	1	8	618	683	7	14	4134

Table 2. Confirmed and probable cases and incidence rate (Per 100,000 Population) of reportable diseases/conditions, Iowa 2010-2015

Reportable Disease/Conditions	2010		2011		2012		2013		2014		2015	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Botulism - Infant	0	NA	0	NA	0	NA	3	NA	0	NA	2	NA
Brucellosis	0	NA	1	NA	0	NA	2	NA	0	NA	1	NA
Campylobacteriosis	751	24.7	747	24.5	534	17.5	610	20.0	571	18.7	769	25.2
Cholera	0	NA	0	NA	0	NA	1	NA	0	NA	0	NA
Cryptosporidiosis	397	13.0	364	11.9	328	10.8	1505	49.4	264	8.7	373	12.2
Cyclosporiasis	0	NA	1	NA	0	NA	148	4.9	0	NA	4	NA
Dengue fever	2	NA	5	NA	2	NA	3	NA	4	NA	4	NA
E. coli (shiga toxin producing)	173	5.7	189	6.2	181	5.9	171	5.6	224	7.4	164	5.4
Ehrlichiosis / Anaplasmosis	2	NA	8	NA	6	NA	8	NA	17	NA	11	NA
Giardiasis	284	9.3	271	8.9	251	8.2	275	9.0	205	6.7	213	7.0
Haemophilus influenzae type b	1	NA	3	NA	0	NA	1	NA	4	NA	2	NA
Hansen's disease	1	NA	0	NA	0	NA	1	NA	0	NA	0	NA
Hantavirus	0	NA	1	NA	1	NA	0	NA	2	NA	0	NA
Hemolytic Uremic Syndrome	0	NA	0	NA	10	NA	0	NA	0	NA	0	NA
Hemolytic Uremic Syndrome (HUS)	5	NA	13	NA	0	NA	6	NA	6	NA	5	NA
Hepatitis A	11	NA	8	NA	7	NA	17	NA	12	NA	16	NA
Hepatitis B (acute)	15	NA	15	NA	13	NA	11	NA	9	NA	16	NA
Hepatitis B (chronic)	183	6.0	182	6.0	226	7.4	276	9.1	283	9.3	266	8.7
Hepatitis D	0	NA	0	NA	0	NA	1	NA	0	NA	0	NA
Legionellosis	16	NA	11	NA	13	NA	11	NA	33	1.1	36	1.2
Listeriosis	3	NA	5	NA	3	NA	2	NA	7	NA	3	NA
Lyme disease	87	2.9	100	3.3	165	5.4	247	8.1	194	6.4	318	10.4
Malaria	14	NA	22	0.7	6	NA	12	NA	17	NA	17	NA
Measles	0	NA	1	NA	0	NA	0	NA	0	NA	0	NA
Meningococcal invasive disease	10	NA	14	NA	2	NA	1	NA	2	NA	5	NA
Mumps	38	1.2	8	NA	6	NA	3	NA	10	NA	411	13.5
Pertussis	705	23.1	232	7.6	1736	57.0	308	10.1	222	7.3	173	5.7
Q Fever	4	NA	2	NA	2	NA	4	NA	7	NA	1	NA
Rocky Mountain spotted fever	5	NA	7	NA	8	NA	8	NA	10	NA	8	NA
Salmonellosis	530	17.4	448	14.7	622	20.4	575	18.9	527	17.3	618	20.3
Shigellosis	57	1.9	18	NA	91	3.0	342	11.2	208	6.8	683	22.4
Tetanus	1	NA	0	NA	0	NA	1	NA	0	NA	0	NA
Toxic Shock Syndrome	1	NA	1	NA	1	NA	1	NA	1	NA	0	NA
Tularemia	0	NA	3	NA	1	NA	4	NA	1	NA	0	NA
Typhoid fever	3	NA	4	NA	3	NA	1	NA	1	NA	7	NA
West Nile virus	9	NA	9	NA	31	1.0	44	1.4	15	NA	14	NA

NA Not applicable. Rates calculated for case counts less than 20 are unreliable and therefore not included in this table.

Table 3: Confirmed and probable cases and incidence rate (Per 100,000 Population) of reportable diseases/conditions by gender, Iowa 2010-2015

Disease	Female		Male		Unk	Total	
	Cases	Rate	Cases	Rate	Unk	Cases	Rate
Botulism	2	N/A	0	N/A	0	2	N/A
Brucellosis	1	N/A	0	N/A	0	1	N/A
Campylobacteriosis	351	22.8	409	27.1	9	769	25.2
Cryptosporidiosis	199	12.9	172	11.4	2	373	12.2
Cyclosporiasis	2	N/A	2	N/A	0	4	N/A
Dengue fever	4	N/A	0	N/A	0	4	N/A
<i>E. coli</i> and other shiga-toxin producing	86	5.6	78	5.2	0	164	5.4
Ehrlichiosis/anaplasmosis	6	N/A	5	N/A	0	11	N/A
Giardiasis	101	6.6	112	7.4	0	213	7.0
<i>Haemophilus influenzae</i> type b	1	N/A	1	N/A	0	2	N/A
Hemolytic uremic syndrome	1	N/A	4	N/A	0	5	N/A
Hepatitis A	6	N/A	10	N/A	0	16	N/A
Hepatitis B, acute	7	N/A	9	N/A	0	16	N/A
Hepatitis B, chronic	119	7.7	147	9.7	0	266	8.7
Legionellosis	8	N/A	28	1.9	0	36	1.2
Listeriosis	1	N/A	2	N/A	0	3	N/A
Lyme disease	129	8.4	188	12.5	1	318	10.4
Malaria	5	N/A	12	N/A	0	17	N/A
Meningococcal invasive disease	3	N/A	2	N/A	0	5	N/A
Mumps	194	12.6	214	14.2	3	411	13.5
Perussis (whooping cough)	87	5.7	82	5.4	4	173	5.7
Q fever	1	N/A	0	N/A	0	1	N/A
Rocky Mountain spotted fever	3	N/A	5	N/A	0	8	N/A
Salmonellosis	320	20.8	295	19.6	3	618	20.3
Shigellosis	378	24.6	298	19.8	7	683	22.4
Typhoid fever	4	N/A	3	N/A	0	7	N/A
West Nile virus	9	N/A	5	N/A	0	14	N/A

NA Not applicable. Rates calculated for less than 20 cases are unreliable and therefore are not included in this table.

Table 4. Reportable diseases by year - Iowa, 1994-2015

Notifiable Disease	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Anthrax																						
Botulism						1					1		1	1	1							2
Brucellosis	1	2	4	4	1	6		2	1			1	2		2	2		1		2		1
Campylobacteriosis	280	274	339	425	455	467	499	467	427	458	559	537	449	524	591	552	751	747	534	610	571	769
Cholera	1					1														1		
Cryptosporidiosis	71	21	75	71	66	56	77	82	49	122	90	122	230	610	284	232	397	364	328	1505	264	373
Cyclosporiasis			3	1	3			1								1		1		148		4
Dengue Fever												1	1	6	5	2	2	5	2	3	4	4
Diphtheria																						
Ehrlichiosis / Anaplasmosis									1	1		4	7	7	7	8	2	8	6	8	17	11
Encephalitis (arboviral, except WNV)	1	13	19	3	3	3	4	3	3		2		1	1								
<i>E. coli</i>	54	64	123	114	93	114	180	81	122	103	124	108	161	185	208	163	173	189	181	171	224	164
Hemolytic uremic syndrome*																		13	10	6	6	5
Giardiasis	339	391	410	358	429	377	420	345	315	277	301	280	302	301	326	291	284	270	251	275	205	213
<i>Haemophilus influenzae</i> Type b	6	3	4	6	5	2					1		2	1	2	1	1	3		1	4	2
Hansen's disease (Leprosy)					1		2	1				1	1		1		1			1		
Hantavirus				2	1	2				1					1			1	1			
Hepatitis A	64	106	346	490	400	161	67	41	72	40	50	22	13	48	109	38	11	8	7	17	12	16
Hepatitis B acute /chronic **	27/X	46/X	74/X	44/X	54/X	44/X	38/X	24/X	20/X	27/X	17/X	32/X	21/35	26/269	24/226	37/293	15/183	15/182	13/227	11/276	9/283	16/266
Legionellosis	34	21	11	12	11	17	15	8	13	12	8	8	13	12	21	24	16	11	13	11	33	36
Listeriosis			1		2	6	2	3	5		3	7	6	8	1	4	3	5	3	2	7	3
Lyme disease	17	16	19	8	27	24	34	36	42	58	56	91	97	124	109	108	87	100	165	247	194	318

Iowa Department of Public Health

Notifiable Disease	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Malaria	5	3	3	10	8	11	2	9	4	6	5	9	2	3	12	10	14	22	6	12	17	17
Measles (Rubeola)	7		1								3					1		1				
Meningococcal invasive disease	25	31	56	47	46	42	37	32	29	28	17	19	20	15	19	16	10	14	2	1	2	5
Mumps	16	11	3	10	11	8	8	1	1	2	2	6	1.963	27	24	15	38	8	6	3	10	411
Pertussis	23	11	32	207	78	111	67	167	230	182	1066	1106	342	150	257	235	705	232	1736	308	222	173
Plague																						
Poliomyelitis																						
Psittacosis								3				1										
Rabies, animal	90	141	237	160	153	159	81	83	74	105	100	108	57	31	29	35	27	25	31	12	15	
Rabies, human										1												
Rocky Mountain Spotted Fever	1		1	2	2	1	2	5	7	3	2	7	5	17	8	5	5	7	8	8	10	8
Rubella (German Measles)						30		1														
Salmonellosis	404	433	335	296	375	260	373	339	509	413	435	410	475	477	425	408	530	448	622	575	527	618
Shigellosis	338	351	151	90	69	74	569	367	122	93	64	103	134	109	214	53	57	18	91	342	208	683
Tetanus	1			1	1		1		1			1					1			1		
Toxic Shock Syndrome	8	5	4	3	4	4	4	1	3	5	5	5			1	2	1	1	1	1		
Trichinosis	1	6						3				1										
Tularemia																1		3	1	4		
Typhoid fever			1	1		1				2				1	6		3	4	3	1	1	7
West Nile virus									52	147	23	37	37	30	5	5	9	9	31	44	15	14
Yellow Fever																2						

Table 5. Reportable disease cases and rates per 100,000 population by age group - Iowa, 2015

	0-4		5 to 19		20 to 29		30 to 39		40 to 64		>64		TOTAL	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Botulism	2	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A	2	N/A
Brucellosis	0	N/A	0	N/A	0	N/A	0	N/A	1	N/A	0	N/A	1	N/A
Campylobacter	83	41.1	125	20.2	107	26.0	82	22.7	260	26.0	112	24.7	769	25.2
Cryptosporidiosis	59	29.2	76	12.3	60	14.6	59	16.3	82	8.2	37	8.2	373	12.2
Cyclospora	0	N/A	0	N/A	1	N/A	0	N/A	3	N/A	0	N/A	4	N/A
Dengue fever	0	N/A	1	N/A	2	N/A	1	N/A	0	N/A	0	N/A	4	N/A
<i>E. coli</i> (shiga-toxin producing)	42	20.8	55	8.9	18	N/A	17	N/A	23	2.3	9	N/A	164	5.4
Ehrlichioses / Anaplasmosis	0	N/A	0	N/A	1	N/A	2	N/A	5	N/A	3	N/A	11	N/A
Giardiasis	30	14.8	42	6.8	28	6.8	27	7.5	63	6.3	23	5.1	213	7.0
<i>Haemophilis influenzae</i> type b	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A	2	N/A	2	N/A
Hemolytic Uremic Syndrome (HUS)	3	N/A	2	N/A	0	N/A	0	N/A	0	N/A	0	N/A	5	N/A
Hepatitis A	0	N/A	0	N/A	3	N/A	3	N/A	9	N/A	1	N/A	16	N/A
Hepatitis B (acute)	0	N/A	0	N/A	3	0.7	4	1.1	8	0.8	1	N/A	16	0.5
Hepatitis B (chronic)	3	N/A	14	N/A	66	16.1	77	21.3	92	9.2	14	N/A	266	8.7
Legionellosis	0	N/A	0	N/A	1	N/A	2	N/A	15	N/A	18	N/A	36	1.2
Listeriosis	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A	3	N/A	3	N/A
Lyme disease	14	N/A	79	12.8	39	9.5	38	10.5	98	9.8	50	11.0	318	10.4
Malaria	0	N/A	3	N/A	5	N/A	3	N/A	5	N/A	1	N/A	17	N/A
Meningococcal invasive disease	0	N/A	1	N/A	1	N/A	0	N/A	1	N/A	2	N/A	5	N/A
Mumps	3	N/A	95	15.4	274	66.6	16	N/A	21	2.1	2	N/A	411	13.5
Pertussis	47	23.3	96	15.5	5	N/A	2	N/A	19	N/A	4	N/A	173	5.7
Q Fever	0	N/A	0	N/A	0	N/A	0	N/A	1	N/A	0	N/A	1	N/A
Rocky Mountain spotted fever	0	N/A	0	N/A	1	N/A	2	N/A	3	N/A	2	N/A	8	N/A
Salmonellosis	90	44.5	89	14.4	85	20.7	79	21.8	203	20.3	72	15.9	618	20.3
Shigellosis	202	99.9	227	36.7	76	18.5	80	22.1	72	7.2	26	5.7	683	22.4
Typhoid fever	1	N/A	3	N/A	1	N/A	2	N/A	0	N/A	0	N/A	7	N/A
West Nile virus	0	N/A	2	N/A	1	N/A	3	N/A	7	N/A	1	N/A	14	N/A

NA Not applicable. Rates calculated for less than 20 cases are unreliable and therefore are not included in this table.

Section 2

Summary of reported outbreak investigations

2015 Iowa Summary of reported outbreak investigations

Table 6. Foodborne Outbreaks

Type	Nature of Episode	Event/Place	Location of Food Preparation	Location of Food Consumption	County	Month	Number Affected/Number Exposed (if known)	Food Vehicle of Transmission	Agent Involved
1. Norovirus	Vomiting, Diarrhea	Private Party	Caterer	Event Center	Story	January	11/63	Unknown	Norovirus GII
2. Norovirus	Diarrhea, Vomiting	Workplace	Restaurant	Workplace	Polk	February	8/15	Unknown	Suspect Norovirus
3. Norovirus	Diarrhea, Cramping	Restaurant	Restaurant	Restaurant	Polk	February	2/2	Unknown	Suspect Norovirus
4. Norovirus	Diarrhea, Vomiting, Cramping	Restaurant	Restaurant	Restaurant	Poweshiek	February	5/7	Unknown	Suspect Norovirus
5. Norovirus	Diarrhea, Vomiting	Restaurant	Restaurant	Restaurant	Pottawattamie	February	4/7	Unknown	Suspect Norovirus
6. Unknown	Histamine reaction	Private Residence	Private Residence	Private Residence	Scott	March	2/2	Salmon	Scombroid negative
7. Unknown	Diarrhea, Vomiting	Restaurant	Restaurant	Workplace	Montgomery	March	5/6	Unknown	Unknown
8. Norovirus	Diarrhea, Vomiting	Private Party	Private Residence	Private Residence	Dallas	March	20/40	Unknown	Suspect Norovirus
9. Unknown	Vomiting, Cramps, Diarrhea	Restaurant	Restaurant	Restaurant	Polk	March	3/6	Unknown	Unknown
10. Norovirus	Vomiting, Diarrhea	Restaurant	Restaurant	Restaurant	Shelby	March	20	Unknown	Norovirus GII
11. Norovirus	Diarrhea, Cramps	Restaurant	Restaurant	Restaurant	Polk	April	4/6	Unknown	Suspect Norovirus
12. <i>Salmonella</i>	Diarrhea	Work	Private Residence	Work	Johnson	April	9/10	Unknown	<i>Salmonella</i> Enteritidis
13. Norovirus	Diarrhea, Vomiting, Cramping, Nausea	Private Party	Caterer	Private Residence	Woodbury	April	13/23	Unknown	Norovirus GI

Type	Nature of Episode	Event/Place	Location of Food Preparation	Location of Food Consumption	County	Month	Number Affected/Number Exposed (if known)	Food Vehicle of Transmission	Agent Involved
14. <i>Salmonella</i>	Diarrhea, Cramping	Private Party	Private Residence	Private Residence	Buena Vista	July	6	Unknown	<i>Salmonella</i> Enteritidis
15. <i>C. perfringens</i>	Diarrhea, Cramping, Nausea	School	School	School	Polk	October	57/160	Unknown	<i>Clostridium perfringens</i>
16. <i>Salmonella</i>	Nausea, Diarrhea, Vomiting	Event Center	Grocery Store/Event Center	Event Center	Carroll	December	4/75	Turkey	<i>Salmonella</i> Reading

Table 7. Non-foodborne or unknown cause outbreaks

Type	Nature of Episode	Event/Place	County	Month	Number Affected/Number Exposed (if known)	Vehicle of Transmission	Agent Involved, Number of Positive Tests, if known
1. Person-to-Person	Diarrhea, Vomiting	Long-term Care	Linn	January	13/51 + 4 staff	Person-to-Person	Norovirus GII
2. Person-to-Person	Diarrhea, Vomiting	Long-term Care	Hardin	January	17/48	Person-to-Person	Norovirus
3. Person-to-Person	Diarrhea, Vomiting	Inpatient Unit	Johnson	January	7 + 8 staff	Person-to-Person	Norovirus
4. Person-to-Person	Pruritus, Scaling	Long-term Care	Buchanan	January	3	Unknown	Dermatophytosis
5. Person-to-Person	Diarrhea	Long-term Care	Buchanan	January	7	Person-to-Person	Suspect Norovirus
6. Person-to-Person	Vomiting, Diarrhea	Long-term Care	Grundy	January	19/55 + 6 staff	Person-to-Person	Norovirus GII
7. Person-to-Person	Vomiting, Diarrhea	Long-term Care	Buchanan	January	23 + 1 staff	Person-to-Person	Norovirus
8. Unknown	Vomiting, Diarrhea	Sporting Event	Dubuque	January	5	Unknown	Norovirus
9. Unknown	Vomiting, Diarrhea	Private Gathering	Dubuque	January	5/10	Unknown	Suspect Norovirus
10. Unknown	Diarrhea	College	Dubuque	January	6/8	Unknown	Negative for Norovirus, bacteria & parasites

Type	Nature of Episode	Event/Place	County	Month	Number Affected/Number Exposed (if known)	Vehicle of Transmission	Agent Involved, Number of Positive Tests, if known
11. Person-to-Person	Vomiting, Diarrhea	Long-term Care	Johnson	February	13/100	Person-to-Person	Suspect Norovirus
12. Person-to-Person	Vomiting, Diarrhea	Long-term Care	Madison	February	17/63	Person-to-Person	Norovirus
13. Person-to-Person	Nausea, Vomiting, Diarrhea	Long-term Care	Muscatine	Feb/March	10/66	Person-to-Person	Negative for Norovirus & Enteric pathogens
14. Person-to-Person	Vomiting, Diarrhea	Long-term Care	Ida	Feb/March	25/27 + 14 staff	Person-to-Person	Suspect Norovirus
15. Person-to-Person	Vomiting, Diarrhea, Nausea	Long-term Care	Delaware	March	16/37 + 1 staff	Person-to-Person	Suspect Norovirus
16. Person-to-Person	Nausea, Vomiting, Diarrhea	Long-term Care	Kossuth	April	12/26	Person-to-Person	Suspect Norovirus
17. Person-to-Person	Coughing	Group Home	Chickasaw	August	12	Person-to-Person	<i>Mycoplasma pneumoniae</i>
18. Person-to-Person	Diarrhea	Private Party	Washington	October	8	Person-to-Person	Cryptosporidium
19. Person-to-Person	Diarrhea	Restaurant	Dubuque	May	7	Person-to-Person	Norovirus
20. Person-to-Person	Diarrhea	Manufacturing Facility	Jones	December	12	Person-to-Person	Norovirus(equivocal)

Type	Nature of Episode	Event/Place	County	Month	Number Affected/Number Exposed (if known)	Vehicle of Transmission	Agent Involved, Number of Positive Tests, if known
21. Person-to-Person	Diarrhea	School	Bremer	September	150	Person-to-Person	Norovirus GI
22. Person-to-Person	Diarrhea	School	Linn	April	62	Person-to-Person	Norovirus GI
23. Person-to-Person	Diarrhea	Restaurant	Woodbury	June	20	Person-to-Person	Norovirus GI
24. Person-to-Person	Diarrhea	Hospital	Pottawattamie	April	8	Person-to-Person	Norovirus GII
25. Person-to-Person	Diarrhea	Long-term Care	Humboldt	April	9	Person-to-Person	Norovirus GII
26. Person-to-Person	Diarrhea	Long-term Care	Kossuth	April	15	Person-to-Person	Norovirus GII
27. Person-to-Person	Diarrhea	School	Linn	April	75	Person-to-Person	Norovirus GII
28. Person-to-Person	Diarrhea	Wedding	Dubuque	August	52	Person-to-Person	Norovirus GII
29. Person-to-Person	Diarrhea	Pre-School	Poweshiek	December	8	Person-to-Person	Norovirus GII
30. Person-to-Person	Diarrhea	Childcare	Lee	November	14	Person-to-Person	Norovirus GII

Type	Nature of Episode	Event/Place	County	Month	Number Affected/Number Exposed (if known)	Vehicle of Transmission	Agent Involved, Number of Positive Tests, if known
31. Person-to-Person	Diarrhea	Restaurant/Swim Team	Johnson	December	8	Person-to-Person	Norovirus GII
32. Person-to-Person	Diarrhea	Long-term Care	Madison	September	4	Person-to-Person	Norovirus GI
33. Person-to-Person	Diarrhea	Community-wide	Linn	March	275	Person-to-Person	<i>Shigella</i>
34. Person-to-Person	Diarrhea	Community-wide	Scott	September	49	Person-to-Person	<i>Shigella</i>
35. Person-to-Person	Diarrhea	Community-wide	Polk	September	76	Person-to-Person	<i>Shigella</i>
36. Person-to-Person	Diarrhea	Community-wide	Dubuque			Person-to-Person	<i>Shigella</i>
37. Person-to-Person	Diarrhea	Restaurant	Linn	May	7	Person-to-Person	Suspect Norovirus
38. Person-to-Person	Diarrhea	Summer Camp	Boone	June	7	Person-to-Person	Suspect Norovirus
39. Person-to-Person	Diarrhea	Farm Workers	Hancock	July	9	Person-to-Person	Suspect Norovirus
40. Person-to-Person	Diarrhea	Independent Living	Scott	August	15	Person-to-Person	Suspect Norovirus

Type	Nature of Episode	Event/Place	County	Month	Number Affected/Number Exposed (if known)	Vehicle of Transmission	Agent Involved, Number of Positive Tests, if known
41. Person-to-Person	Diarrhea	Long-term Care	Buchanan	September	6	Person-to-Person	Suspect Norovirus
42. Person-to-Person	Diarrhea	School	Black Hawk	September	9	Person-to-Person	Suspect Norovirus
43. Person-to-Person	Diarrhea	Daycare	Polk	October	20	Person-to-Person	Suspect Norovirus
44. Person-to-Person	Diarrhea	School	Polk	October	11	Person-to-Person	Suspect Norovirus
45. Person-to-Person	Diarrhea	School	Webster	October		Person-to-Person	Suspect Norovirus
46. Person-to-Person	Diarrhea	School	Jefferson	October	95	Person-to-Person	Suspect Norovirus
47. Person-to-Person	Diarrhea	Long-term Care	Scott	November	6	Person-to-Person	Suspect Norovirus
48. Person-to-Person	Diarrhea	Assisted Living	Warren	December	8	Person-to-Person	Suspect Norovirus
49. Person-to-Person	Rash	School	Lee	April	100	Person-to-Person	Suspect Scabies

Table 8. PFGE Clusters

Type	Nature of Episode	Event/Place	County	Month	Number Affected	Vehicle of Transmission	Agent Involved
1. National Cluster	Diarrhea	Unknown	Dubuque	Oct-Dec 2014	1	Unknown	<i>Salmonella</i> Saintpaul 1501MLJN6-1
2. IA only cluster	Diarrhea	Unknown	Black Hawk, Polk, Buchanan	Jan/Feb	13	Unknown	<i>Shigella sonnei</i> multiple PFGE patterns (closely related)
3. National Cluster	Diarrhea	Group Gathering	Dubuque, Black Hawk	Jan/Feb	2	Unknown	<i>Salmonella</i> Typhi JPPX01.0255
4. IA only cluster	Diarrhea	Unknown	Multi-county	March	16	Unknown	<i>Salmonella</i> Enteriditis JEGX01.0005
5. National Cluster	Diarrhea	Unknown	Multi-county	Jan-March 2015	7	Unknown	<i>Salmonella</i> Enteriditis JEGX01.0002
6. National Cluster	Diarrhea	Unknown	Linn	March	1	Unknown	<i>Shigella sonnei</i> J16X01.1166
7. National Cluster	Diarrhea	Unknown	Multi-county	March	3	Cucumbers	<i>Salmonella</i> Heidelberg JF6X01.0080
8. National Cluster	Diarrhea	Unknown	Johnson	Aug/Sept 2014	2	Unknown	<i>Shigella sonnei</i> J16X01.0232

Table 9. Vaccine-preventable Disease Outbreaks

Type	Nature of Episode	Event/Place	County	Month	Number Affected	Vehicle of Transmission	Agent Involved
1. Influenza	Respiratory	Long-term Care	Crawford	January	7/39	Person-to-Person	Influenza
2. Influenza	Respiratory	Long-term Care	Pocahontas	January	6/52	Person-to-Person	Influenza
3. Influenza	Respiratory	Long-term Care	Page	January	3/?	Person-to-Person	Influenza
4. Influenza	Respiratory	Long-term Care	Wright	Dec/Jan	9/59 + 7 staff	Person-to-Person	Influenza
5. Influenza	Respiratory	Long-term Care	Carroll	January	15/40	Person-to-Person	Influenza
6. Influenza	Respiratory	Long-term Care	Humboldt	January	5/22	Person-to-Person	Influenza
7. Influenza	Respiratory	Long-term Care	Jasper	January	11/40 + 1 staff	Person-to-Person	Influenza
8. Influenza	Respiratory	Assisted Living	Henry	January	16/45	Person-to-Person	Influenza
9. Influenza	Respiratory	Long-term Care	Madison	January	11/68 + 2 staff	Person-to-Person	Influenza
10. Influenza	Respiratory	Group Home	Boone	January	5 + 1 staff	Person-to-Person	Influenza
11. Influenza	Respiratory	Long-term Care	Johnson	January	3/28	Person-to-Person	Influenza
12. Influenza	Respiratory	Long-term Care	Benton	January	11/42	Person-to-Person	Influenza
13. Influenza	Respiratory	Long-term Care	Dallas	January	20/200	Person-to-Person	Influenza
14. Influenza	Respiratory	Long-term Care	Bremer	January	3/28	Person-to-Person	Influenza
15. Influenza	Respiratory	Long-term Care	Warren	January	16	Person-to-Person	Influenza
16. Influenza	Respiratory	Long-term Care	Winneshiek	January	8	Person-to-Person	Influenza
17. Influenza	Respiratory	Long-term Care	Pottawattamie	January	5	Person-to-Person	Influenza
18. Influenza	Respiratory	Long-term Care	Clay	January	27/90	Person-to-Person	Influenza
19. Influenza	Respiratory	Long-term Care	Scott	January	4/87	Person-to-Person	Influenza

Type	Nature of Episode	Event/Place	County	Month	Number Affected	Vehicle of Transmission	Agent Involved
20. Influenza	Respiratory	Long-term Care	Jackson	January	7	Person-to-Person	Influenza
21. Influenza	Respiratory	Long-term Care	Hamilton	January	5	Person-to-Person	Influenza
22. Influenza	Respiratory	Long-term Care	Bremer	January	3/29	Person-to-Person	Influenza
23. Influenza	Respiratory	Long-term Care	Shelby	January	9	Person-to-Person	Influenza
24. Influenza	Respiratory	Long-term Care	Warren	January	3 + 2 staff	Person-to-Person	Influenza
25. Influenza	Respiratory	Long-term Care	Buchanan	January	2	Person-to-Person	Influenza
26. Influenza	Respiratory	Long-term Care	Kossuth	January	3/11	Person-to-Person	Influenza
27. Influenza	Respiratory	Long-term Care	Winneshiek	January	5/41 + 1 staff	Person-to-Person	Influenza
28. Influenza	Respiratory	Long-term Care	Clinton	Dec 2014/Jan 2015	29	Person-to-Person	Influenza
29. Influenza	Respiratory	Long-term Care	Ida	February	3/42	Person-to-Person	Influenza
30. Influenza	Respiratory	Long-term Care	Muscatine	February	15/140	Person-to-Person	Influenza
31. Influenza	Respiratory	Long-term Care	Kossuth	February	14/90	Person-to-Person	Influenza
32. Influenza	Respiratory	Long-term Care	Clay	Feb/March	22/91	Person-to-Person	Influenza
33. Influenza	Respiratory	Long-term Care	Plymouth	March	6/23 + 2/15 staff	Person-to-Person	Influenza
34. Influenza	Respiratory	Elementary School	Dubuque	March	250/545 + 40/90 staff	Person-to-Person	Influenza
35. Influenza	Respiratory	Long-term Care	Story	March	3 + 3 staff	Person-to-Person	Influenza
36. Influenza	Respiratory	Long-term Care	Audubon	April	2 + 1 staff	Person-to-Person	Influenza B
37. Influenza	Respiratory	Long-term Care	Pocahontas	April	10	Person-to-Person	Influenza B
38. Influenza	Respiratory	Long-term Care	Polk	July	14	Person-to-Person	Influenza H3

Type	Nature of Episode	Event/Place	County	Month	Number Affected	Vehicle of Transmission	Agent Involved
39. Mumps	Mumps	School	Multi-county	July	408	Person-to-Person	Mumps
40. Mumps	Mumps	School	Warren	November	22	Person-to-Person	Mumps
41. Pertussis	Coughing	Community-wide	Winneshiek	December	24	Person-to-Person	Pertussis
42. Pertussis	Coughing	School	Jefferson	September	14	Person-to-Person	Pertussis

Table 10. Environmental Outbreaks

Type	Nature of Episode	Event/Place	County	Month	Number Affected	Vehicle of Transmission	Agent Involved
1. Water	Vomiting, Fever, Cramping	Family reunion	Woodbury	August	11	Water	Suspect <i>Legionella</i>
2. Environmental	Rash	School	Monona	August	29	Unknown	<i>Staphylococcus</i>
3. Water	Diarrhea, Cramping, Vomiting	WI Campground/pond	Dubuque	August	7	Water	<i>Cryptosporidium</i>

Section 3

Disease-specific Summaries of Select Reportable Diseases/Conditions

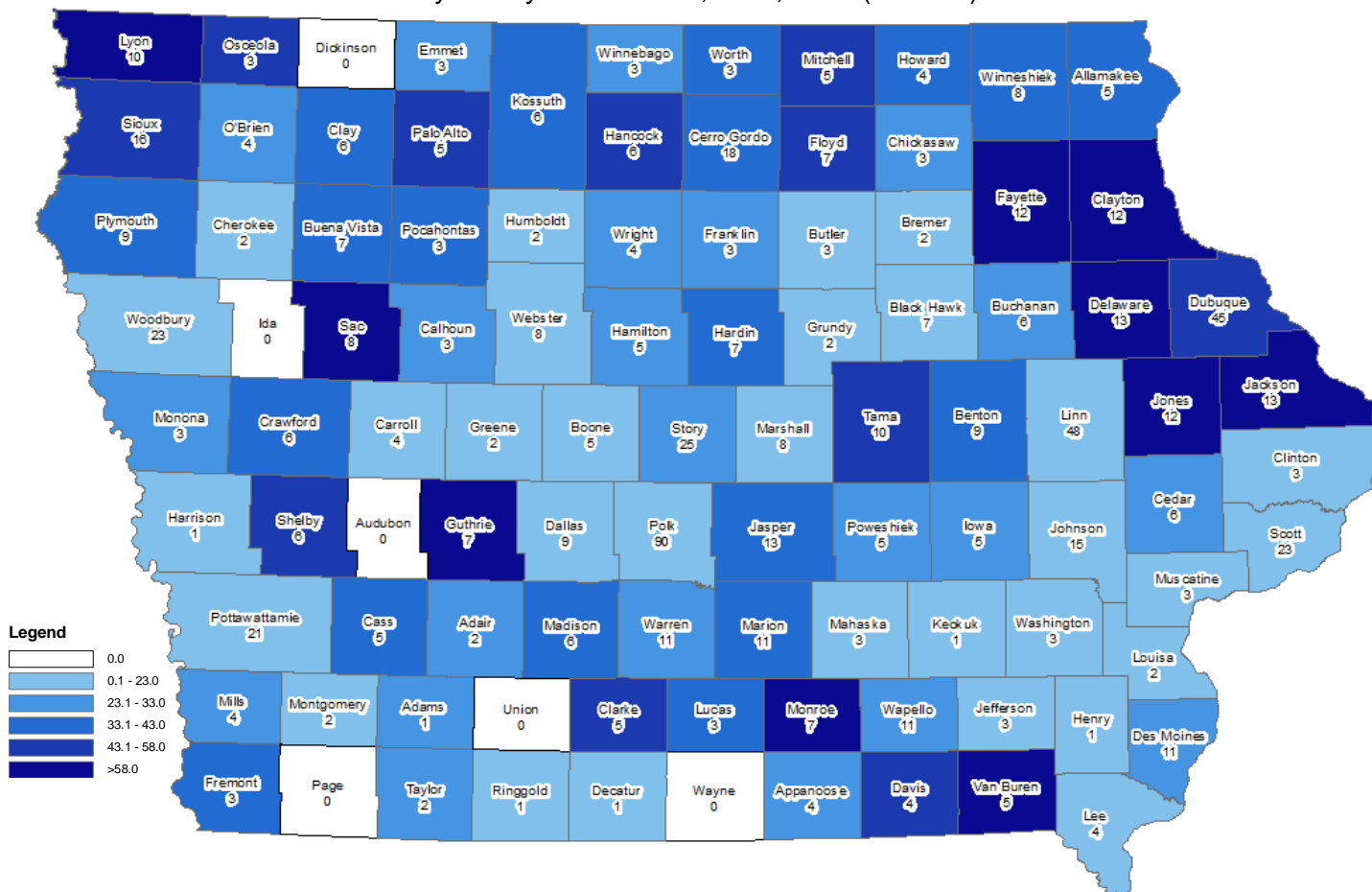
Campylobacteriosis

Cause: *Campylobacter* bacteria

Clinical Features: Diarrhea, abdominal pain, fever, malaise, and nausea

Transmission: Transmitted through ingestion of organisms in under-cooked meat, unpasteurized dairy products, or other contaminated food or water, or from direct contact with infected animals. *Campylobacter* can be found in fecally contaminated water. As little as 500 organisms can cause illness.

Reported campylobacteriosis cases (confirmed and probable) and incidence rates per 100,000 population by county of residence, Iowa, 2015 (N = 769)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Summary of 2015 Campylobacteriosis cases

Number of cases	769
Incidence rate (per 100,000 population)	25.2
Change from 5-year average incidence	+19.4%

Age (in years)

Mean	39
Median	39
Min-Max	0 - 103

Gender

	Number	Percent	Rate
Female	351	45.6	22.8
Male	409	53.2	27.1
Unknown	9	N/A	N/A

Race

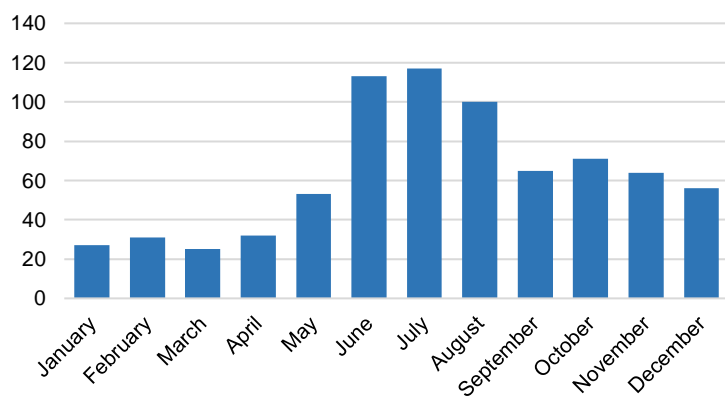
	Number	Percent	Rate
White	324	96.1	11.6
Black	5	1.5	N/A
Other/Unknown	8/432	N/A	N/A

Ethnicity

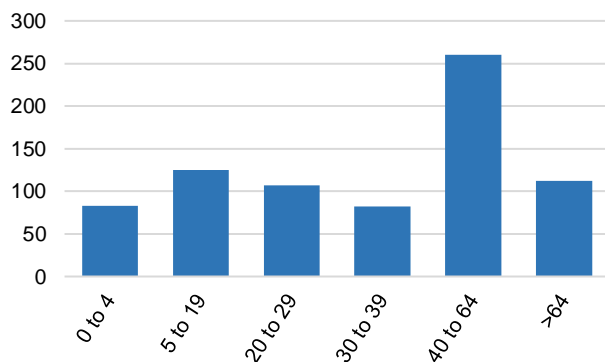
	Number	Percent	Rate
Non-Hispanic	283	36.8	9.8
Hispanic	12	1.6	N/A
Unknown	474	N/A	N/A

NA Not applicable. Rates calculated for less than 20 cases are unreliable and therefore are not included in this table.

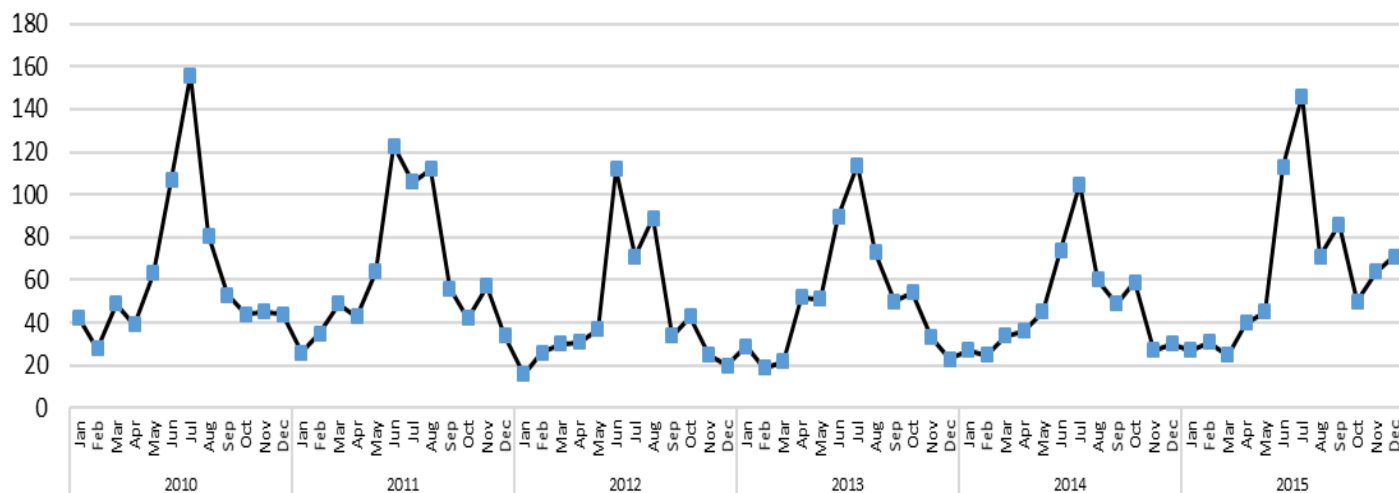
2015 Campylobacteriosis Cases by Month



2015 Campylobacteriosis Counts by Age Group



Campylobacteriosis cases by month and year - Iowa, 2010-2015



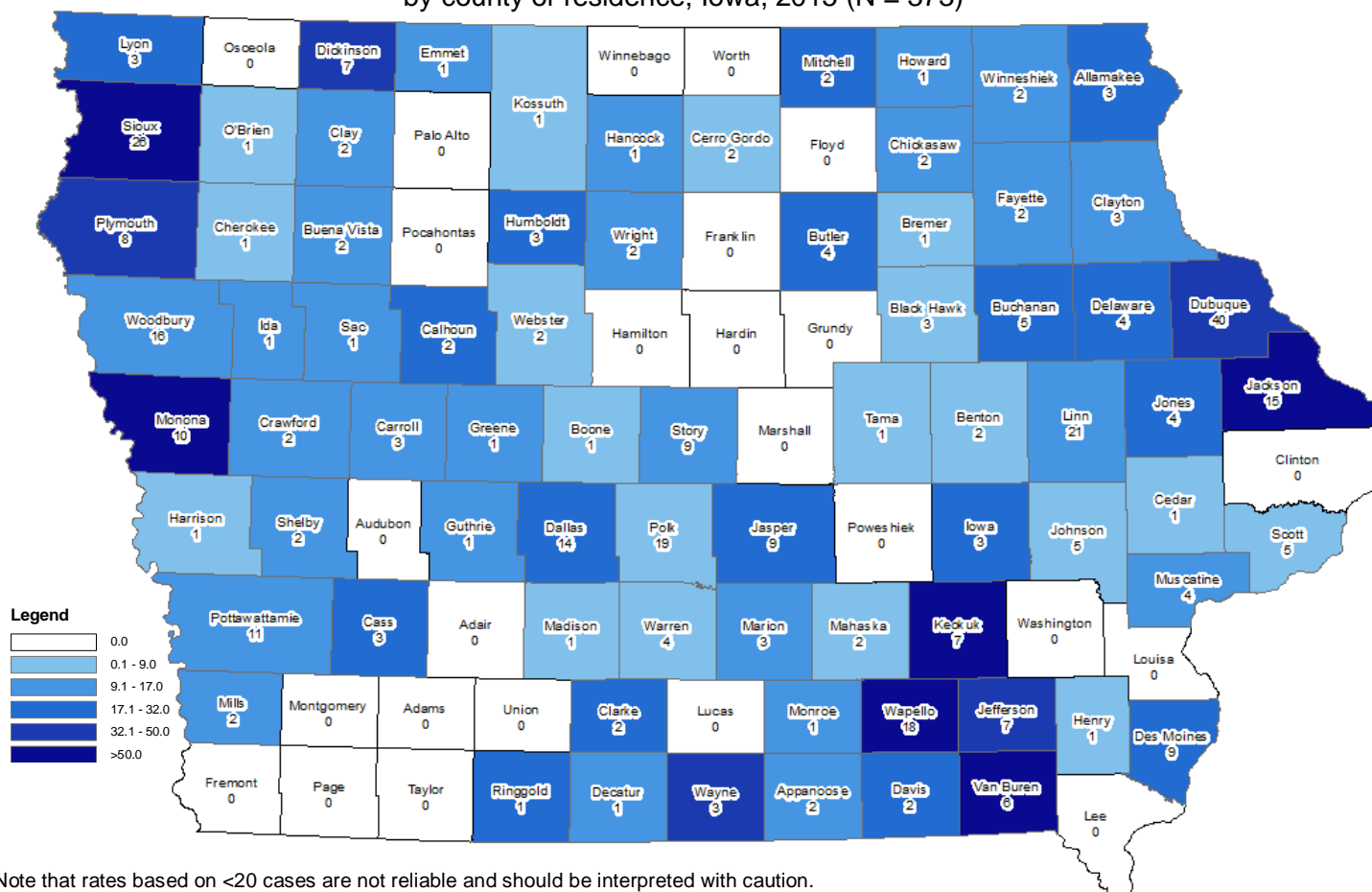
Cryptosporidiosis

Cause: *Cryptosporidium* protozoan

Clinical Features: Watery diarrhea, abdominal cramps, nausea, vomiting, low-grade fever

Transmission: Fecal-oral, which includes person-to-person, animal-to-person, waterborne and foodborne transmission. Localized outbreaks may occur from fecally contaminated water, such as streams, lakes, and swimming pools open to contamination by human and animal feces. Outbreaks have resulted from eating food contaminated by animal feces (e.g., unpasteurized apple cider). An infected food worker could be a source of foodborne transmission.

Reported cryptosporidiosis cases (confirmed and probable) and incidence rates per 100,000 population by county of residence, Iowa, 2015 (N = 373)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Summary of 2015 cases

Number of cases	373
Incidence rate (per 100,000 population)	12.2
Change from 5-year average incidence	-35.0%

Age (in years)

Mean	32
Median	29
Min-Max	0 - 95

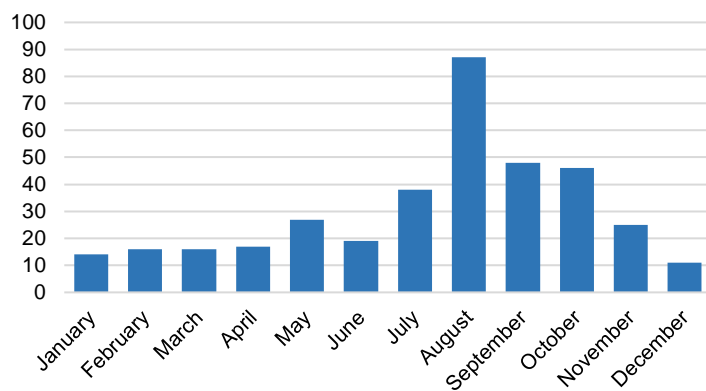
Gender	Number	Percent	Rate
Female	199	53.6	12.9
Male	172	46.4	11.4
Unknown	2	0.5	N/A

Race	Number	Percent	Rate
White	263	96.7	9.4
Black	1	0.4	N/A
Other/Unknown	8/101	N/A	N/A

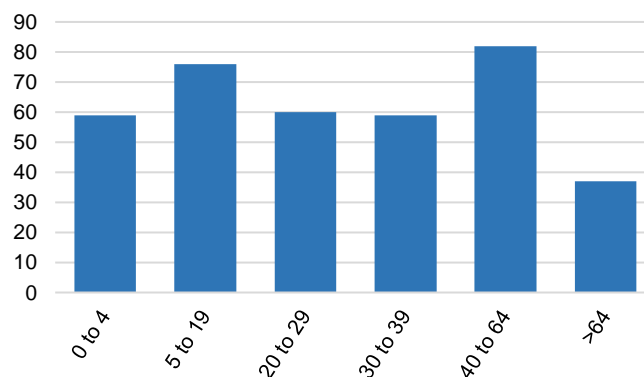
Ethnicity	Number	Percent	Rate
Non-Hispanic	257	68.9	8.87
Hispanic	16	4.3	N/A
Unknown	100	N/A	N/A

NA Not applicable. Rates calculated for less than 20 cases are unreliable and therefore are not included in this table.

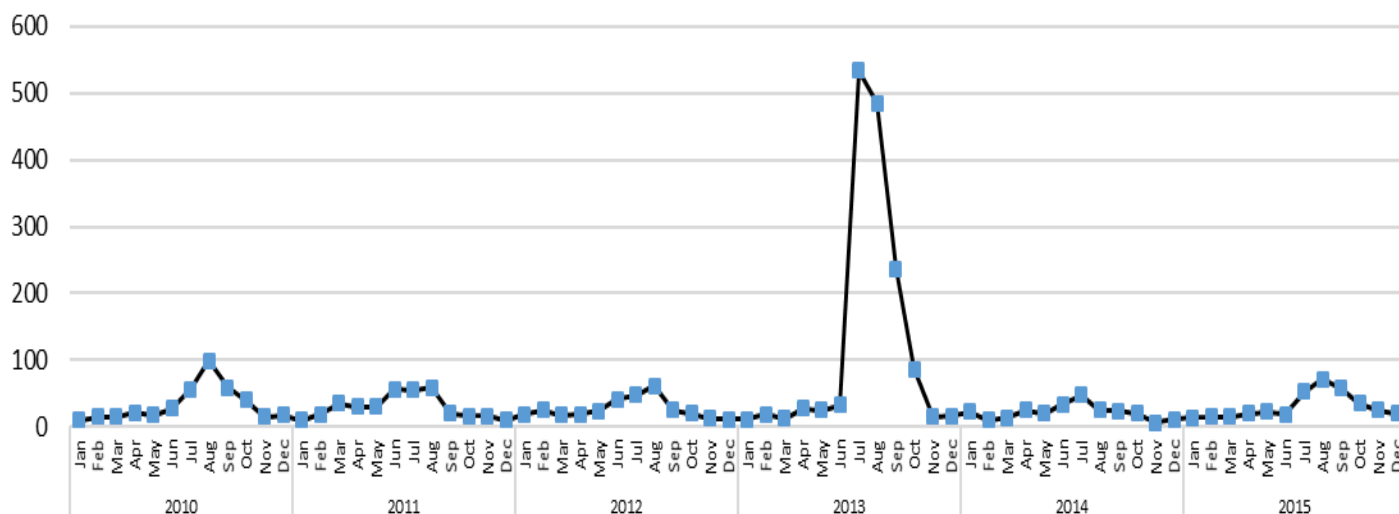
2015 Cryptosporidiosis cases by month



2015 Cryptosporidiosis counts by age group



Cryptosporidiosis cases by month and year - Iowa, 2010-2015



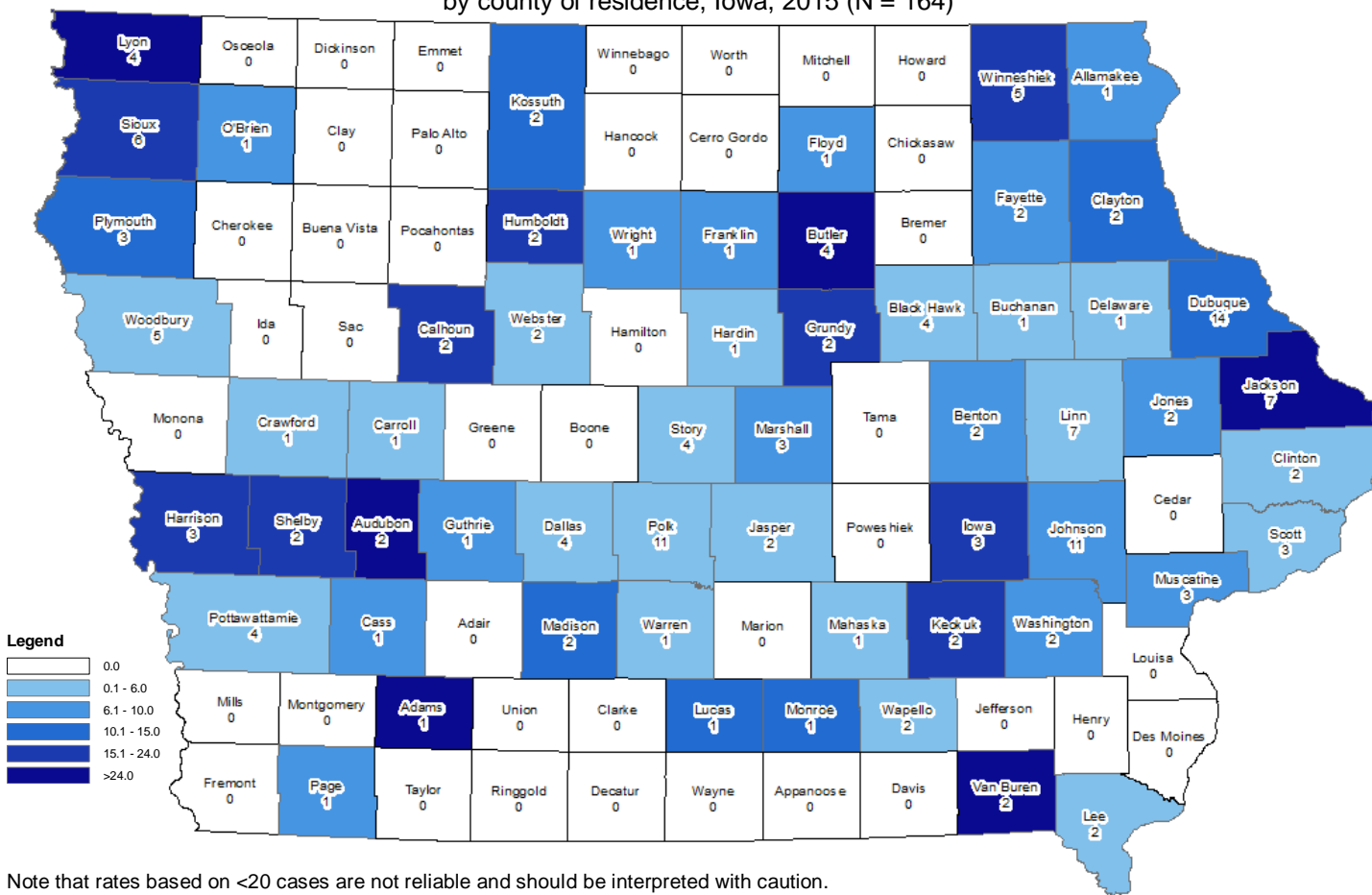
E.coli O157:H7 and other shiga-toxin producing strains (STEC)

Cause: Shiga toxin-producing *Escherichia coli* bacteria (STEC) that produce cytotoxins called Shiga toxin 1 and 2.

Clinical Features: An individual may be asymptomatic, have mild non-bloody diarrhea, or have grossly bloody diarrhea. Most diagnosed cases develop bloody diarrhea 6 to 48 hours after the onset of non-bloody diarrhea. Abdominal cramps, nausea and vomiting may also be present.

Transmission: STEC transmission occurs fecal-orally via contaminated food, drinking water or recreational water. Transmission may also occur directly from person-to-person; and can include certain types of sexual contact. The infectious dose for *E. coli* O157:H7 is very low (about 100 organisms). *E. coli* O157:H7 has been associated with the consumption of undercooked contaminated ground beef, unpasteurized apple juice and cider, unpasteurized milk and other dairy products, raw fruits and vegetables, and salami.

Reported *E. coli* (STEC) cases (confirmed and probable) and incidence rates per 100,000 population by county of residence, Iowa, 2015 (N = 164)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Summary of 2015 cases

Number of cases	164
Incidence rate (per 100,000 population)	5.38
Change from 5-year average incidence	-12.6%

Age (in years)

Mean	22
Median	17
Min-Max	0 - 91

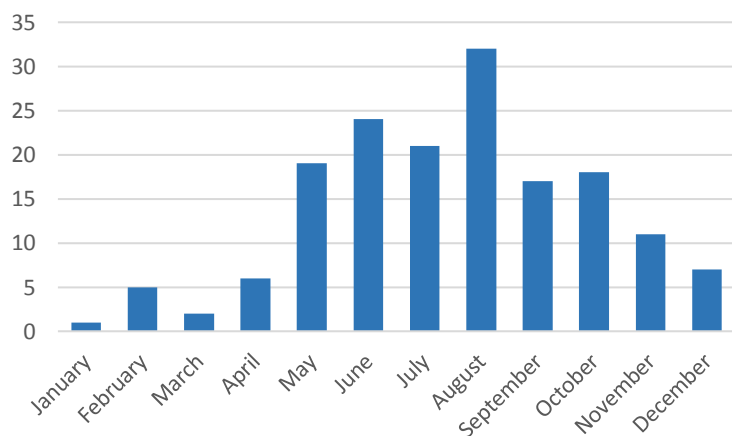
Gender	Number	Percent	Rate
Female	86	52.4	5.6
Male	78	47.6	5.2

Race	Number	Percent	Rate
White	111	67.7	4.0
Black	4	2.4	N/A
Other/Unknown	8/41	N/A	N/A

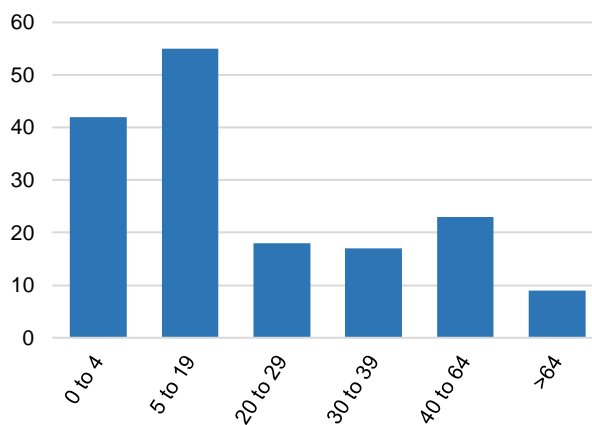
Ethnicity	Number	Percent	Rate
Non-Hispanic	112	68.3	3.9
Hispanic	3	1.8	N/A
Unknown	49	N/A	N/A

NA Not applicable. Rates calculated for less than 20 cases are unreliable and therefore are not included in this table.

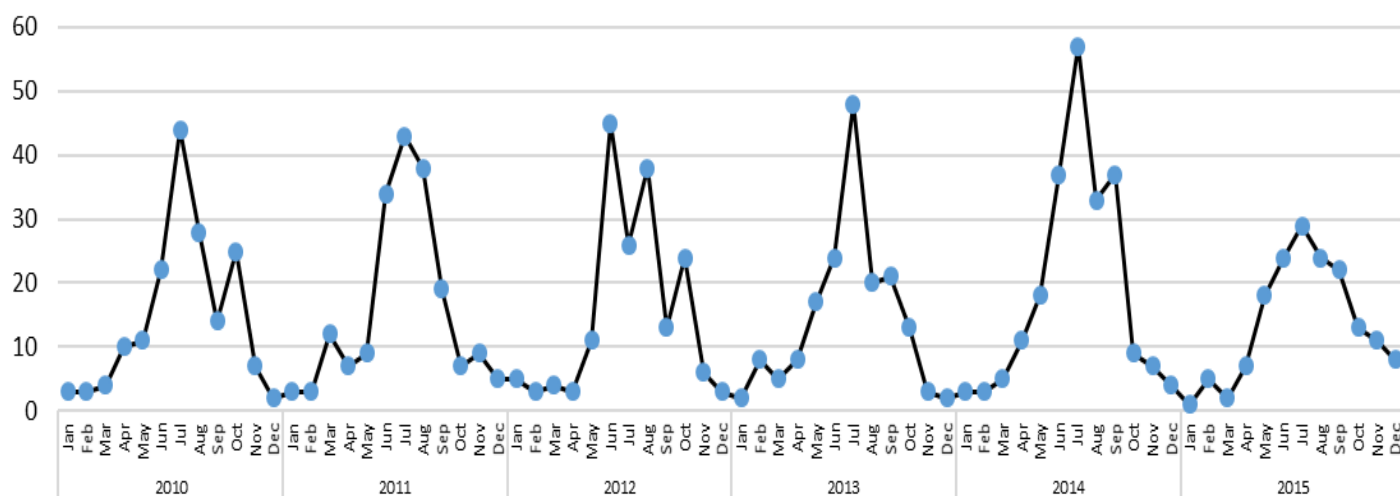
2015 *E. coli* (STEC) cases by month



2015 *E. coli* (STEC) Counts by Age Group



E. coli (STEC) cases by month and year - Iowa, 2010-2015



Giardiasis

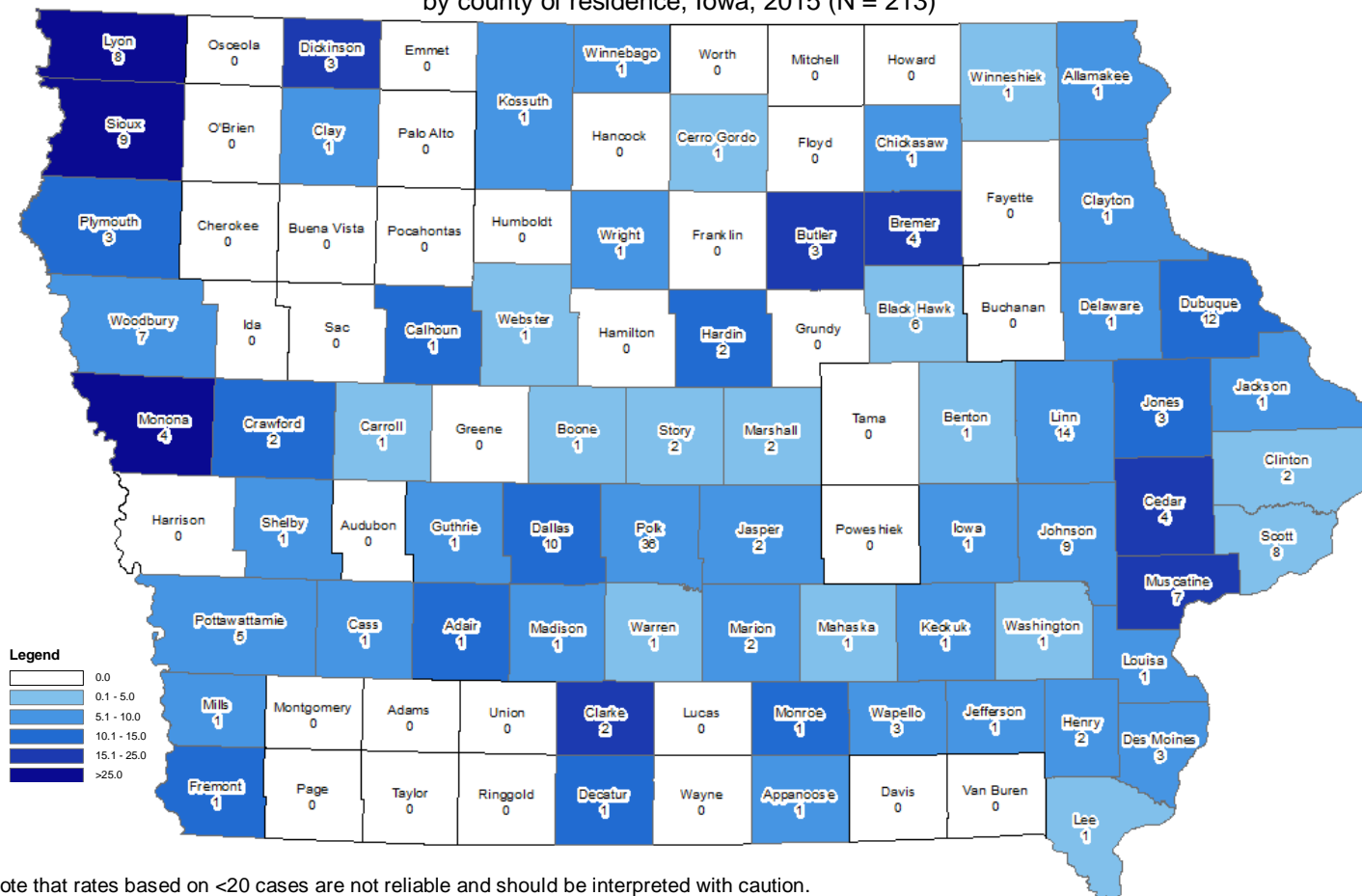
Cause: *Giardia lamblia* protozoan

Clinical Features: Symptoms can include soft, non-bloody, foul-smelling diarrhea. Abdominal cramps and a “bloated” feeling with excess gas often accompany the diarrhea. The diarrhea can be chronic or intermittent and it can be accompanied by fatigue and steatorrhea (fatty stools). Appetite loss combined with malabsorption can lead to significant weight loss, failure to thrive and anemia.

Transmission: *Giardia* is principally spread person-to-person. Persons become infected by fecal-oral transfer of cysts from the feces of an infected individual, especially in institutions and child care centers. Transmission can also occur person-to-person through certain types of sexual contact (e.g., oral-anal contact). Giardiasis has developed with ingestion with as few as 10 cysts.

Environmental exposure can occur. Localized outbreaks may occur from fecally contaminated water, such as stream and lake waters and swimming pools that are contaminated by human and animal feces. Eating food contaminated by an infected food handler can be a source, but this has been rarely documented. Diapered children using “kiddie” pools filled with tap water without added chlorine or bleach is a high-risk source of transmission.

Reported giardiasis cases (confirmed and probable) and incidence rates per 100,000 population by county of residence, Iowa, 2015 (N = 213)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Summary of 2015 cases

Number of cases	213
Incidence rate (per 100,000 population)	7.0
Change from 5-year average incidence	-17.1%

Age (in years)

Mean	33
Median	31
Min-Max	0 - 87

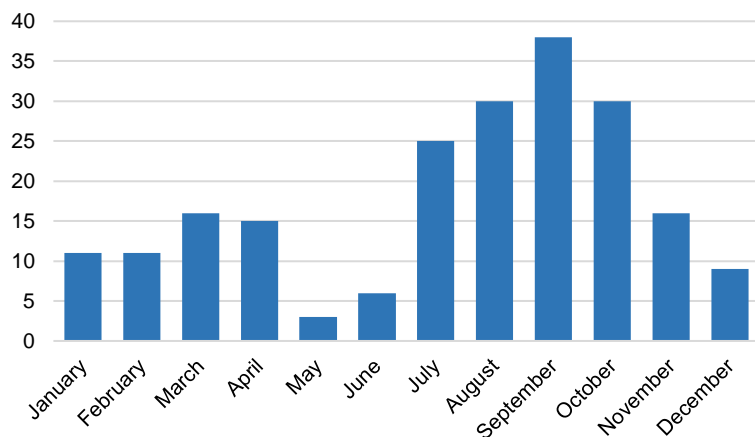
Gender	Number	Percent	Rate
Female	101	47.4	6.6
Male	112	52.6	7.4

Race	Number	Percent	Rate
White	169	79.3	6.1
Black	11	5.1	N/A
Other/Unknown	16/17	N/A	N/A

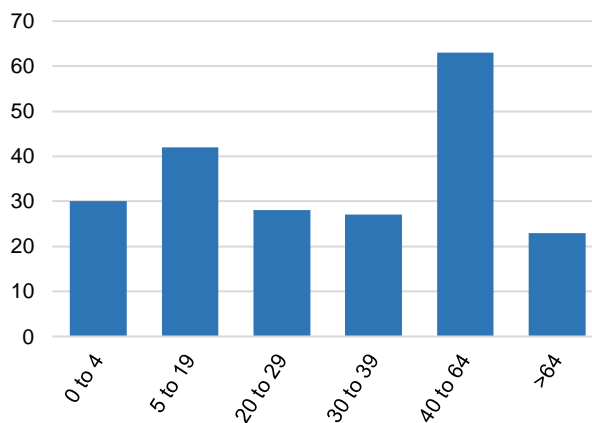
Ethnicity	Number	Percent	Rate
Non-Hispanic	190	89.2	6.6
Hispanic	6	2.8	N/A
Unknown	17	N/A	N/A

NA Not applicable. Rates calculated for less than 20 cases are unreliable and therefore are not included in this table.

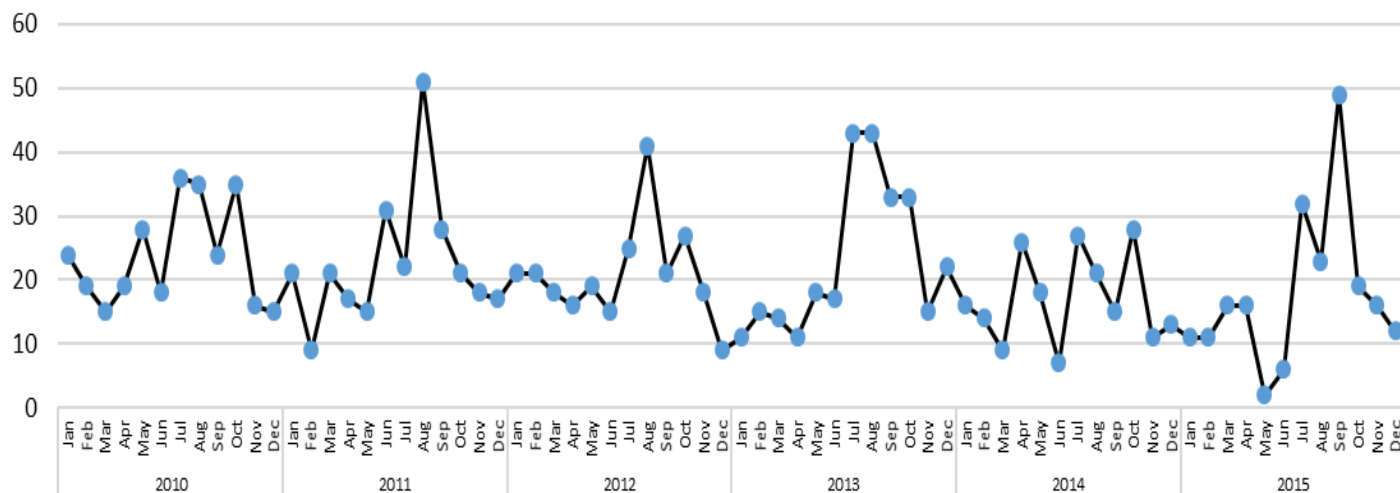
2015 Giardiasis cases by month



2015 Giardiasis counts by age group



Giardiasis cases by month and year - Iowa, 2010-2015



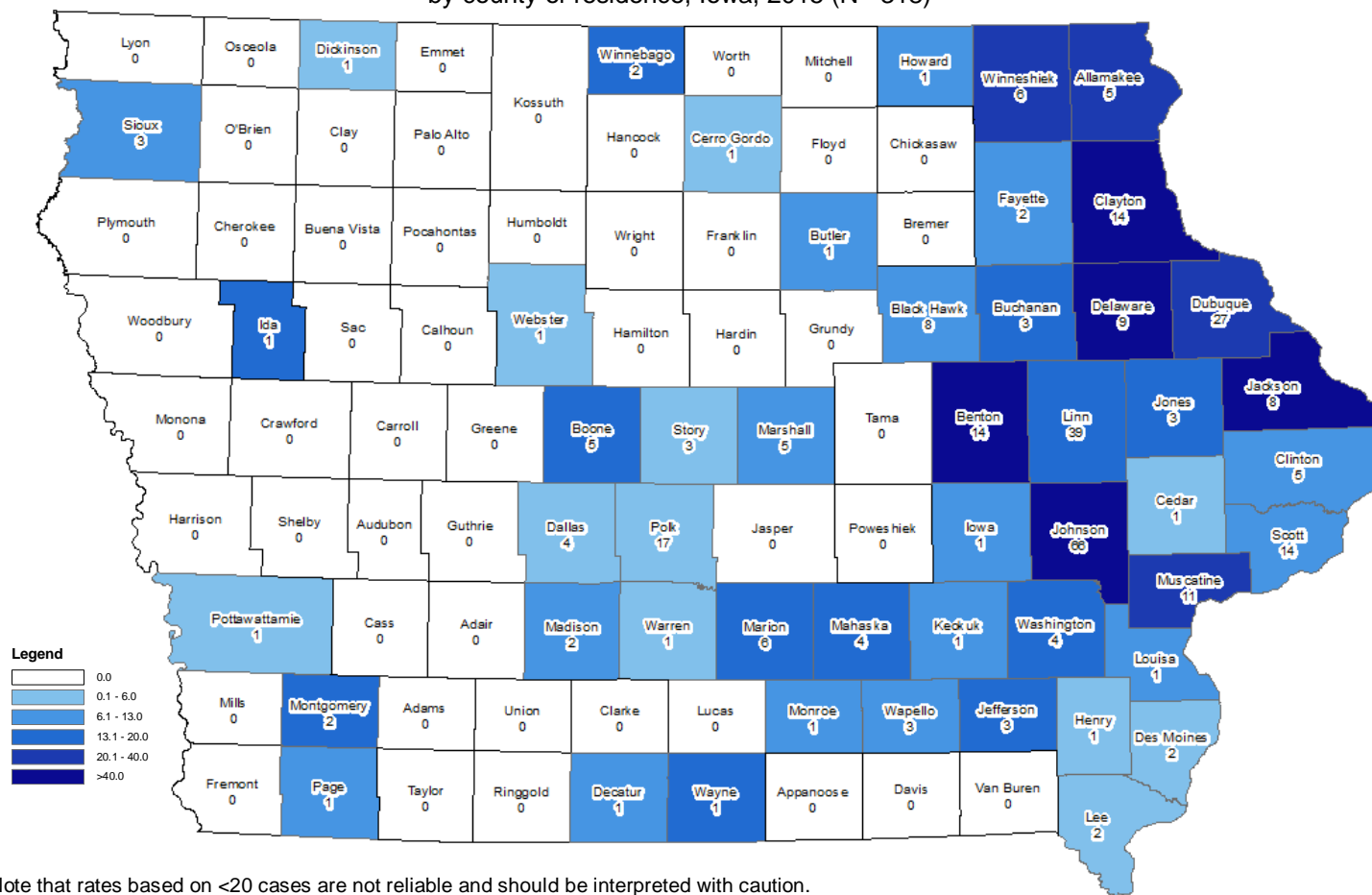
Lyme Disease

Cause: *Borrelia burgdorferi* bacteria

Clinical Features: Lyme disease is a systemic, tick-borne disease with a variety of manifestations, including dermatologic, rheumatologic, neurologic, and cardiac abnormalities. The best clinical marker for the disease is erythema migrans (EM), the initial skin lesion that occurs in 60%-80% of patients.

Transmission: Lyme disease is acquired from a tick bite. Laboratory data suggests that the tick must usually remain attached from 24 to 48 hours before transmission can occur.

Reported lyme disease cases (confirmed and probable) and incidence rates per 100,000 population by county of residence, Iowa, 2015 (N =318)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Summary of 2015 cases

Number of cases	318
Incidence rate (per 100,000 population)	10.4
Change from 5-year average incidence	+50.0%

Age (in years)

Mean	38
Median	36
Min-Max	1-83

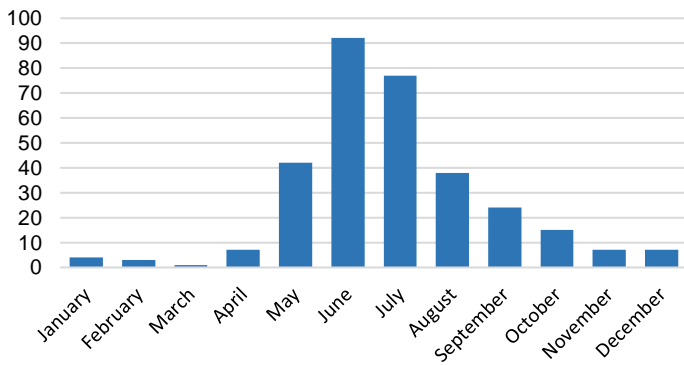
Gender	Number	Percent	Rate
Female	129	40.6	8.4
Male	188	59.1	12.5
Unknown	1	0.3	N/A

Race	Number	Percent	Rate
White	272	85.5	9.8
Black	1	0.3	N/A
Other	2/43	13.5	24.5

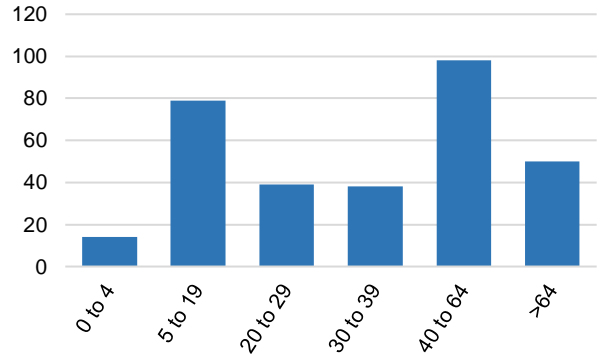
Ethnicity	Number	Percent	Rate
Non-Hispanic	252	79.2	8.7
Hispanic	7	2.2	N/A
Unknown	59	18.5	N/A

NA Not applicable. Rates calculated for less than 20 cases are unreliable and therefore are not included in this table

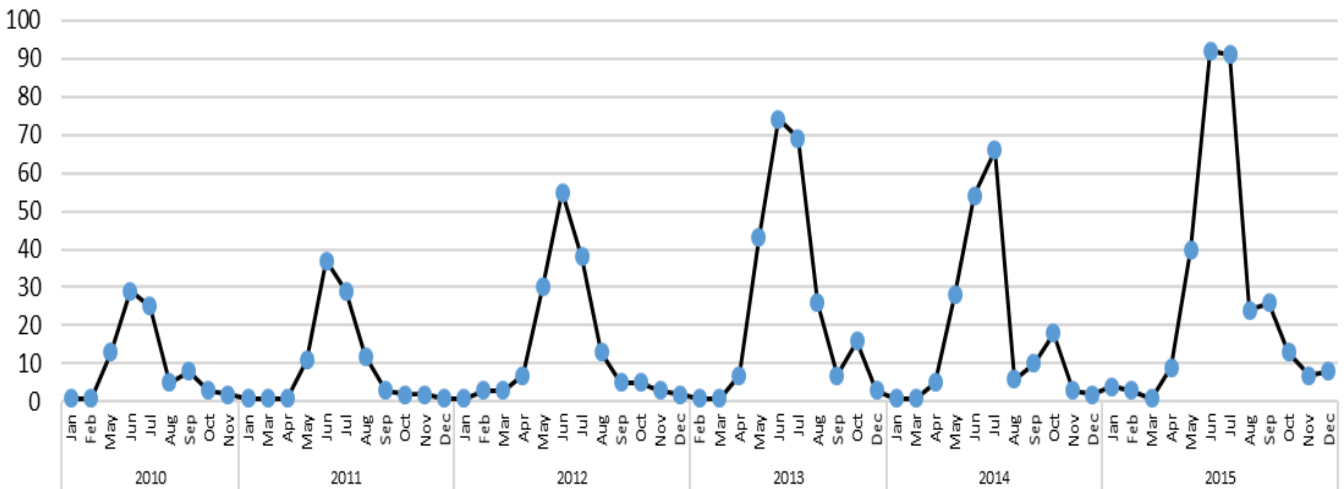
2015 lyme disease cases by month



2015 Lyme disease counts by age group



Lyme disease cases by month and year - Iowa, 2010-2015



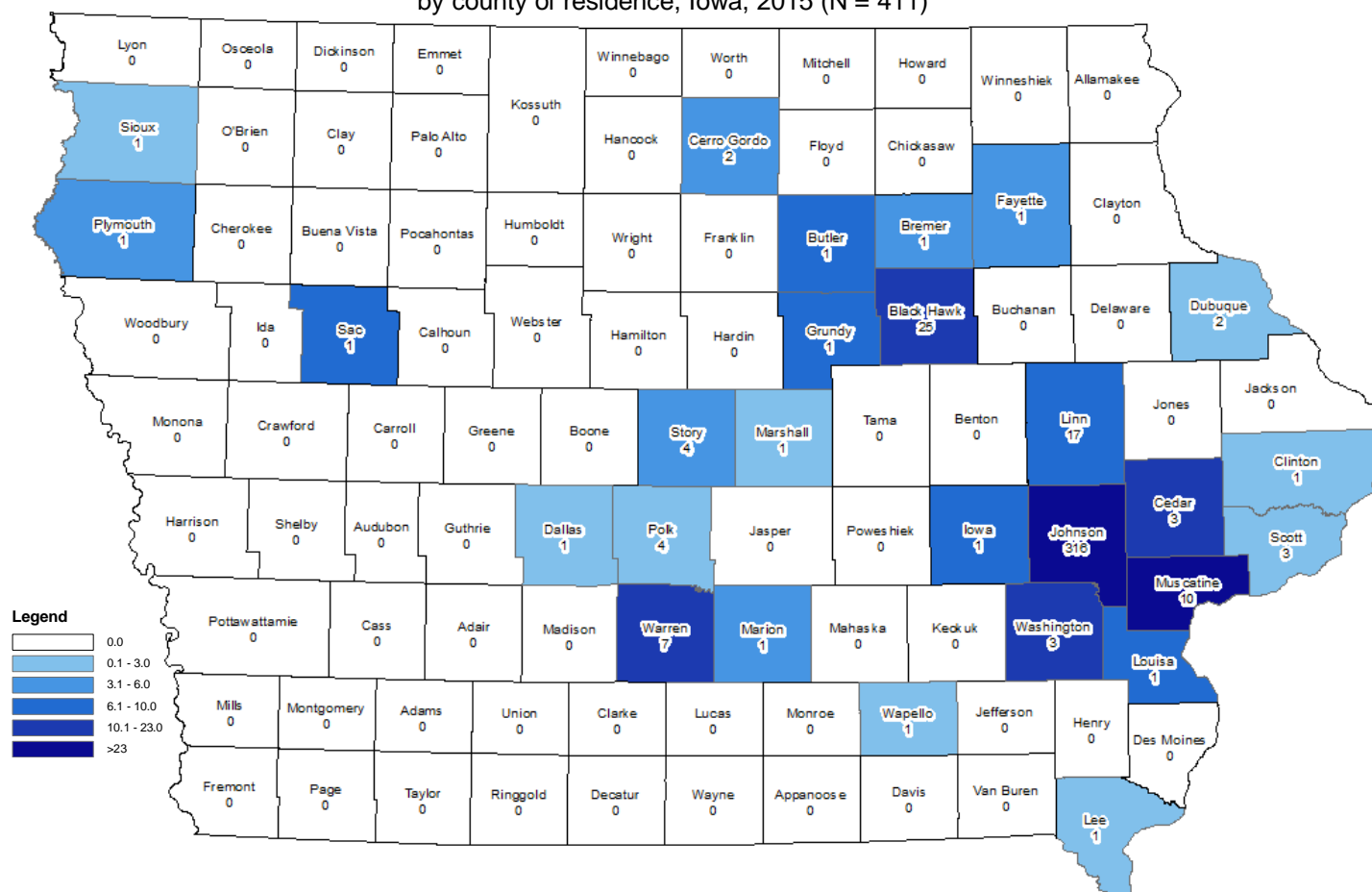
Mumps

Cause: Mumps virus

Clinical Features: Acute viral disease characterized by fever, swelling, or tenderness of one or more of the salivary glands that lasts several days. Parotitis may be unilateral or bilateral. Respiratory symptoms are common. Infection in adulthood is likely to produce a more severe disease, including mastitis in women and orchitis in men.

Transmission: Mumps is transmitted by droplet or direct contact with nasopharyngeal secretions of an infected person, and by the airborne route.

Reported mumps cases (confirmed and probable) and incidence rates per 100,000 population by county of residence, Iowa, 2015 (N = 411)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Summary of 2015 cases

Number of cases	411
Incidence rate (per 100,000 population)	13.5

Age (in years)

Mean	23
Median	21
Min-Max	1 - 69

Gender	Number	Percent	Rate
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Female	194	47.2	12.6
Male	214	52.1	14.2
Unknown	3	0.7	N/A

Race	Number	Percent	Rate
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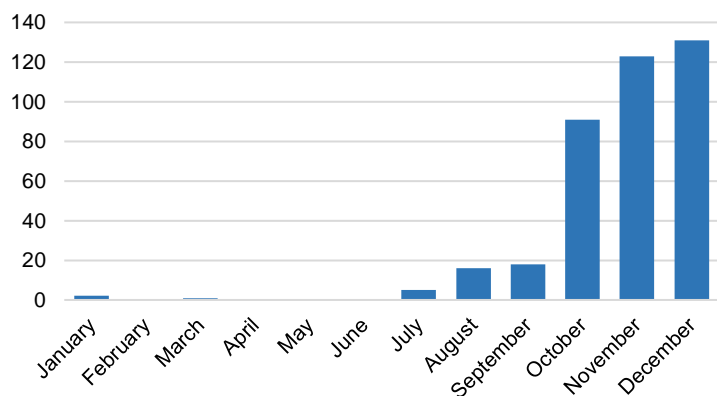
White	195	47.4	7.0
Black	10	2.4	N/A
Other	5/201	N/A	N/A

Ethnicity	Number	Percent	Rate
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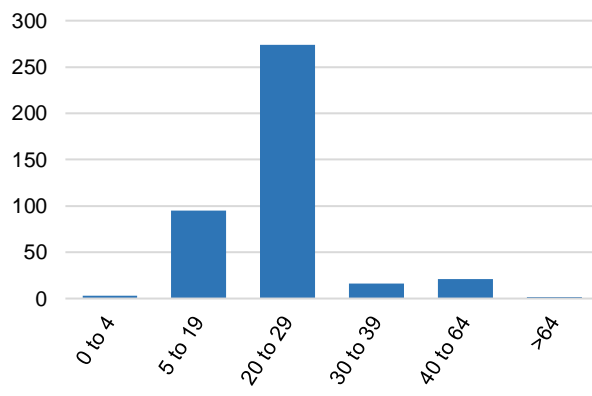
Non-Hispanic	113	27.5	3.9
Hispanic	8	1.9	N/A
Unknown	290	N/A	N/A

NA Not applicable. Rates calculated for less than 20 cases are unreliable and therefore are not included in this table

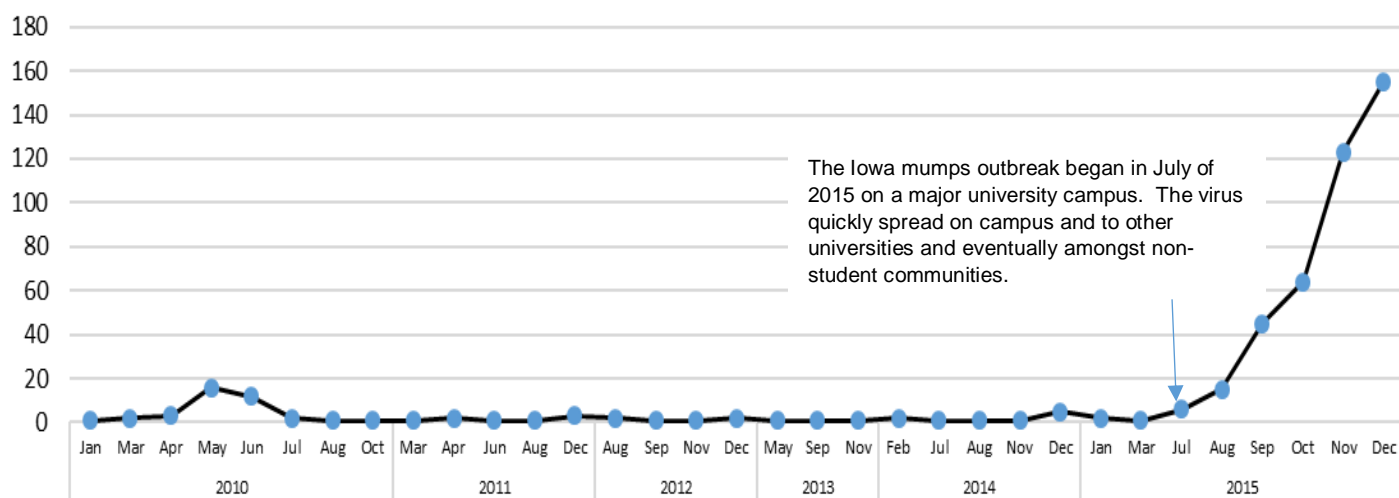
2015 Mumps cases by month



2015 Mumps counts by age group



Mumps cases by month and year - Iowa, 2010-2015



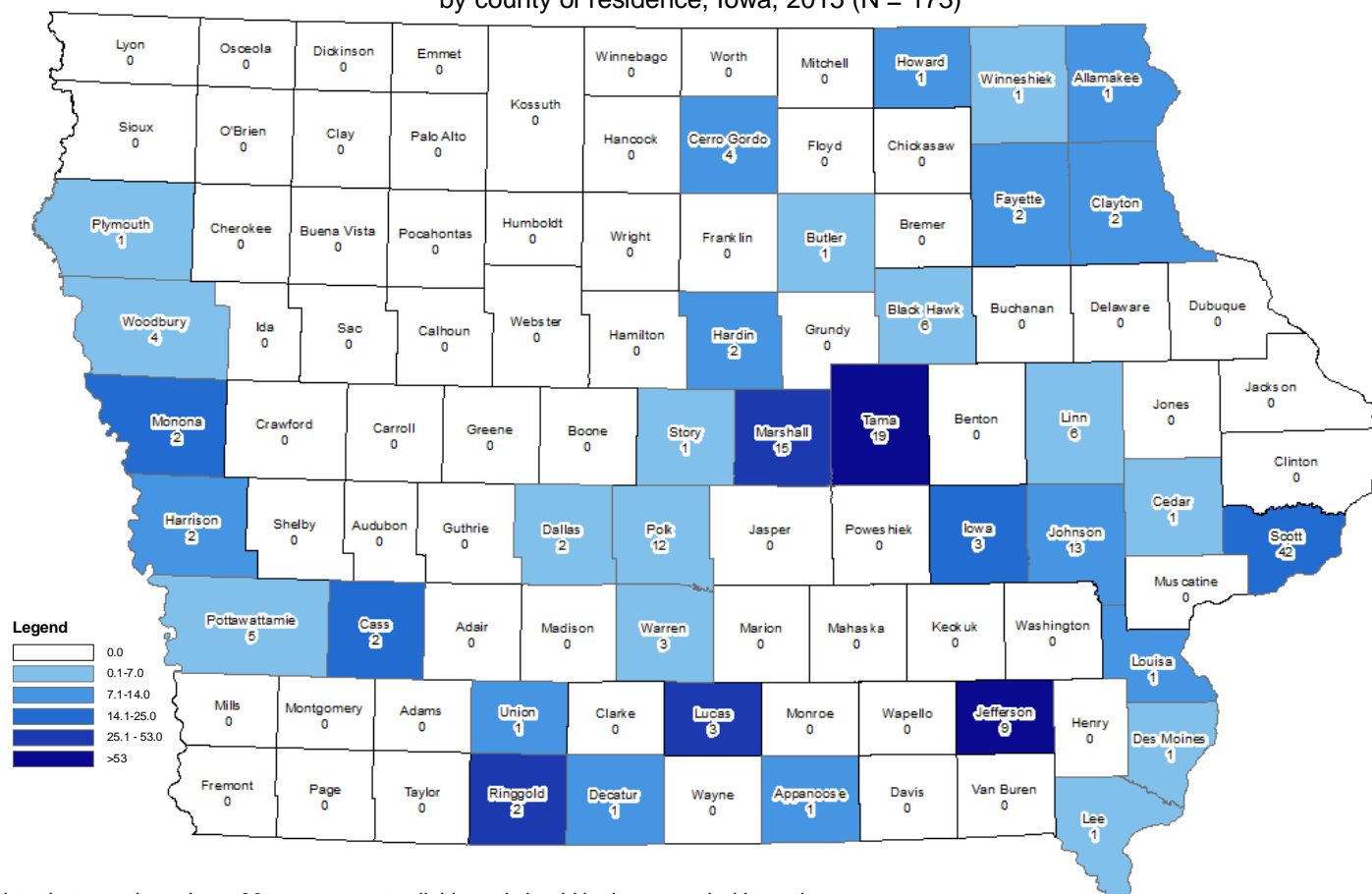
Pertussis (whooping cough)

Cause: *Bordetella pertussis* bacteria

Clinical Features: An acute bacterial infection of the respiratory tract classically characterized by paroxysmal cough and inspiratory whoop. The initial (catarrhal) stage consists of an insidious onset of upper respiratory infection with an irritating cough. Over the course of 1 – 2 weeks, paroxysms develop (paroxysmal phase) and increase in frequency and intensity before gradually improving after 1 – 2 months.

Transmission: Pertussis is most commonly spread by contact with respiratory droplets or by contact with airborne droplets of respiratory secretions. It occurs rarely by contact with an infected person’s freshly contaminated articles.

Reported pertussis cases (confirmed and probable) and incidence rates per 100,000 population by county of residence, Iowa, 2015 (N = 173)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Summary of 2015 cases

Number of cases	173
Incidence rate (per 100,000 population)	5.7
Change from 5-year average incidence	-72.9%

Age (in years)

Mean	15
Median	11
Min-Max	0 - 74

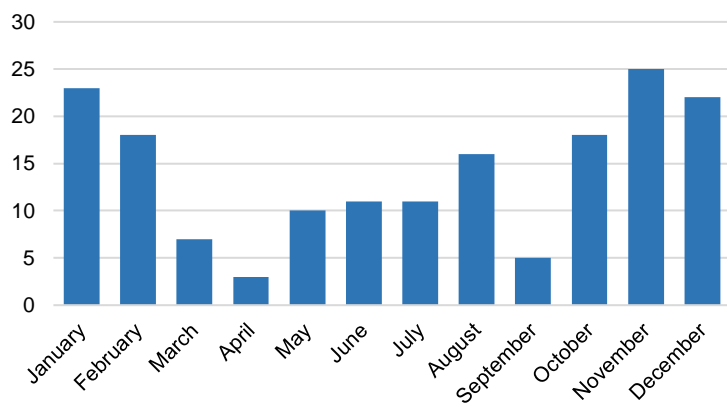
Gender	Number	Percent	Rate
Female	87	50.3	5.7
Male	82	47.4	5.4
Unknown	4	2.3	N/A

Race	Number	Percent	Rate
White	119	68.8	4.3
Black	2	1.2	N/A
Other/Unknown	5/47	N/A	N/A

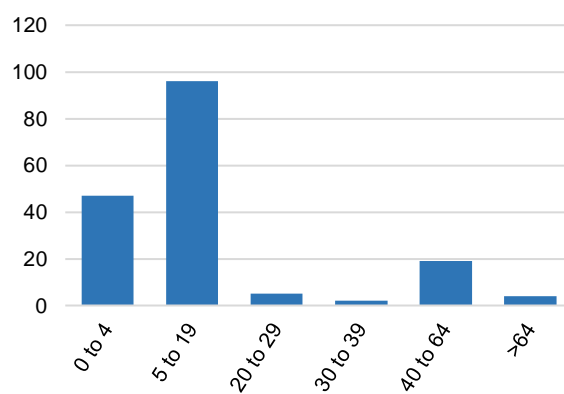
Ethnicity	Number	Percent	Rate
Non-Hispanic	105	60.7	3.6
Hispanic	18	10.4	N/A
Unknown	50	N/A	N/A

NA Not applicable. Rates calculated for less than 20 cases are unreliable and therefore are not included in this table.

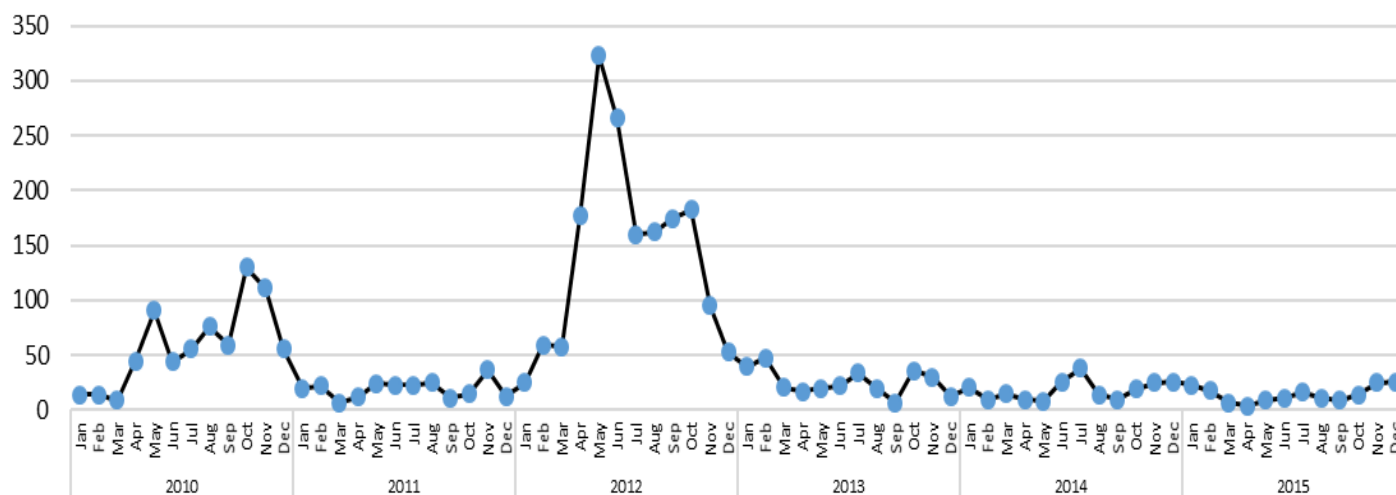
2015 Pertussis cases by month



2015 Pertussis counts by age group



Pertussis cases by month and year - Iowa, 2010-2015



Salmonellosis

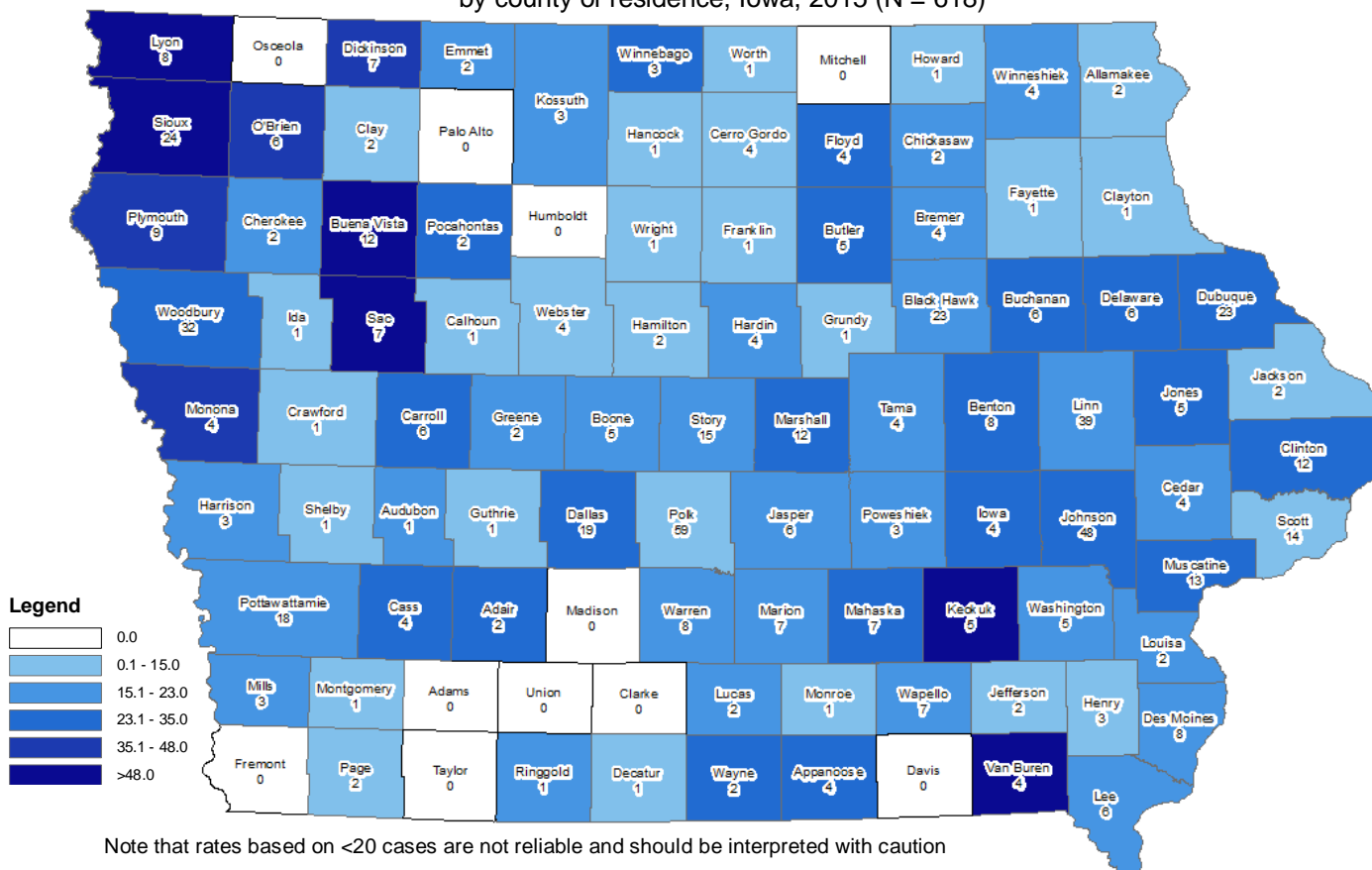
Cause: *Salmonella* bacteria

Clinical Features: Diarrhea (sometimes bloody), headache, stomach cramps, fever, nausea, and sometimes vomiting. The infection may also appear as septicemia, an abscess, arthritis or cholecystitis.

Transmission: The bacteria is spread via the fecal-oral route. The most common mode of transmission is ingestion of food or water that has been contaminated with animal feces. This includes raw or undercooked poultry, meats, and raw milk or milk products. Eggs can become infected “in utero,” thus should be cooked until no longer runny, or pasteurized egg products used. Reptiles such as iguanas, snakes and lizards are often chronic carriers of these bacteria and can also be sources of infection.

Person-to-person spread can occur when an infected food handler contaminates food. A large dose of organisms is usually needed to cause infection, but the infectious dose may be lower for certain susceptible groups such as children, the elderly and the immunocompromised. Most often, person-to-person spread occurs among household contacts, preschool children in child care, and the elderly and developmentally disabled living in residential facilities. Transmission can also occur person-to-person through certain types of sexual contact (e.g. fecal - oral contact).

Reported salmonellosis cases (confirmed and probable) and incidence rates per 100,000 population by county of residence, Iowa, 2015 (N = 618)



Note that rates based on <20 cases are not reliable and should be interpreted with caution

Summary of 2015 cases

Number of cases	618
Incidence rate (per 100,000 population)	20.3
Change from 5-year average incidence	+14.7

Age (in years)

Mean	36
Median	35
Min-Max	0 - 96

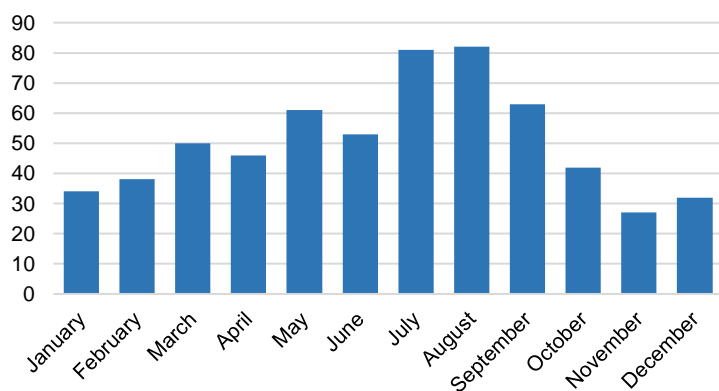
Gender	Number	Percent	Rate
Female	320	51.8	20.8
Male	295	47.7	19.6
Unknown	3	0.5	N/A

Race	Number	Percent	Rate
White	415	67.2	14.9
Black	8	1.3	N/A
Other/Unknown	30/165	N/A	N/A

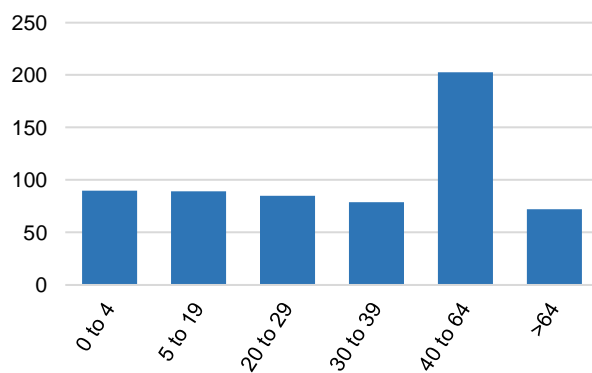
Ethnicity	Number	Percent	Rate
Non-Hispanic	418	67.6	14.4
Hispanic	27	4.4	17.8
Unknown	173	N/A	N/A

NA Not applicable. Rates calculated for less than 20 cases are unreliable and therefore are not included in this table

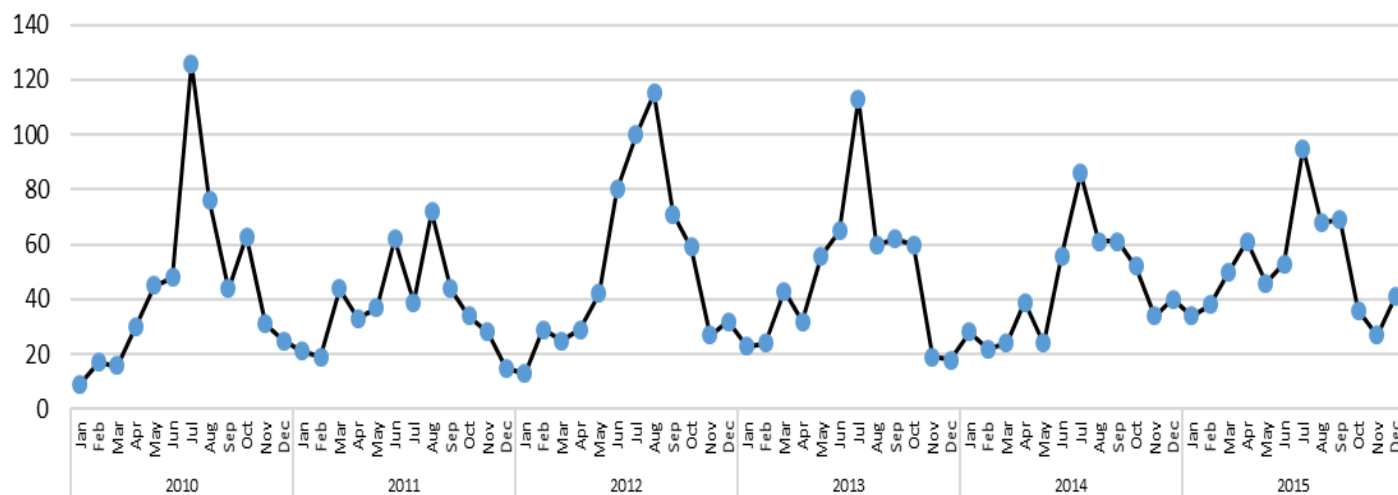
2015 Salmonellosis cases by month



Salmonellosis counts by age group



Salmonellosis cases by month and year - Iowa, 2010-2015



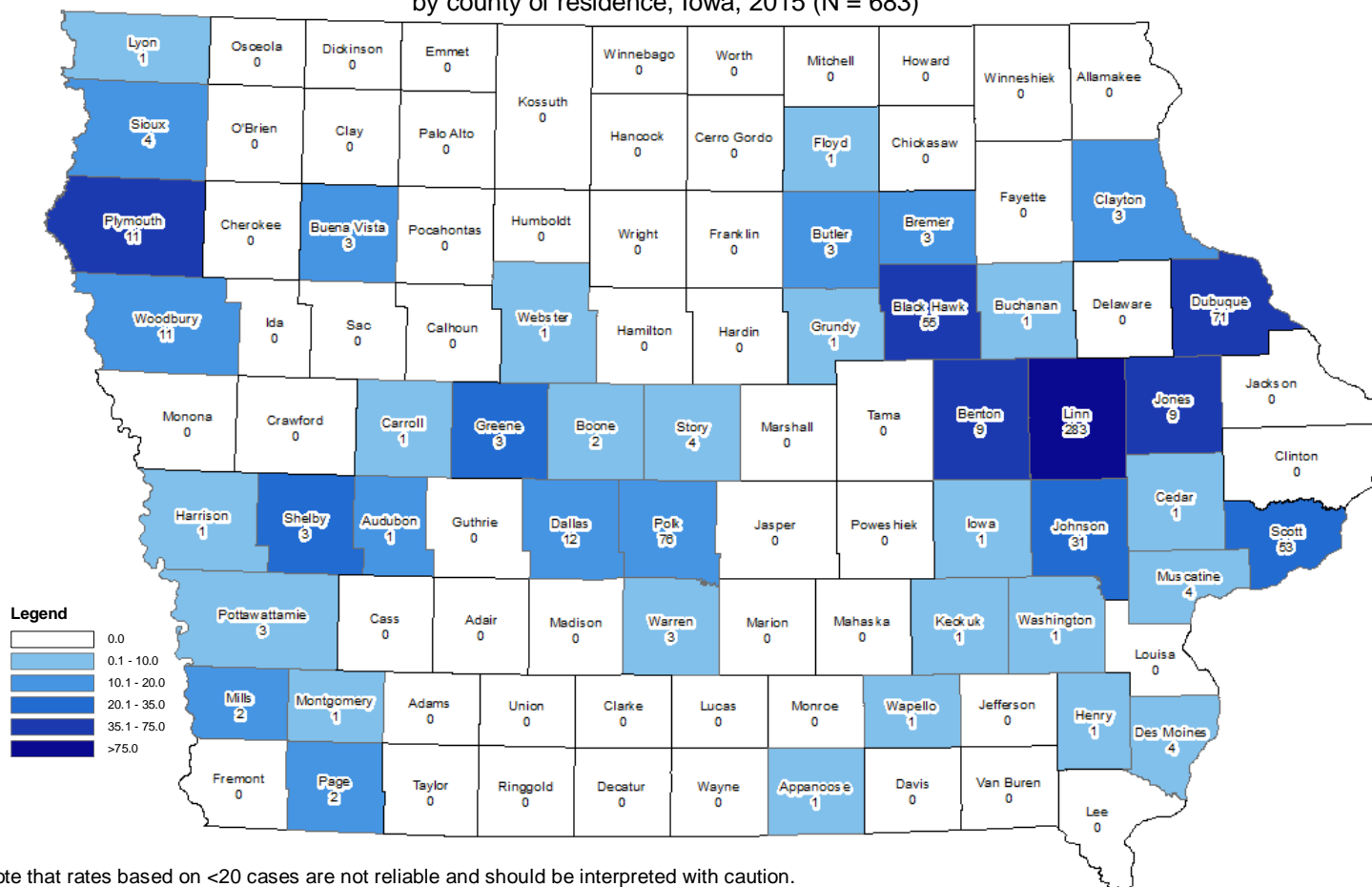
Shigellosis

Cause: *Shigella* bacteria

Clinical Features: Diarrhea accompanied by fever, nausea and sometimes, vomiting, cramps and tenesmus (painful, especially ineffectual straining at stool or urination).

Transmission: Transmitted via the fecal-oral route. People shedding bacteria may contaminate food by failing to properly wash their hands before food handling, potentially causing large numbers of people to become ill. A very small dose of *Shigella* is needed to cause illness (probably 10 – 100 organisms); thus, it can be easily spread. Person-to-person spread typically occurs among household contacts, pre-school children in child care, and the elderly and developmentally disabled living in residential facilities. Secondary attack rate in households can be as high as 40%. Transmission can also occur person-to-person through certain types of sexual contact (e.g., oral-anal contact).

Reported shigellosis cases (confirmed and probable) and incidence rates per 100,000 population by county of residence, Iowa, 2015 (N = 683)



Note that rates based on <20 cases are not reliable and should be interpreted with caution.

Summary of 2015 cases

Number of cases	683
Incidence rate (per 100,000 population)	22.4
Change from 5-year average incidence	+79.0%

Age (in years)

Mean	19
Median	9
Min-Max	0 - 86

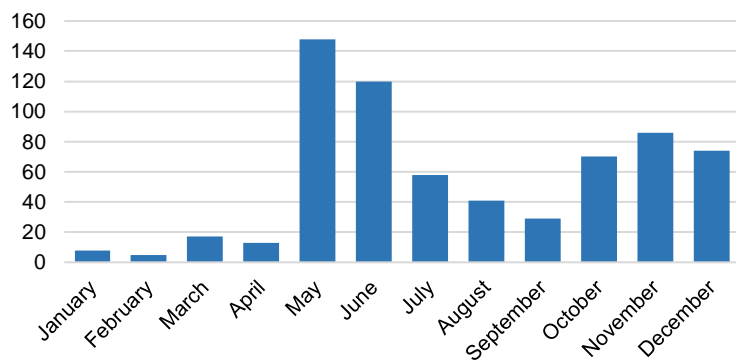
Gender	Number	Percent	Rate
Female	378	55.3	24.6
Male	298	43.6	19.8
Unknown	7	1.1	N/A

Race	Number	Percent	Rate
White	443	64.9	15.9
Black	82	12.0	92.0
Other/Unknown	26/132	N/A	N/A

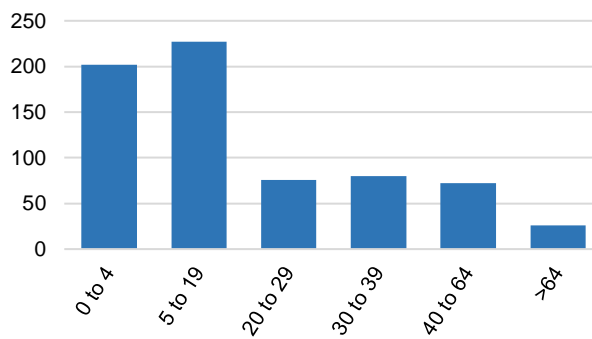
Ethnicity	Number	Percent	Rate
Non-Hispanic	514	75.3	17.8
Hispanic	30	4.4	19.8
Unknown	139	N/A	N/A

NA Not applicable. Rates calculated for less than 20 cases are unreliable and therefore are not included in this table

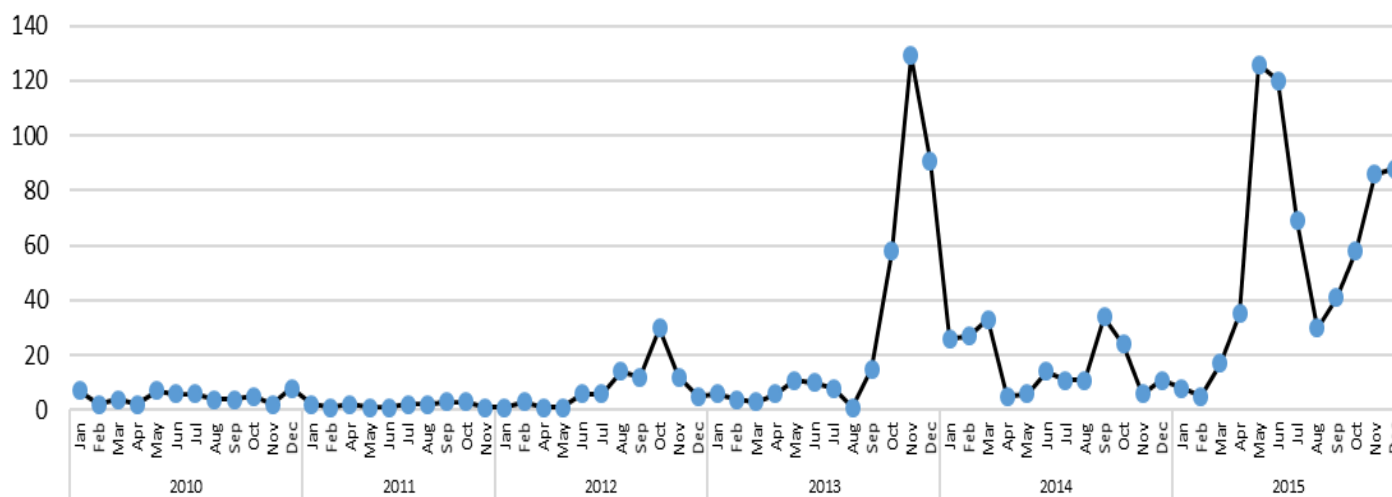
2015 Shigellosis cases by month



2015 Shigellosis counts by age group



Shigellosis cases by month and year - Iowa, 2010-2015



Section 4

2015 Mosquito-borne disease

West Nile Virus (WNV)

WNV is endemic in Iowa and activity usually peaks in late summer and early fall. IDPH works in collaboration with Local Public Health (LPH) and other appropriate partners to investigate all reported cases.

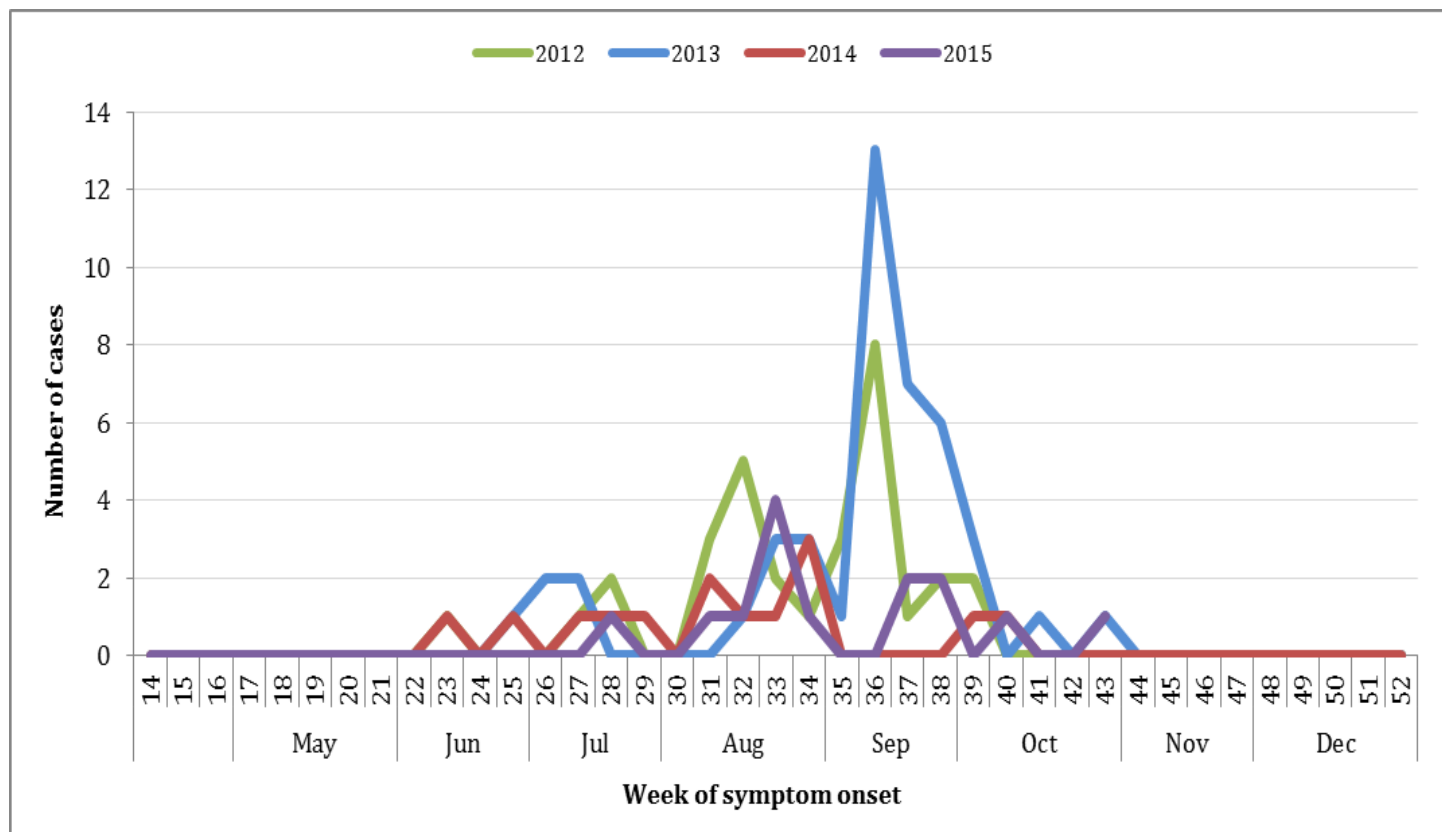
In addition, IDPH in collaboration with the State Hygienic Laboratory (SHL), Iowa State University (ISU), and local public environmental health partners conducts ecological surveillance in four counties across the state by monitoring mosquitoes and testing for infected populations.

Fourteen human cases of WNV and five presumptive viremic blood donors have been reported in Iowa in 2015 [Table 9]. Seventeen mosquito pools and three horses have also tested positive for this virus. During the 2014 surveillance season, 15 human cases of WNV were reported, in 11 Iowa counties [Figure 1].

Table 11. Positive WNV by source

County	Human	Blood Donor	Horses	Mosquito Pools		
				<i>Culex pipiens</i>	<i>Culex pipiens</i> Complex	<i>Culex restuans</i>
Adams	1	0	0	N/A	N/A	N/A
Cedar	0	1	0	N/A	N/A	N/A
Clarke	1	0	0	N/A	N/A	N/A
Dallas	1	1	0	N/A	N/A	N/A
Davis	0	0	1	N/A	N/A	N/A
Dubuque	0	1	0	N/A	N/A	N/A
Hancock	1	0	0	N/A	N/A	N/A
Harrison	0	1	0	N/A	N/A	N/A
Jefferson	0	0	1	N/A	N/A	N/A
Lee	1	0	1	N/A	N/A	N/A
Louisa	1	0	0	N/A	N/A	N/A
Lyon	1	0	0	N/A	N/A	N/A
Mahaska	2	0	0	N/A	N/A	N/A
Plymouth	1	0	0	N/A	N/A	N/A
Polk	1	0	0	0	1	2
Ringgold	1	0	0	N/A	N/A	N/A
Story	0	0	0	7	2	5
Tama	1	0	0	N/A	N/A	N/A
Warren	1	0	0	N/A	N/A	N/A
Webster	0	1	0	N/A	N/A	N/A
Total	14	5	3	7	3	7

Figure 1. WNV disease cases reported to IDPH, by week of onset – Iowa, 2015



Chikungunya

Chikungunya is a viral disease that is spread to people by the bite of an infected *Aedes aegypti* and *Aedes albopictus* mosquito. Mosquitoes become infected when they feed on a person already infected with this virus. These species of mosquitoes are not sustained in Iowa.

In 2014, four imported cases of chikungunya virus disease were reported in Iowa. Cases occurring in Iowa are in travelers returning from parts of the world where Chikungunya transmission occurs. In 2015, three imported cases of chikungunya were reported.

Jamestown Canyon Virus (JCV)

Jamestown Canyon virus is a Bunyavirus within the California serogroup. It is transmitted to humans through the bite of an infected mosquito.

One case was reported in Iowa in 2015. This is the first case of Jamestown Canyon virus identified in Iowa.

Section 5

2015 Iowa Rabies

ANIMAL RABIES IN IOWA:

In 2015, 12 cases of animal rabies were reported in Iowa. Rabies was identified most frequently in wildlife species including 7 bats and 1 skunk. Three cases were diagnosed in dogs and one case was diagnosed in a cat.

Table 12: Positive Rabies Cases 2004-2014

Species	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Bat	60	28	13	11	11	10	12	17	6	10	7	185
Skunk	33	13	5	7	13	13	7	9	4	2	1	107
Cat	5	7	7	9	3	1	3	1	0	1	1	38
Cow	7	4	0	1	5	1	3	4	2	2	0	29
Dog	2	2	5	1	2	1	0	0	0	0	3	16
Horse	1	3	1	0	0	0	0	0	0	0	0	5
Fox	0	0	0	0	0	1	0	0	0	0	0	1
Squirrel	0	0	0	0	1	0	0	0	0	0	0	1
Badger	0	0	0	0	0	0	0	0	0	0	0	0
Total	108	57	31	29	35	27	25	31	12	15	12	382

During 2015, 1389 animals in Iowa were tested for rabies and 12 were confirmed positive (0.87%). The percent positive varies greatly by species, see the Table 11 below. It is important to note that this data is 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 13: Percent Positive by Species in 2015

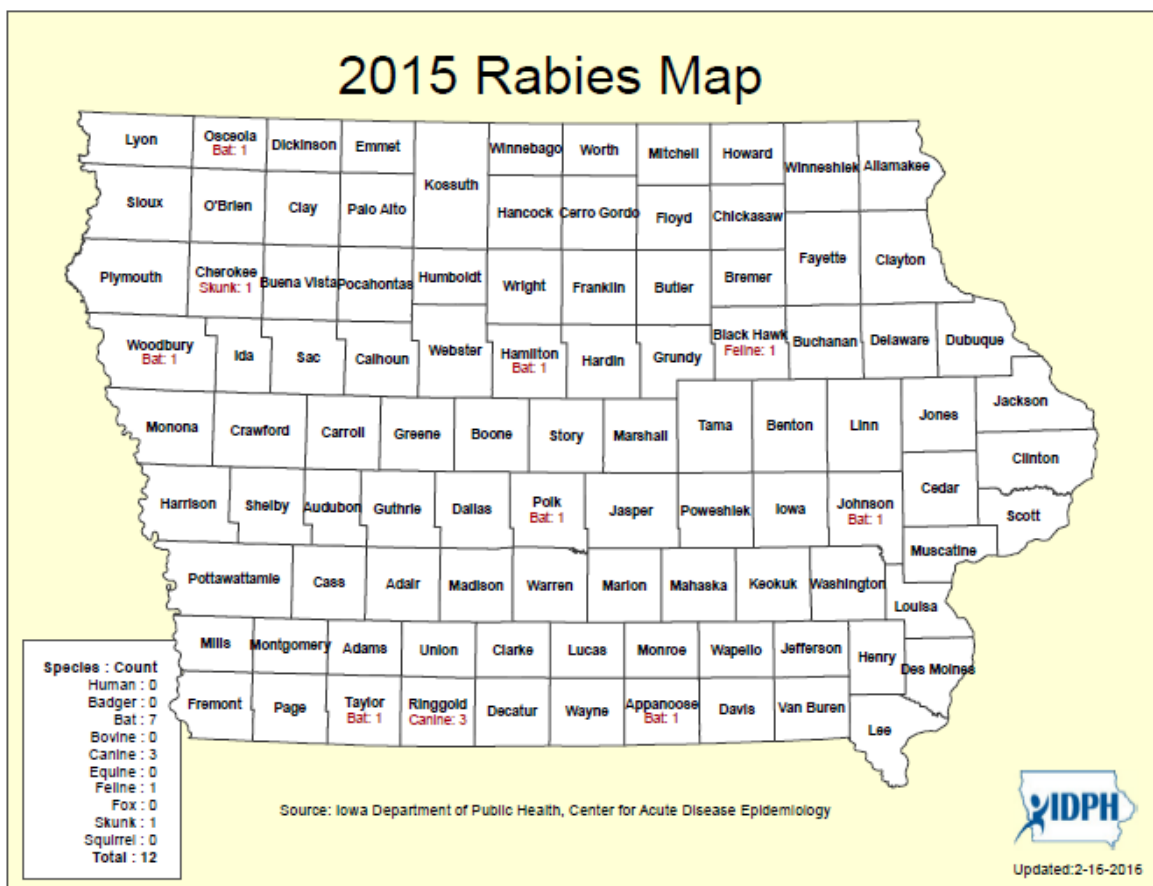
Species	Positive	Total Tested	% Positive
Skunk	1	15	6.67%
Bat	7	449	1.56%
Dog	3	310	0.97%
Cat	1	371	0.32%

In Iowa, the most common bat species submitted for testing are the Big Brown bat and Little Brown bat; however other bat species are occasionally tested.

Table 14: Bat Species Tested and Positive for Rabies Infection

Species	Positive	Total Tested
<i>Eptesicus fuscus</i> (Big Brown bat)	7	403
<i>Myotis lucifugus</i> (Little Brown bat)	0	27
<i>Lasiurus borealis</i> (Eastern Red bat)	0	4
<i>Myotis sodalis</i> (Indiana bat)	0	4
<i>Rousettus aegyptiacus</i>	0	1
Unknown	0	10

Figure 2. 2015 Iowa rabies map



There are two laboratories that test animals for rabies in Iowa:

- State Hygienic Laboratory at the University of Iowa
- Iowa State University Veterinary Diagnostic Laboratory

Iowa animals are also periodically tested in out-of-state laboratories

HUMAN RABIES IN IOWA:

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

While the exact number of people who receive rabies post exposure prophylaxis (PEP) each year in the United States is unknown, it is estimated to be about 40,000 people. Based upon Iowa’s population, that would equate to approximately 390 Iowan’s receiving PEP each year.

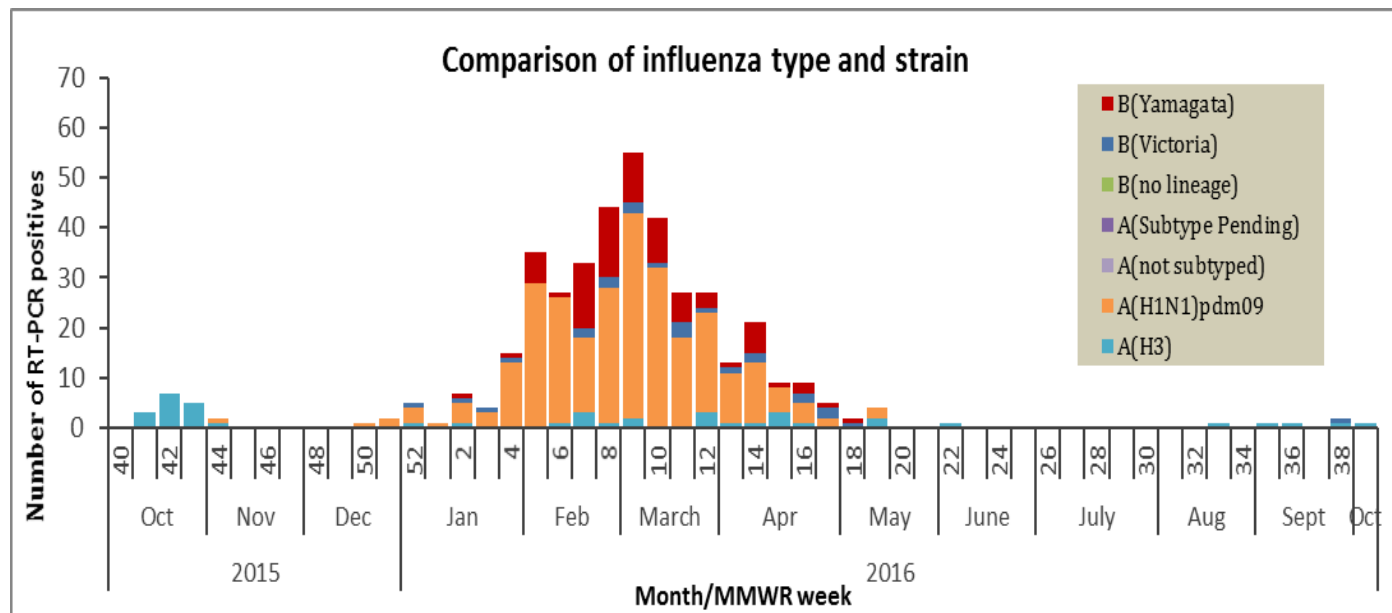
Section 6

Influenza Surveillance

The Iowa Influenza Surveillance Network (IISN) tracks influenza activity, age groups impacted, outbreaks, virus type and strain, and severity of seasonal influenza. During the 2015-2016 season, a wide variety of surveillance sites reported to IISN, including medical clinics, hospitals, laboratories, schools, and local public 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 <http://idph.iowa.gov/influenza/reports>.

The 2015-2016 influenza season in Iowa started late and was less severe than in 2014-2015. The first case of seasonal influenza was confirmed by the State Hygienic Laboratory (SHL) in October, 2015. Influenza activity increased in January and peaked in March, 2016 (Figures 3-6). SHL identified three seasonal influenza viruses circulating in Iowa for the season: influenza A (H3N2), influenza A (2009 H1N1) and influenza B (both Yamagata and Victoria Lineage). Influenza A (2009 H1N1) viruses were predominant in Iowa, accounting for 64 percent of all positive influenza specimens tested (Figure 3). During the 2015-2016 season, 353 influenza-associated hospitalizations were reported from 28 sentinel hospitals and 31 percent of the hospitalizations were among people 64 years-of-age and older (Figure 5). This is a 70 percent decrease from the 1196 influenza-associated hospitalizations reported during the 2014-2015 season (Figure 6).

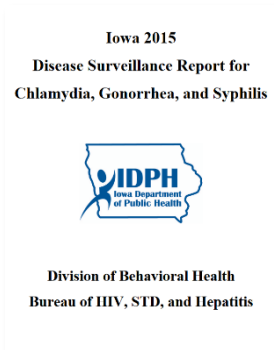
Figure 3. Laboratory-confirmed cases of influenza reported – Iowa, 2015-2016



Section 7

Related Program Reports

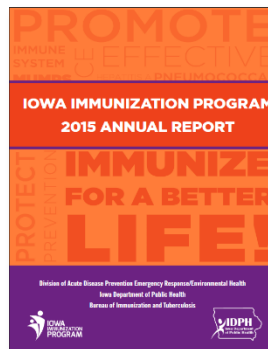
Division of Behavioral Health Bureau of HIV, STD, and Hepatitis



Iowa 2015 Disease Surveillance Report for Chlamydia, Gonorrhea, and Syphilis

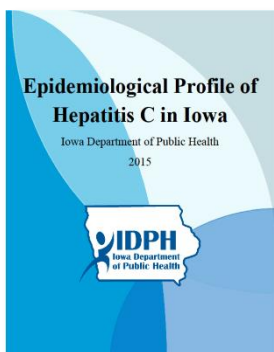
[idph.iowa.gov/Portals/1/userfiles/105/STD surveillance data 2015 for webpage.pdf](http://idph.iowa.gov/Portals/1/userfiles/105/STD%20surveillance%20data%202015%20for%20webpage.pdf)

Bureau of Immunization and TB



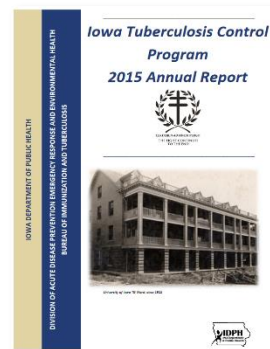
Iowa Immunization Program 2105 Annual Report

[idph.iowa.gov/Portals/1/userfiles/39/2015 Immunization Annual Report.pdf](http://idph.iowa.gov/Portals/1/userfiles/39/2015%20Immunization%20Annual%20Report.pdf)



Epidemiological Profile of Hepatitis C in Iowa

idph.iowa.gov/hivstdhep/hep



Iowa Tuberculosis Control Program 2015 Annual Report

[idph.iowa.gov/Portals/1/userfiles/39/TB Annual Report 2015 Final for Posting 10-2-16.pdf](http://idph.iowa.gov/Portals/1/userfiles/39/TB%20Annual%20Report%202015%20Final%20for%20Posting%2010-2-16.pdf)



2015 State of Iowa End-of-Year HIV Disease Surveillance Report

[idph.iowa.gov/Portals/1/userfiles/105/State of Iowa 2015 End-of-Year HIV Disease Surveillance Report.pdf](http://idph.iowa.gov/Portals/1/userfiles/105/State%20of%20Iowa%202015%20End-of-Year%20HIV%20Disease%20Surveillance%20Report.pdf)

References

¹Diseases reportable to Iowa Department of Public Health. Iowa Administrative Code [641] Chapter 1.