COMMUNICABLE DISEASE IN ILLINOIS

VOLUME 1, ISSUE 2 OCTOBER 2017

LYME DISEASE: NEW CASE DEFINITION TIPS

With the new 2017 case definition for Lyme disease, the CDC has changed the exposure requirement in the case definition, making it increasingly difficult for a case to be counted as confirmed. Additionally, two of the three qualifying criteria that determine whether a case is confirmed includes a physician diagnosed erythema migrans (EM), also known as a bulls-eye rash. However, for the EM to meet the requirements of the case definition, it must be measured and reported in I-NEDSS. **The EM must be ≥ 5cm (approximately 2 inches) in size across its largest diameter.**

"Classic" erythema migrans rash

https://www.cdc.gov/lyme/signs_symptoms/index.html

If the rash was not measured by the healthcare provider, a descriptive approximation of its size is adequate, e.g., golf ball, soft ball, basketball sized, etc. Please be sure to review the 2017 case definition for Lyme disease (https://wwwn.cdc.gov/nndss/conditions/lyme-disease/case-definition/2017/) before completing your investigation and assigning a case status. After assigning the appropriate case status, send the case to IDPH for review and closure.

INSIDE THIS ISSUE

Lyme disease	PH in Action
CD News	Surveillance
Training	Foodborne Disease
Zika	Influenza
Botulism	Tuberculosis
Brucellosis	Data Summary

IDPH CD NEWS

WELCOME!

Erin Moritz, CDC Epidemiologic Intelligence Service officer, will be stationed in the CD Section in Springfield for two years. She earned her B.S. (Biochemistry/Molecular Biology) and M.S. (Environmental Public Health) from the University of Wisconsin-Eau Claire and her Ph.D. in epidemiology from the University of Iowa. She has studied *Staphylococcus aureus* in childcare facilities and worked on blood donation screening for parasites for the American Red Cross.

Kelly Walblay has joined IDPH as a CSTE Applied Epidemiology Fellow in the Chicago office for the next two years. Kelly recently graduated from the University of Michigan School of Public Health with a masters in epidemiology. She has worked on projects involving Zika virus and other mosquito-borne illnesses in the U.S. and South America. Kelly also holds a bachelor's degree in biology and Spanish.

CD SECTION TRAINING SCHEDULE

UPCOMING CD WEBINARS

Influenza

Lab Reporting & Result Interpretation

<See the IDPH Training Resources web portal page for dates/times and to register>

ZIKA VIRUS, ILLINOIS, 2016

The state of Illinois has been closely monitoring Zika virus cases since the introduction of Zika virus into the Western hemisphere. Zika can be transmitted from:

- a bite from an infected mosquito,
- sexual contact with an infected partner, or
- an infected pregnant woman to her fetus

Most people infected with the virus do not exhibit symptoms, or will only have mild ones. Common Zika symptoms include: fever, rash, headache, joint pain, red eyes, and muscle pain. Symptoms can last anywhere from two to seven days. Because there is not a Zika virus vaccine available at this time, it is strongly recommended that people protect themselves by wearing protective clothing, using insect repellent, and proper condom usage after traveling to an endemic area or being diagnosed with Zika. Pregnant women should be aware of and follow Zika travel advisories about Zika. Cases of Zika in pregnant women are currently linked to several birth defects, including microcephaly.

In 2016 there were 114 confirmed cases of Zika virus in Illinois residents, of whom three were congenital. One case was born with small lateral ventricles, while the other two were asymptomatic. Of the remaining 111 non-congenital cases, the majority were symptomatic (Figure 2). Symptomatic cases experienced one or more of the following symptoms: fever, rash, joint pain, and conjunctivitis (Table 1). Table 2 shows the number of cases reporting one through four typical symptoms of Zika.

Figure 1. Illinois Counties with Residents Diagnosed with Zika Virus, 2016

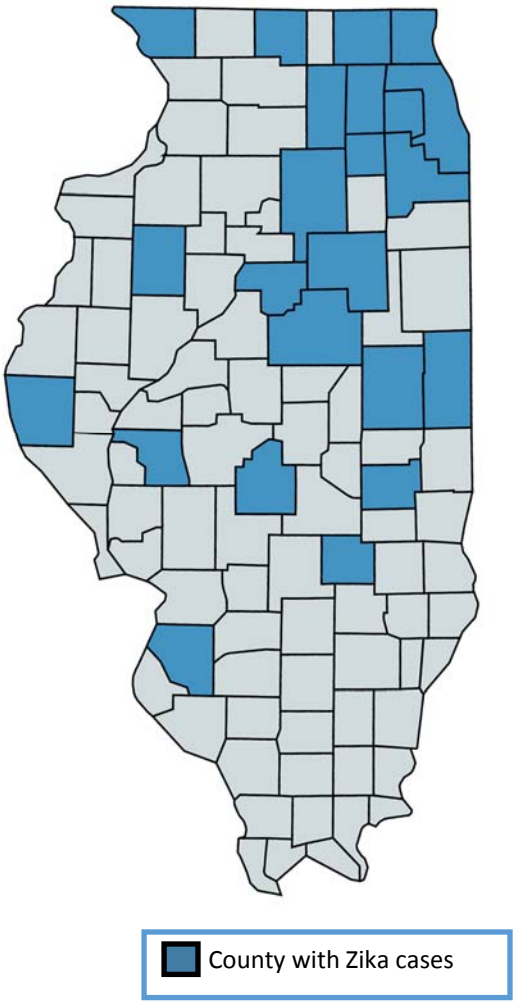


Table 1. Symptoms in Zika cases, Illinois, 2016 (N=105)

Symptom	Cases with Symptom	Total Cases	Percent with Symptom
Fever	64	99	65%
Rash	98	105	93%
Joint Pain	70	99	70%
Conjunctivitis	63	100	63%

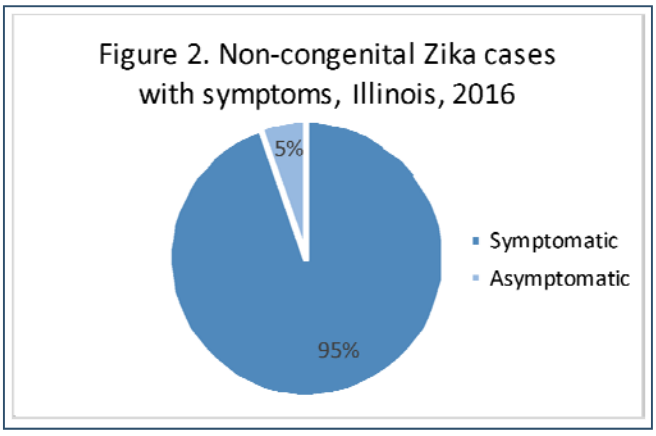


Table 2. Number of Zika Cases with Symptoms, Illinois, 2016 (n= 104)

Cases Exhibiting 1 of 4 Symptoms	10	9.6%
Cases Exhibiting 2 of 4 Symptoms	38	36.5%
Cases Exhibiting 3 of 4 Symptoms	43	41.3%
Cases Exhibiting All Symptoms	13	12.5%

BOTULISM Q&A

What is botulism?

Botulism is a rare but serious illness caused by a toxin that attacks the body's nerves (neurotoxin), and causes muscle paralysis, difficulty breathing, and even death.

What causes botulism?

The botulism toxin is made by bacteria called *Clostridium*, most commonly *Clostridium botulinum*. The bacteria that make this deadly toxin are found naturally in many places. These bacteria make spores, which act like protective coatings and help the bacteria survive in the environment. While these bacteria rarely cause human illness, in some conditions, the spores can grow and make the botulism toxin that can lead to human disease.

What are the types of botulism?

There are five general types of botulism. **All kinds of botulism can be fatal and are medical emergencies.**

- **Foodborne botulism** occurs when a person ingests botulinum toxin, which leads to illness within a few hours to days. Outbreaks of foodborne botulism have potential to be public health emergencies because the contaminated food may be eaten by other people.
- **Infant botulism** occurs each year in a small number of susceptible infants who harbor *C. botulinum* in their intestinal tract. It occurs when an infant ingests spores of *C. botulinum*, which in turn colonize the intestinal tract and produce toxin.
- **Adult intestinal toxemia botulism** is a very rare kind of botulism that can happen if the spores of the bacteria get into an adult's intestines, grow, and produce the toxin. Although we don't know why people get this kind of botulism, people who have serious health conditions that affect the gut may be more likely to get sick.
- **Wound botulism** is a rare disease that occurs when wounds infected with *C. botulinum* secrete the toxin. It occurs more frequently among persons who inject drugs, but also has been seen in cases of traumatic injury, such as motorcycle crashes and surgeries.
- **Iatrogenic botulism** occurs after an overdose of injected botulinum toxin for cosmetic or medical purposes.

What are the symptoms of botulism?

Cranial nerve deficits: Botulism starts with paralysis of one or more of the cranial nerves. Symptoms that can indicate paralysis of a cranial nerve include: blurred vision, double vision (diplopia), drooping upper eyelids (ptosis), slurred speech, difficulty swallowing (dysphagia), and dry mouth. Sometimes these findings can be subtle and not readily recognized.

Disease progression: The disease progresses as a descending, symmetric paralysis and leads to muscle weakness and paralysis of respiratory muscles, arms, and legs.

Characteristic clinical findings for botulism

- starts with cranial nerve deficits / paralysis
- descending, symmetric, paralysis of motor and autonomic nerves
- absence of sensory nerve dysfunctions

For individuals with foodborne botulism, symptoms typically begin within 18 to 36 hours after eating a contaminated food, though can be as soon as six hours and up to 10 days after exposure. Individuals with foodborne botulism may also have abdominal pain, nausea, and/or diarrhea. Infants may display such additional signs as poor feeding, diminished sucking or ability to cry, and may appear 'floppy'. Individuals with wound botulism may have abscesses, especially near the site of injection or trauma.

Continued on page 4...

BOTULISM CONTINUED

Why is it important to immediately report?
Botulism is a clinical emergency that requires prompt evaluation and determination for the need to administer treatment. Further, if there is an outbreak, it is important to identify other individuals who may have been exposed to the same contaminated source. Suspect cases should be reported by phone immediately to the IDPH CD Section.

What is the treatment for botulism?
There is a treatment for botulism called botulism antitoxin. The antitoxin does not reverse paralysis but arrests its progression. Clinical recovery then follows with the regeneration of new neuromuscular connections. Treatment should not be delayed while awaiting laboratory confirmation. The decision to treat should be based initially on clinical symptoms. Treatment is only available through the CDC for adult cases and California for infant cases and must be coordinated with IDPH.

How is botulism diagnosed?
Laboratory confirmation is done by demonstrating the presence of botulinum toxin in serum, stool or food or by culturing *Clostridium* from stool, a wound or food samples. Testing can be completed at the CDC and requires approval from IDPH to submit samples to the CDC for testing. Laboratory testing for botulism is not typically done to 'rule out' botulism but rather to provide laboratory confirmation for a suspect case. Thus, any request for diagnostic assistance should coincide with a strong consideration to treat the suspect case. This is especially important given the time sensitivity to initiating treatment.

BRUCELLOSIS IN ILLINOIS

Brucellosis is a zoonotic disease transmitted to people through the ingestion of uncooked meat or unpasteurized dairy products from overseas. It also can be transmitted from contact with infected animals or laboratory cultures.

Between 100 and 200 human brucellosis cases are documented in the United States annually, and 3-10% of these cases occur in children under 18 years. Symptoms include night sweats, weakness, anorexia, weight loss, arthralgias, myalgias, abdominal pain, and headache. Serious complications can also occur, such as meningitis, endocarditis, and osteomyelitis. Certain symptoms may be recurrent over time. Blood cultures or serology are used to diagnose *Brucella* infection. Incubation periods can span anywhere from several days to several months, with a majority becoming ill approximately three to four weeks after the initial exposure.

Illinois currently has an average of five *Brucella* infection cases per year. Over 80% of these cases were confirmed. The most common serotype identified was *melitensis* (95%) followed by *abortus* (5%). The majority of the cases (26%) occurred in patients 65 years or older, and approximately 68% of the people infected sought medical treatment at a hospital, with nearly half staying five days or less. Symptom breakdowns can be found in Table 3.

Table 3. Percentage of Brucellosis Cases with Symptoms

Symptom	Cases with Symptom
Fever	68%
Fatigue	52%
Loss of Appetite	43%
Night Sweats	43%
Illness-Related Weight Loss	41%
Headache	38%
Arthritis/Arthralgia	32%

Laboratories that isolate *Brucella* should review the CDC guidance on what constitutes an exposure and needed follow-up for personnel (https://www.cdc.gov/brucellosis/laboratories/index.html). Brucellosis is a reportable disease in Illinois. Important information to gather for exposure history is travel and consumption of unpasteurized dairy products from overseas or contact with livestock overseas.

PUBLIC HEALTH IN ACTION!

Every day in Illinois, health departments and health care providers go above and beyond to protect the public's health. Recently Dr. Donald Graham's office in Sangamon County worked diligently to ensure a patient received needed rabies prophylaxis. The elderly patient feared and refused going to the hospital so Dr. Graham's office arranged for the patient to receive treatment at a different location demonstrating that compassion and accommodation are part of the public health mission!

SURVEILLANCE TOOLS & TIPS

Accessing Negative Rabies Results

When animal specimens are sent to the IDPH labs for rabies testing, positive rabies results are faxed and called to the local health department as soon as results are confirmed.

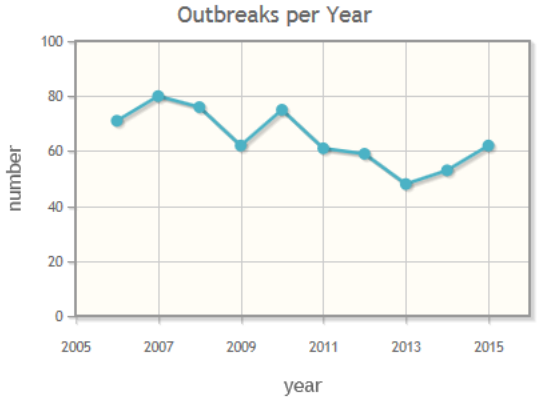
Negative results are provided to the submitter (typically animal control or veterinarian). Local health departments can find these results on the IDPH Communicable Disease Section web portal page by following these steps:

- On the IDPH CD web portal page, go to Communities (top of the page)
- Scroll over Communicable Disease Control (left side of page) and pick Rabies Testing Results
- Scroll through the list or use the Search box at the top to find the result. Addresses can not be posted on this page to protect confidentiality but you should find enough information to determine a result.
- If you cannot identify the animal's results, please contact the IDPH laboratory for results.

FOODBORNE DISEASE OUTBREAK REPORTING RESOURCES

Foodborne disease outbreak detection and investigation is vital to protect the public's health and ensure that regulatory officials can take action quickly to prevent additional people from becoming ill. CDC estimates that each year roughly 48 million people get sick from a foodborne illness, 128,000 are hospitalized, and 3,000 die. In 2016, there were 43 foodborne outbreaks reported in Illinois involving 550 people. This is a 29% decrease from 2015 when 61 foodborne outbreaks were reported that involved over 857 people and a 27% decrease from the 5 year median of 59 outbreaks. It is not known if this drop was due to fewer outbreaks or decreased reporting.

Figure 3. Illinois Foodborne Outbreaks 2006-2015



CDC FOOD Tool—https://wwwn.cdc.gov/foodborneoutbreaks/

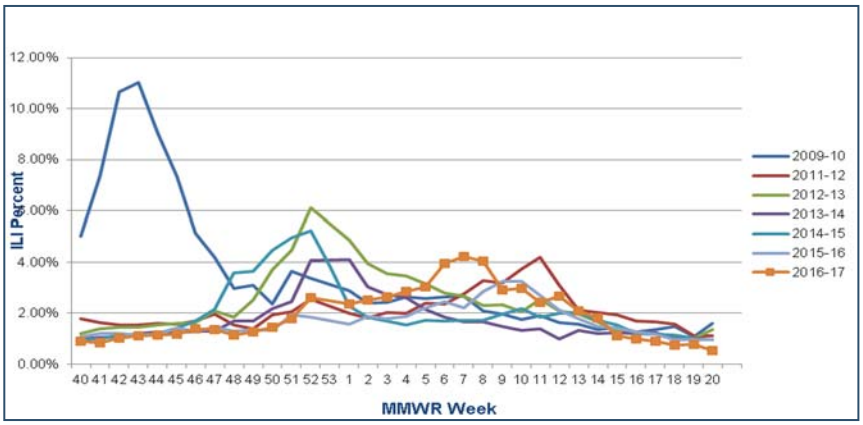
A foodborne outbreak is defined as **any clusters of illness in which two or more people** (usually residing in separate households) **associated in time and place experience onset of a similar, acute illness** (usually gastrointestinal) **following ingestion of common food or drink**. All suspect foodborne outbreaks should immediately be reported, or within 24 hours, using the IDPH Outbreak Reporting System (ORS). The IDPH CDCS should also be notified of the suspect foodborne outbreak to discuss the outbreak, arrange for laboratory testing and to discuss implementation of necessary control measures.

Numerous resources are available to assist local health departments in responding to and investigating suspect foodborne disease outbreaks. The IDPH CDCS Web Portal A-Z pages contain information regarding all reportable foodborne diseases as well as a page on Foodborne Outbreaks. Another available resource on the A-Z page is the Outbreak Toolkit, which provides guidance on the steps to complete during a foodborne disease outbreak.

ILLINOIS INFLUENZA SURVEILLANCE

During the 2016-2017 influenza season, influenza A (H3N2) was the predominate strain reported; however, influenza B was more frequently reported later in the season. H3N2-predominant seasons have been associated with more severe illness and mortality, especially in older people and young children, compared to seasons during which H1N1 or B viruses predominated. For the 2016-2017 season, influenza-like illness (ILI) in the United States went above baseline the week ending December 17, 2016 and remained elevated for 17 consecutive weeks, through week 14 which ended April 8th. In Illinois, ILI remained above the regional baseline of 1.9% for 15 consecutive weeks. Below is a graph comparing the influenza seasons since 2009.

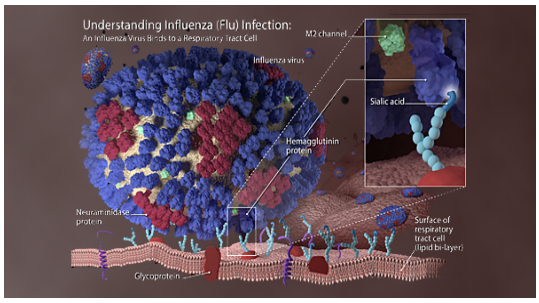
Figure 4. Illinois Influenza Seasons 2009-2017



From MMWR week 40 through week 20 each year, Illinois monitors influenza-like illness (ILI) and trends to evaluate the influenza illness activity level in the state and distributes a weekly influenza activity report. (ILI is defined as an illness with fever of ≥100°F with a cough and/or sore throat.) This program is made possible by the providers and laboratories in Illinois that volunteer to submit data and specimens to the surveillance system.

As IDPH prepares for the 2017-2018 influenza surveillance season that began October 1, we are actively seeking additional providers and laboratories to participate in this program. Local health departments can assist by identifying providers in their jurisdictions that would be good candidates for the program. In Illinois the southern (Marion) region is where new and additional providers are most needed. Sentinel surveillance is vital as it allows the CDC, IDPH, local health departments, and the sentinel sites to:

- Evaluate the severity of illness and activity levels throughout the season
- Identify types of influenza circulating in Illinois
- Aid in the development of next season's vaccine
- Identify rare/novel Influenza A (H3N2v; H7) and B strains that may not be identified by commercial molecular assays; and
- Identify and submit specimens to CDC for antiviral susceptibility testing and identification of shifts in the virus's genetic makeup.



https://www.cdc.gov/flu/images/socialmedia/influenza-virus-fulltext-fb.png

Participating laboratories are asked to send at least ten specimens each week to their designated IDPH laboratory for viral testing at **no cost** to the sentinel site. Each site will be provided influenza collection and shipping materials, again at no cost to the site, that contain specimen collection kits, submission forms, cold packs, and packaging and pre-paid mailing materials.

Throughout the season each site participating in the program receives an emailed copy of the IDPH weekly influenza surveillance report and a final summary report at the end of the season. The weekly report also can be found on the IDPH public website on the influenza surveillance page. **To sign up for the ILINet provider or laboratory programs, please contact the IDPH Influenza Surveillance program by phone at 217-782-2016 or by email at dph.influenza@illinois.gov.** In addition, you may view and download the program recruitment information on the IDPH website under publications to the right side of the page.

Have a question? Need some help? Have a suggestion?

IDPH Communicable Disease Control Section (CDCS)

⇒ Phone: 217-782-2016
⇒ Fax: 217-524-0962
⇒ Address: 525 W. Jefferson St, Floor 1, Springfield, IL 62761
⇒ Web Portal (registered users): portalhome.dph.illinois.gov
⇒ IDPH Website: idph.state.il.us

Epidemiology of Infectious Diseases

	2016					2017*			YTD % Change
	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Year	Jan-Mar	Apr-Jun	Year	
Babesiosis	0	2	0	0	2	0	0	0	
Botulism, Foodborne	0	0	0	0	0	0	0	0	
Brucellosis	1	1	0	1	3	0	1	1	-50.0%
Campylobacter	358	537	641	465	2001	414	630	1044	16.6%
Chikungunya	2	1	6	4	13	0	1	1	-66.7%
Cryptosporidiosis	44	48	183	60	335	68	59	127	38.0%
Cyclospora	2	2	16	3	23	2	19	21	425.0%
Dengue	12	3	16	4	35	1	2	3	-80.0%
Ehrlichiosis/Anaplasmosis	1	28	9	2	40	2	12	14	-51.7%
H. influenzae	54	51	48	79	232	62	56	118	12.4%
Hepatitis A	15	16	16	24	71	21	7	28	-9.7%
Hepatitis C Acute	9	6	5	4	24	11	13	24	60.0%
Histoplasmosis	65	50	60	73	248	84	85	169	47.0%
Legionella	38	49	146	85	318	35	79	114	31.0%
Listeriosis	9	6	11	4	30	4	5	9	-40.0%
Lyme Disease	16	100	99	22	237	10	51	61	-47.4%
Malaria	10	18	25	9	62	11	12	23	-17.9%
Measles	0	2	0	0	2	0	0	0	
MRSA, Age <61 days	38	30	41	35	144	38	31	69	1.5%
Mumps	161	117	27	28	333	109	123	232	-16.5%
Neisseria meningitidis, Invasive	6	3	5	4	18	0	6	6	-33.3%
Pertussis	209	245	247	333	1034	149	129	278	-38.8%
Q fever	1	0	1	1	3	0	4	4	300.0%
Rabies - positive animals	0	27	30	6	63	0	17	17	-37.0%
Rabies - potential human exposure	96	206	287	124	713	93	192	285	-5.6%
Salmonellosis	297	470	644	397	1808	250	481	731	-4.7%
Shiga toxin producing *E. coli*	31	145	96	41	313	18	49	67	-61.9%
Shigellosis	151	190	138	113	592	75	75	150	-56.0%
Spotted Fever Rickettsioses	3	20	34	11	68	7	42	49	113.0%
VISA/VRSA	4	1	3	1	9	2	0	2	-60.0%
Streptococcus, Group A, invasive	166	119	64	104	453	158	139	297	4.2%
Tularemia	0	2	2	1	5	0	1	1	-50.0%
Typhoid Fever	7	4	2	4	17	4	3	7	-36.4%
Varicella	131	126	107	105	469	87	94	181	-29.6%
Vibrio spp. Non-cholera	5	4	17	7	33	3	11	14	55.6%
West Nile Virus Infection	0	3	140	12	155	0	1	1	-66.7%
Yersiniosis	13	10	14	6	43	15	4	19	-17.4%
Zika	18	25	59	12	114	3	3	6	-86.0%

Closed confirmed and probable cases. Year and quarter based on onset date.

Not all reportable diseases are contained in the table. * Data are provisional and subject to change.

Reported Outbreaks of Infectious Diseases

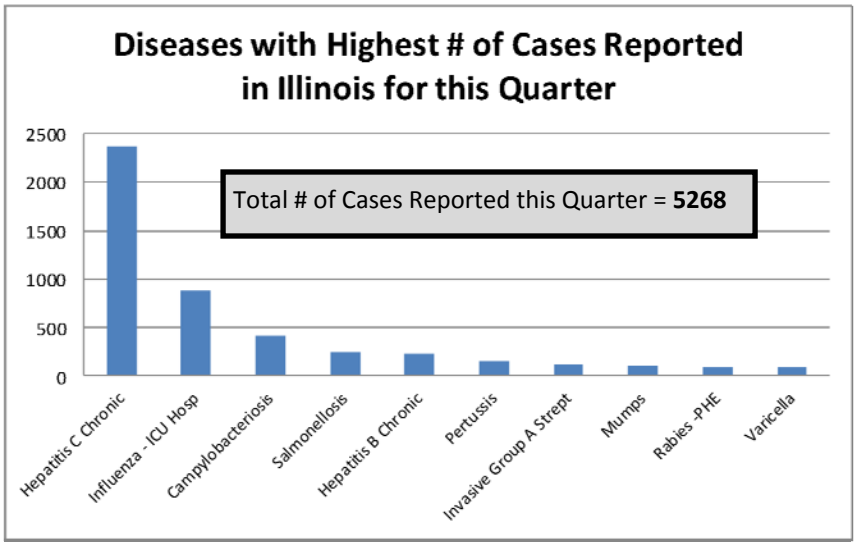
	2016					2017		
	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Year	Jan-Mar	Apr-Jun	Year
ALL OUTBREAKS^	172	64	47	99	382	304	40	344
Foodborne Outbreaks	13	10	8	9	40	8	6	14
Waterborne Outbreaks	0	1	2	0	3	0	0	0
Person-to-person Outbreaks	156	48	36	87	327	288	32	320

Closed and counted outbreaks. Year and quarter based on first onset date.

^Total number of outbreaks includes those associated with foodborne, waterborne, person-to-person, vaccine preventable diseases and those with unknown mode of transmission.

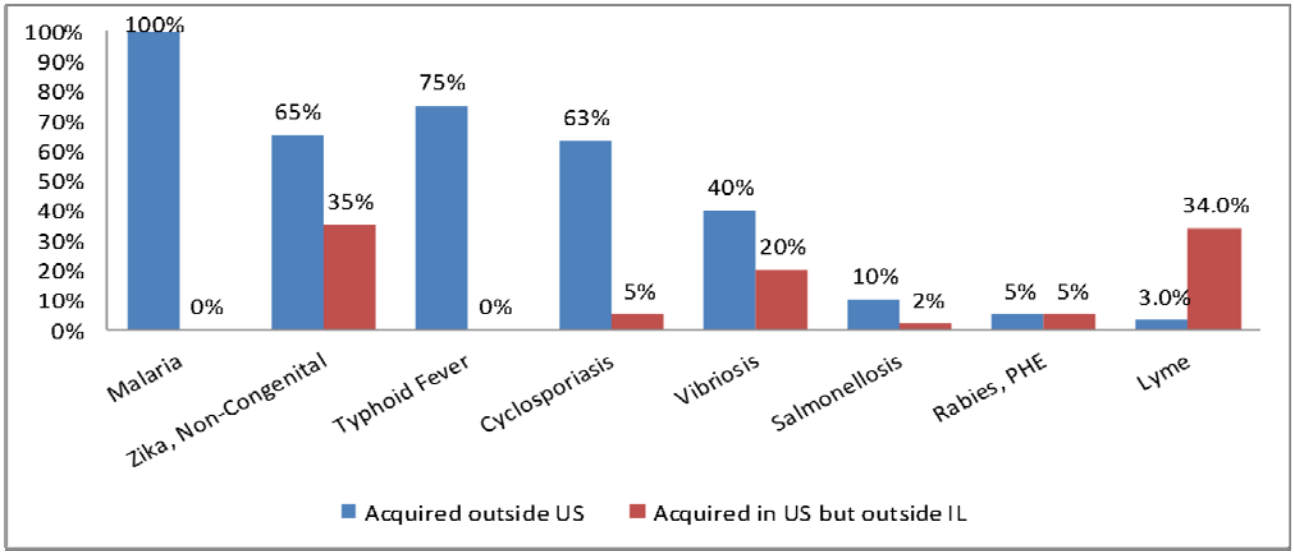
*** Data are provisional and subject to change.**

Chronic Hepatitis C accounted for almost half of the communicable disease reports in the second quarter of 2017, followed by ICU admitted influenza cases. Two enteric diseases, campylobacteriosis and salmonellosis, were the third and fourth common diseases while three vaccine preventable diseases (pertussis, mumps and varicella) were all in the top ten.



Some diseases are more likely to be acquired outside the U.S. or in the U.S. but outside of Illinois. For this reason, travel information is important and helps determine the type of follow-up investigation that should occur. Malaria transmission does not occur in U.S. so all cases are imported but are nationally reported in the state where they were tested. For diseases like Typhoid Fever where cases are typically imported, reports in persons who did not travel outside of the country should be investigated thoroughly to identify sources of their illnesses.

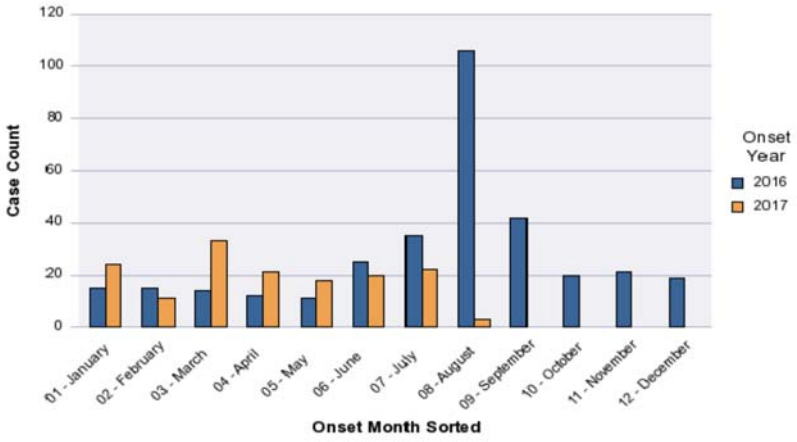
Percent of Illinois Cases with Disease Acquired Outside Illinois, April—June Onsets

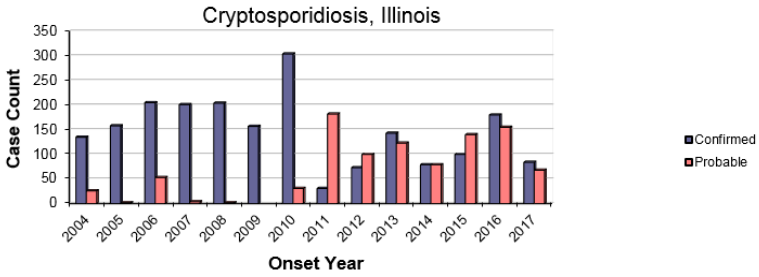


Cryptosporidiosis cases typically increase during the summer. However, during 2017 an increased incidence of cases earlier in the year was observed when compared to 2016.

In 2011, the probable case definition for cryptosporidiosis was changed to include specimens with antigen detection, increasing the number of probable cases. The adoption of new laboratory techniques by hospital laboratories has also likely contributed to the increase in probable cases and the decrease in confirmed cases.

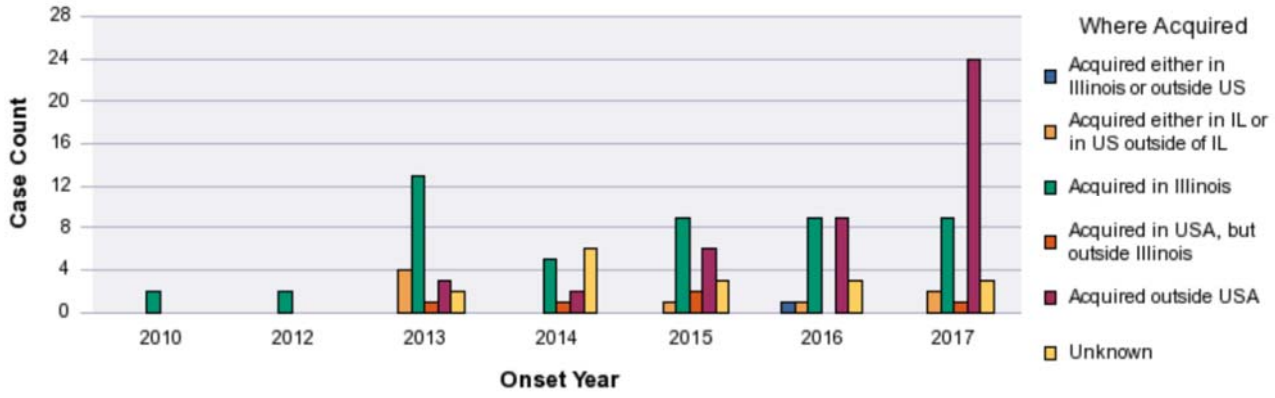
Cryptosporidiosis, Confirmed & Probable, Illinois





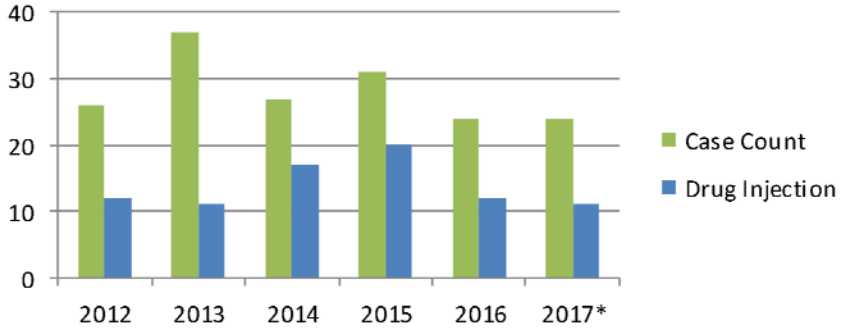
Illinois is working with CDC and other federal and state partners to investigate an increase in reported *Cyclospora* infection: https://www.cdc.gov/parasites/cyclosporiasis/outbreaks/2017/index.html. Local health departments are asked to complete supplemental forms on cases with onsets after May 1 who did not travel out of the country. The majority of 2017 cases in Illinois did travel internationally, particularly to Mexico (67%).

Cyclosporiasis, Illinois



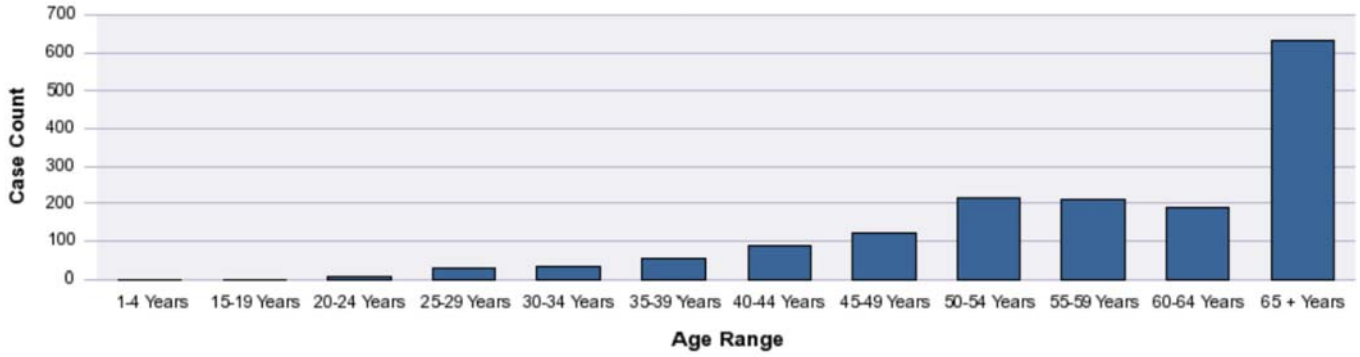
The number of acute hepatitis C cases in the first half of 2017 equals all of the cases reported in 2016. This is likely due to increased local health department efforts to obtain clinical data on new positives, especially from those younger than 35 years of age. Capturing risk factors, like drug injection, is critical to identify potential clusters of cases.

Hepatitis C, Acute, Illinois



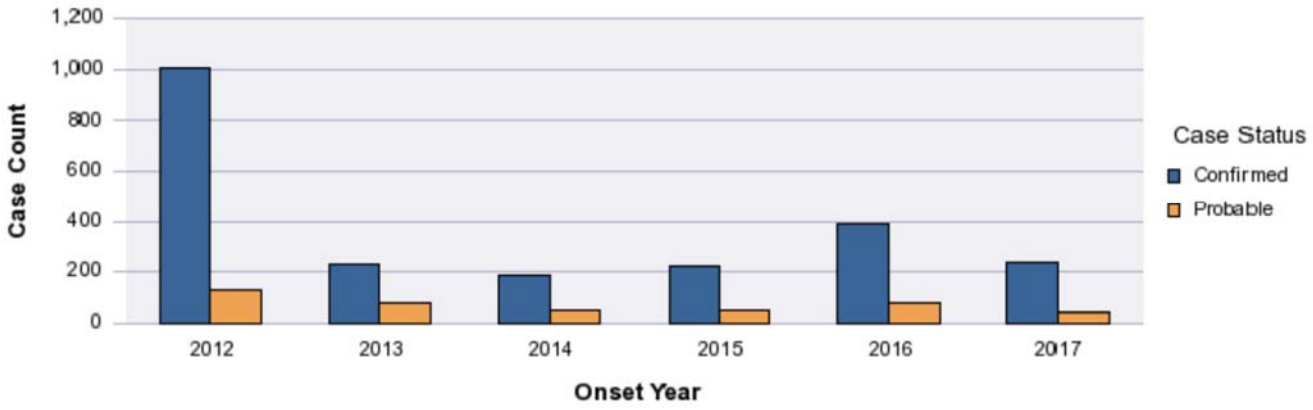
The majority of legionellosis cases are older than 65 years, but for those of working age, place of employment is an important piece of information when looking for clustering of cases because exposures can occur at home or at work. So far in 2017, only 32 percent of I-NEDSS reports of cases aged 18 to 65 years included employment information, leaving a void in important exposure data for epidemiologically linking cases.

Legionellosis, Illinois, 2012-2017



The number of pertussis cases in the first six months of the year declined 39 percent compared to 2016. However, this is similar to the trend observed in 2013 and 2015 in terms of the number of cases reported during the same time period. A national epidemic of pertussis occurred in 2012 when Illinois saw the most cases reported since 1950.

Pertussis, Illinois, January—June Onsets



Outbreaks of enteric diseases, like Shiga-toxin producing *E.* coli, typically occur during the summer (e.g. the June 2016 *E. coli* O157:H7 outbreak in Chicago) . Epidemiological data obtained from cases by the local health departments and entered in I-NEDSS are critical to identifying outbreaks and are reviewed daily by IDPH staff.

Shiga-toxin producing *E. coli*, Illinois, January—June Onsets