



2018 Communicable Disease Annual Report



The Knox County Health Department is committed to promoting healthy lifestyles, preventing illness and protecting the environment for our community.



Summary of 2018 Events

The Knox County Health Department (**KCHD**) is dedicated to conducting disease surveillance and continues to evaluate investigation protocols to better serve county residents. In 2018, KCHD responded to two outbreaks (**pertussis and hepatitis a**) in the community, 385 reportable diseases through the Ohio Disease Reporting System (**ODRS**), and 1,084 cases of influenza captured through the department's influenza surveillance program.

Public Health Accreditation

On August 21, 2018, KCHD was awarded national accreditation through the Public Health Accreditation Board (**PHAB**). KCHD submitted over 700 pages of documents covering 12 different domains addressing multiple types of public health services/programs. The entire accreditation process has strengthened KCHD and its role with serving the public. KCHD is now one of only 25 public health agencies in Ohio, out of 114, to be accredited by PHAB.

Vector-Borne Diseases

During the months of May through August, KCHD investigated a much higher rate of Lyme disease cases compared to past years. All of the cases seem to have been acquired locally in Knox County. Additional cases were reported after this timeline and Knox County continues to be the most likely location where exposure occurred. At this time, KCHD is promoting information on tick bite prevention to address the rise in Lyme disease cases. Two cases of LaCrosse virus disease were reported at the end of summer and KCHD will work to target these areas in the future for mosquito spraying.

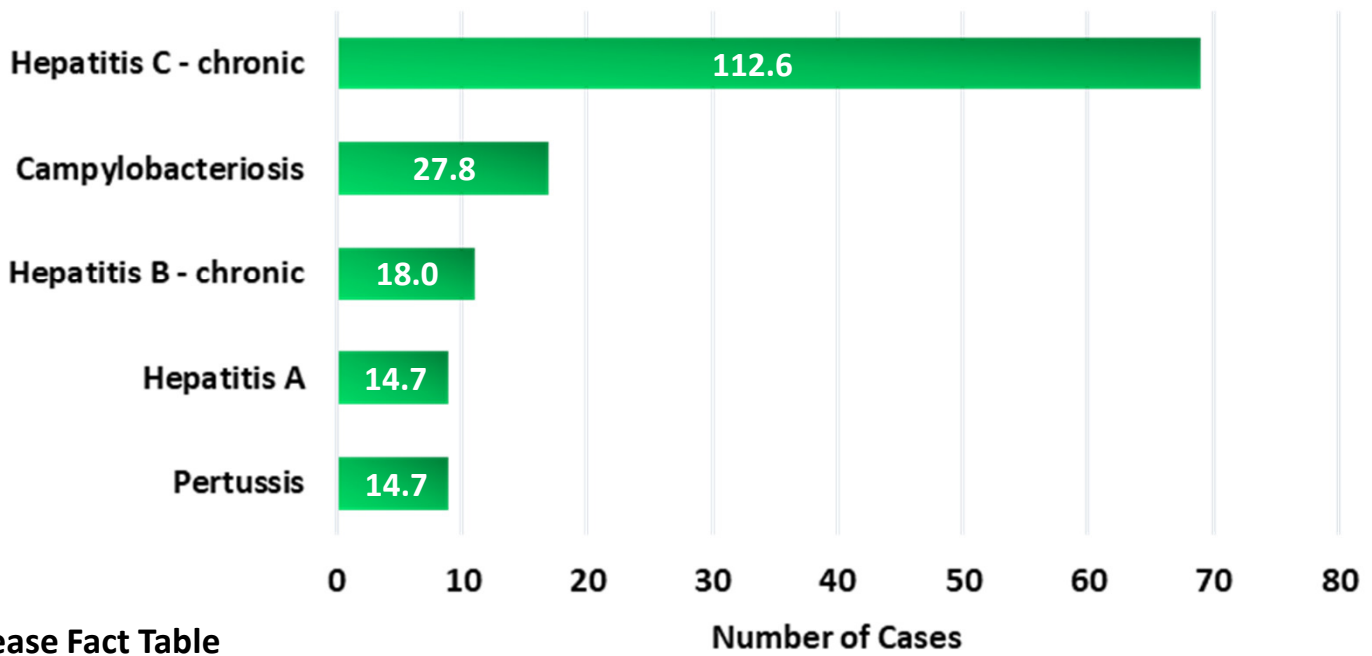
Statewide Hepatitis A Outbreak

In December 2018, KCHD started to see several cases of Hepatitis A which were epidemiologically linked to a case reported back in September. Follow up investigations identified several other cases with links in Morrow County and all cases in both Knox and Morrow were Amish. Laboratory confirmation found that these cases were related to the statewide outbreak being investigated by the Ohio Department of Health (**ODH**). In response to this investigation, KCHD has been going out into the community and providing vaccine to the Amish and other high-risk groups of people. Education is being shared amongst the community to reduce transmission by practicing proper hygienic measures. Hepatitis A is acquired through the fecal-oral route and unsanitary conditions contribute to most infections.

Top Reportable Diseases (not including STDs or Influenza)

Figure 1: 2018 Reportable Diseases, Knox County (Number of Cases and Incidence Rate per 100,000)

Top 5 Reportable Diseases



Disease Fact Table

Disease	Source	Transmission	Treatment	Prevention
Hepatitis C – chronic	human blood	iv drug use blood to blood contact	antiviral medications	clean needles avoid blood to blood contact
Campylobacter	poultry cattle puppies kittens swine sheep rodents birds	fecal-oral	supportive care antibiotics for high risk patients	cook raw meat to appropriate temperatures avoid cross contamination avoid unpasteurized milk and untreated water
Hepatitis B – chronic	human blood human body fluids	iv drug use blood to blood contact sex bodily fluid contact	antiviral medications	vaccination
Hepatitis A	human feces	fecal-oral	supportive care	vaccination
Pertussis	humans	person to person direct contact with discharges	antibiotics	vaccination early detection and isolation

STDs

Local Activity: During the investigation of STDs, KCHD has tracked the number of reinfections amongst Chlamydia cases and the number of coinfections (positive test for both Chlamydia and Gonorrhea) amongst Gonorrhea cases. Below are graphs for these statistics for the last five years along with historical data for comparison. Historical data is used to measure if cases are above or below their expected averages for each year.

Figure 2: Knox County Chlamydia Cases, Reinfections vs. Historical Data

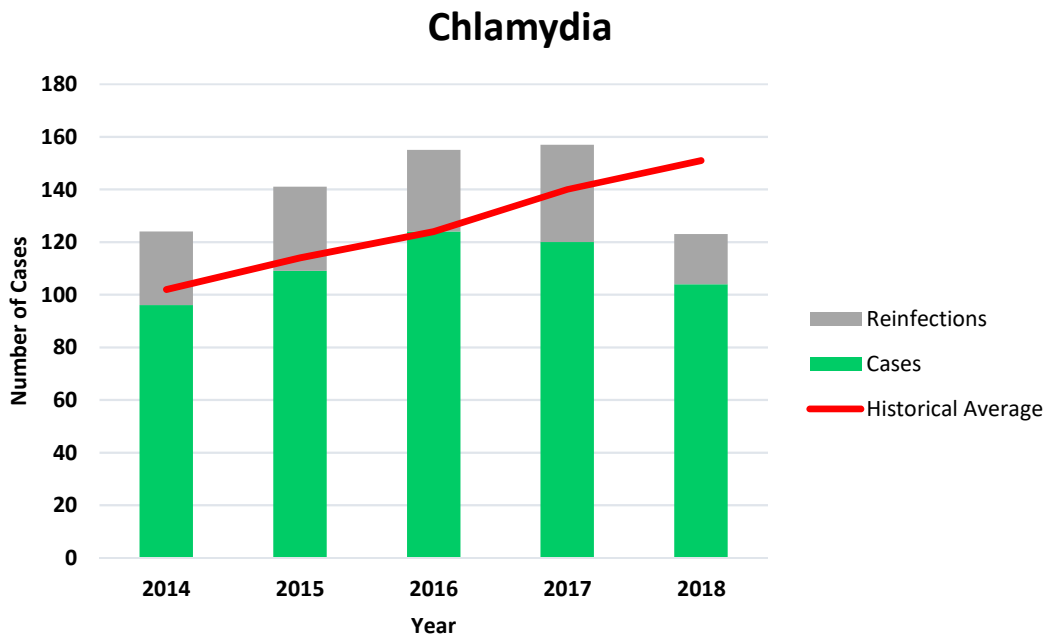
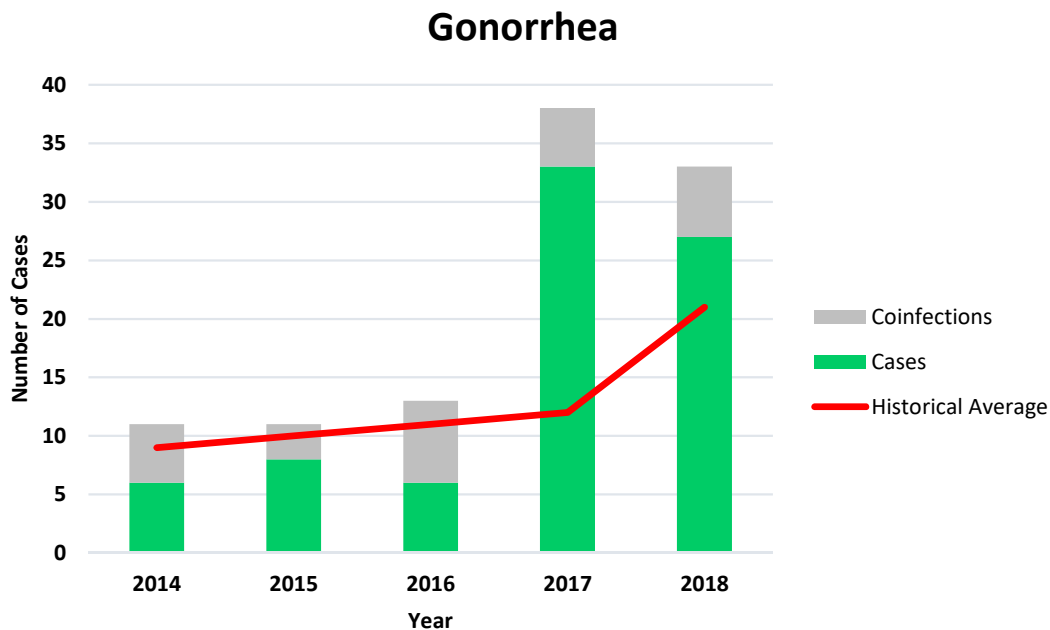


Figure 3: Knox County, Gonorrhea Cases, Coinfections vs. Historical Data



Vector-Borne Diseases

Description: Vectors are living organisms that can transmit infectious diseases between humans or from animals to humans. Most are blood sucking insects. These insects ingest microorganisms when they take a blood meal from an infected host and later inject it into a new host during their next blood meal. Mosquitoes and ticks are two of the most common disease vectors.

Examples: Lyme disease, LaCrosse virus disease, Rocky Mountain spotted fever

Data:

Figure 4: 2018 Vector-Borne Diseases, Knox County

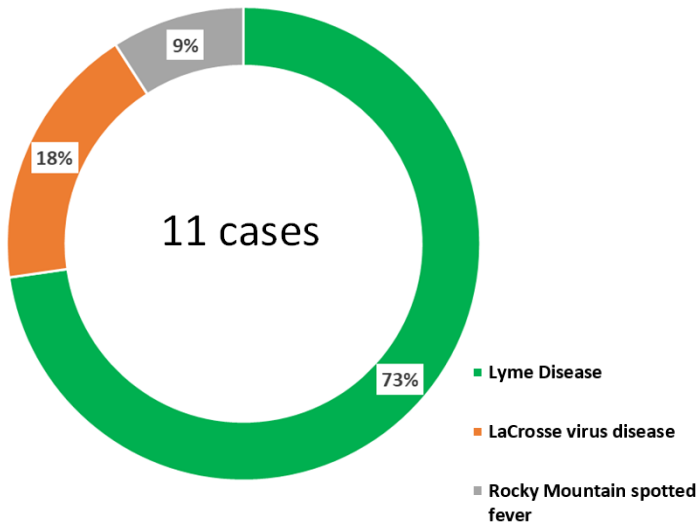
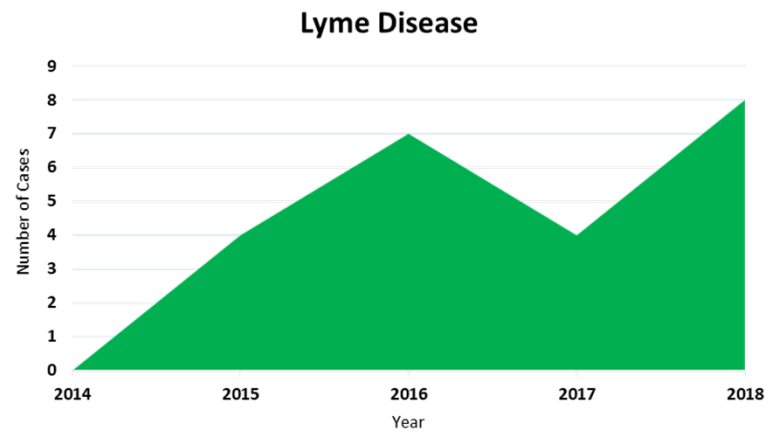


Figure 5: Lyme Disease, Knox County (2014-2018)



Local Activity: The two most notable vector-borne diseases for Knox County in 2018 were Lyme disease and LaCrosse virus disease. Lyme disease cases doubled compared to 2017 (4-8 cases) and investigations suggest local transmission occurred. This emergence is prompting education to be pushed out to the public. Two cases of LaCrosse virus disease were reported in 2018 and KCHD is taking a similar approach by educating the public on mosquito bite and breeding prevention. KCHD will spray locations where LaCrosse virus disease are reported during the mosquito spraying season.

Prevention: Currently, KCHD continues active surveillance for cases of Lyme disease and promoting education in the community. No other projects are available at this time to address tick populations in Knox County but discussions are taking place.

Recommendations: Education on vector-borne diseases and practicing preventative measures. If symptoms develop, seek medical attention and provide information on travel and local activities involving bug bites.

Bacterial Enteric Infections

Description: Bacterial enteric infections are when pathogenic bacteria enter the body and cause disease. Symptoms include diarrhea, vomiting, nausea, abdominal cramps, and fever. The route in which these bacteria enter the body are through ingestion of feces (animal or human) in which the bacteria are in. Contamination of food, contact with animals, or consuming unpasteurized goods are common ways in which people get sick with bacterial enteric infections.

Examples: Campylobacter, Escherichia coli (E.coli), Salmonella, Shigella, and Yersiniosis

Data:

Figure 6: 2018 Bacterial Enteric Infections, Knox County

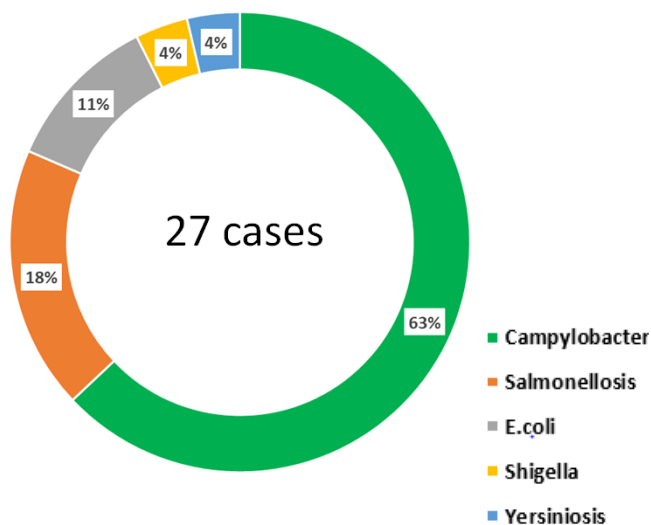
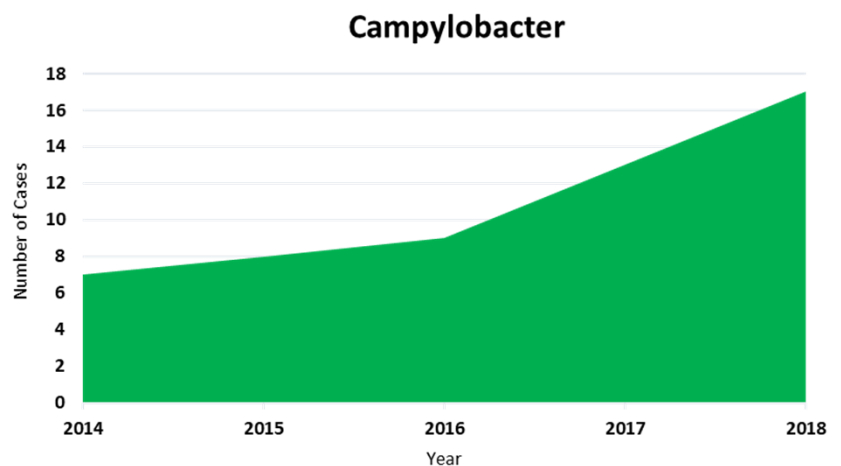


Figure 7: Campylobacter, Knox County (2014 – 2018)



Local Activity: Knox County had a 30.8% increase in reported cases of Campylobacter (type of bacterial enteric infection) compared to 2017. The top exposures identified during case interviews were consumption of poultry and contact with dogs. None of the exposures were linked to a common source.

Prevention: Keys to preventing bacterial enteric infections involve washing hands with warm soapy water and thoroughly cooking raw meats to appropriate temperatures. Avoid consuming any unpasteurized juices or milk. KCHD will continue to provide education and guidance to the jurisdiction to help prevent future cases. Active surveillance will continue along with case investigations to identify any new sources of exposures.

Recommendations: The single most effective preventative measure one can take is thorough, regular hand washing with soap and warm water. Education on each organism knowing sources and routes of transmission.



Table 1: Knox County's Top Disease Rates vs. Regional Rates

Top Reportable Diseases in Knox County in Comparison to Central Region Counties (Rate per 100,000)														
CENTRAL REGION COUNTIES	HEPATITIS C - CHRONIC		CAMPYLOBACTERIOSIS		HEPATITIS B - CHRONIC		HEPATITIS A		PERTUSSIS		CHLAMYDIA		GONORRHEA	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Crawford	54	129.4	1	2.4	17	40.7	9	21.6	1	2.4	172	412.0	37	88.6
Delaware	83	41.4	38	19.0	20	10.0	5	2.5	22	11.0	366	182.6	81	40.4
Fairfield	177	114.4	20	12.9	28	18.1	44	28.4	16	10.3	336	217.1	107	69.2
Fayette	40	139.1	5	17.4	20	69.7	8	27.8	1	3.5	76	264.3	26	90.4
Franklin	1,634	126.5	253	19.6	630	48.8	213	16.5	173	13.4	10,733	830.7	5,068	392.3
Hardin	51	162.6	14	44.6	12	38.3	2	6.4	3	9.6	90	287.0	20	63.8
Knox	69	112.6	17	27.8	11	18.0	9	14.7	9	14.7	123	200.8	33	53.9
Licking	164	94.6	32	18.4	37	21.3	10	5.8	21	12.1	571	329.2	253	145.9
Logan	45	99.3	10	22.1	4	8.8	1	2.2	12	26.5	146	322.1	35	77.2
Madison	85	193.0	12	27.3	22	50.0	6	13.6	6	13.6	97	220.3	39	88.6
Marion	160	246.3	21	32.3	31	47.7	17	26.2	2	3.1	317	487.9	73	112.4
Morrow	42	120.0	14	40.0	18	51.4	8	22.9	3	8.6	86	245.8	13	37.1
Pickaway	719	1,243.3	6	10.4	132	228.3	80	138.3	15	25.9	228	394.3	74	128.0
Union	320	564.0	15	26.4	54	95.2	7	12.3	5	8.8	206	363.1	59	104.0
Wyandot	18	81.7	17	77.2	4	18.2	3	13.6	0	0.0	53	240.6	8	36.3
OHIO	18,321	157.1	2,190	18.8	N/A	N/A	1693	14.5	637	5.5	61,604	528.4	24,472	209.9



INFLUENZA

The Knox County Health Department uses several different techniques to track local influenza activity. Influenza is not a reportable disease unless under certain conditions including a case being hospitalized, a pediatric death, or detection of a novel strain. KCHD established local influenza surveillance to track non-reportable cases of influenza in 2018 with county providers. Predicting influenza seasons are a difficult task, but based on historical data, flu seasons can start as early as Week 39 and last through Week 26. For this report, data will be included for the entire 2018 year and for the 2018 – 2019 season.

Figure 8: Knox County Flu Totals for 2018 – 2019 Season

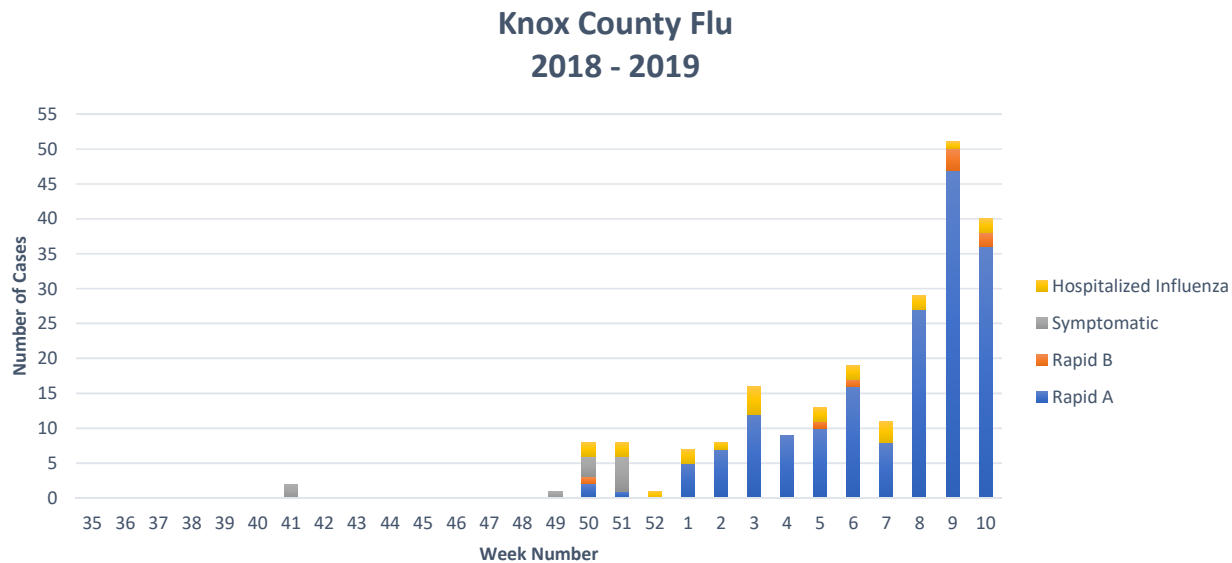


Table 2: Knox County Influenza Surveillance Totals

Flu Totals	Flu Case Types				Total
	IRIS	Hospitalizations	Pediatric Mortality	Novel	
2018 – 2019 Season	199	24	0	0	223
Total Cases in 2018	1084	58	0	0	1142

Table 3: Knox County Influenza Types

Flu Totals	IRIS Flu Types			Total
	Rapid A's	Rapid B's	Symptomatic	
2018 – 2019 Season	180	8	11	199
Total Cases in 2018	488	477	119	1084



EPICENTER

The Knox County Health Department uses EpiCenter, a syndromic surveillance system using emergency department registration data to detect events of public health significance. The system establishes thresholds and if data exceeds these thresholds, an alert is generated. Public health staff with access to the system can investigate these alerts and identify events including, clusters, outbreaks, and seasonal illness. Below is a calendar timeline of all EpiCenter alerts generated and investigated by KCHD during 2018.

EpiCenter Alerts Knox County, Ohio

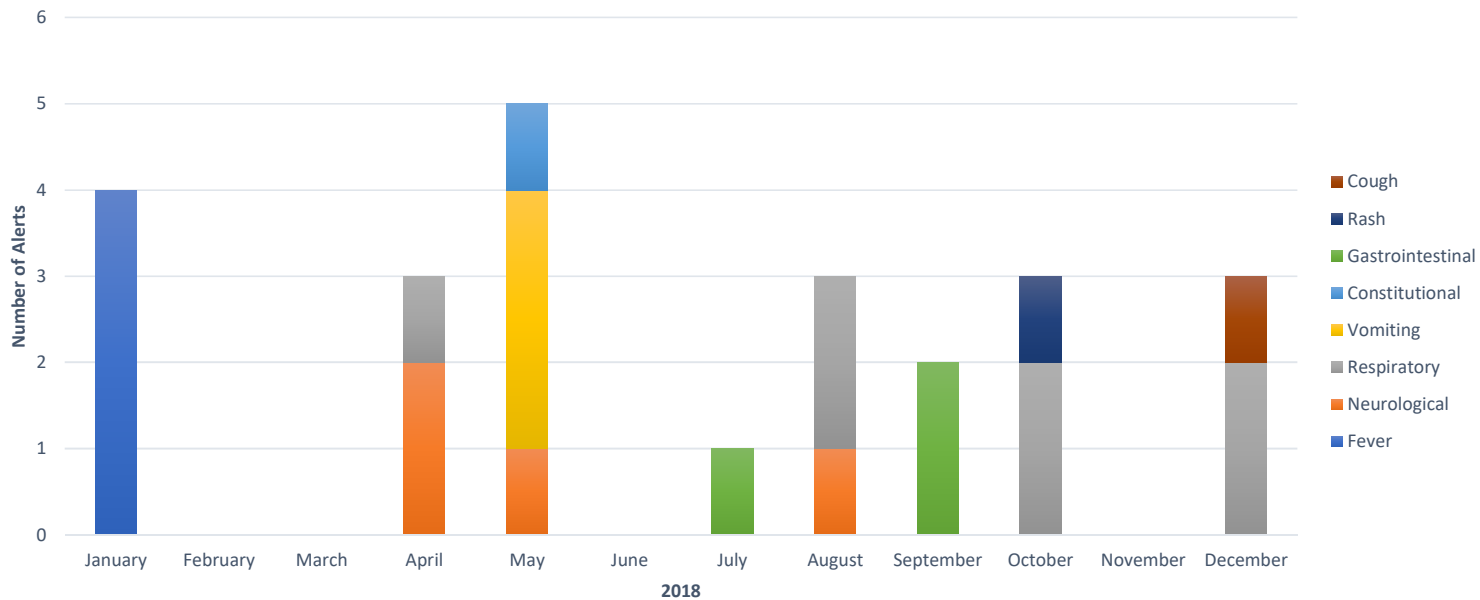


Table 4: 2018 Rank of Reported Communicable Diseases in Knox County

Rank	Communicable Disease	Cases	Rate
1	Influenza - Seasonal (IRIS)	1013	1653.6
2	Chlamydia	122	199.1
3	Hepatitis C - chronic	69	112.6
4	Influenza - associated hospitalization	58	94.7
5	Gonorrhea	33	53.9
6	Campylobacteriosis	17	27.8
7	Hepatitis B (including delta) - chronic	11	18.0
8	Hepatitis A	9	14.7
9	Pertussis	9	14.7
10	Lyme Disease	8	13.1
11	Giardiasis	7	11.4
12	Streptococcal - Group A - Invasive	6	9.8
13	Streptococcus pneumoniae - invasive antibiotic resistance unknown	6	9.8
14	Salmonellosis	5	8.2
15	CP-CRE	3	4.9
16	E.coli - enterohemorrhagic (shiga toxin producing) Unknown serotype	3	4.9
17	Streptococcus pneumoniae - invasive antibiotic resistant/intermediate	3	4.9
18	LaCrosse virus disease	2	3.3
19	Legionellosis - Legionnaires' Disease	2	3.3
20	Meningitis - aseptic/viral	2	3.3
21	Brucellosis	1	1.6
22	Coccidioidomycosis	1	1.6
23	Cryptosporidiosis	1	1.6
24	Haemophilus influenzae (invasive disease)	1	1.6
25	Hepatitis C - acute	1	1.6
26	Rabies - animal	1	1.6
27	Rocky Mountain spotted fever (RMSF)	1	1.6
28	Shigellosis	1	1.6
29	Syphilis - stage Unknown	1	1.6
30	Varicella	1	1.6
31	Yersiniosis	1	1.6