

Communicable Disease Trends: 2014-2023

**Warren County
Health District**



Public Health
Prevent. Promote. Protect.

Foreword

Why should we care about disease surveillance? The concept of [case surveillance](#) related to infectious diseases is critical to public health. While modern case surveillance involves contributions from a network of over 3,000 health departments, it began more humbly with a cholera outbreak in London in 1854. A map of who had become ill and what source of water they were using allowed John Snow, the father of modern epidemiology, to trace the source of illness to a single pump. The handle to the pump was removed and the cholera [epidemic](#) ended (Centers for Disease Control and Prevention, 2012).

Tracking the sources of illness and preventing their spread is generally much more difficult than what John Snow encountered. In the years since that cholera outbreak, the United States government has created and improved upon methods to report diseases of public health concern in an effort to prevent the introduction and spread of illness in the population. Computer analysis software has allowed us to do things that John Snow never could have imagined. This information is monitored and utilized on county, state, and national levels to inform health policy, combat the spread of disease, and protect us all.

"No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring."

(Centers for Disease Control and Prevention, 1996)

Note:

This document has been designed to be interactive. Clicking on a hyperlink within the document will take you to additional information about that term (either the glossary or more information within the document itself). The hyperlink at the new location will take you back to the first occurrence of the term within the document.

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Introduction

This report covers cases of disease classified as an Ohio [reportable disease](#) during the ten-year period from January 1, 2014 to December 31, 2023 in Warren County, Ohio.

As of the most recent census in 2020, Warren County reported an official population of 242,337 with 2024 population estimates ranging from a little under 250,000 to a little over 252,000. Approximately 23.6% of the population is under the age of 18, while 16.3% is over the age of 65. The racial breakdown for Warren County is provided below (United States Census Bureau, n.d.). Warren County fares better than average on both the state and national levels for both [health outcomes](#) and [health factors](#) (University of Wisconsin Population Health Institute, 2024). This means that Warren County residents generally live longer than both state and national averages and usually experience better health overall during their lifetime.

Race	Percentage
White, Non-Hispanic	82.9
Black or African American	3.9
American Indian and Alaska Native	0.2
Asian	7.5
Native Hawaiian/Other Pacific Islander	0.2
Two or More Races	2.2
Hispanic or Latino	3.6

Case Surveillance Overview

Case surveillance in the United States is made of up two components: case reporting and case notification. In case reporting, hospitals, healthcare providers, and laboratories report lab results and other information to appropriate health departments regarding people who are diagnosed with conditions that the state has classified as reportable. Case reporting is mandatory and is utilized to identify and control disease outbreaks. After a

case is reported, the Ohio Department of Health sends deidentified data about confirmed cases of [notifiable diseases](#) and conditions to CDC for national tracking. Case notification is voluntary, although generally participated in. This information is used to support recognition of disease outbreaks, monitor shifts in disease patterns, and evaluate and fund disease control activities (Centers for Disease Control and Prevention, 2024).

Top 10 Diseases Reported in Warren County

The ten most common diseases reported in Warren County and their total case counts from 2014 to 2023 are shown below. While by far the most reported disease, COVID-19 cases only represent the period from 2020 to 2023.

Disease	Number
COVID-19*	77,548
Chlamydia	4,586
Hepatitis C, Chronic	2,355
Influenza (associated with hospitalization)	1,115
Gonococcal Infection	1,058
Hepatitis B, Chronic	651
Pertussis	385
Campylobacteriosis	288
Salmonellosis	215
Hepatitis A	160

*Only reported from 2020 to 2023

In looking at the top diseases, it is worth noting that all of them present significant opportunities for prevention. Half of the illnesses listed have an associated vaccine that provides partial to full protection against infection. These vaccine-associated diseases are influenza (flu), hepatitis B, pertussis (whooping cough), hepatitis A, and COVID-19. Additionally, four of the ten most common illnesses are strongly associated with preventable lifestyle

factors. Chlamydia and gonococcal infection (gonorrhea) are both sexually transmitted diseases. Hepatitis B and (less commonly) hepatitis C can also both be spread through sexual contact. Both hepatitis diseases are also spread through blood-to-blood contact, such as sharing needles or syringes. The remaining two illnesses (campylobacteriosis and salmonellosis) are both diarrheal illnesses most commonly associated with foods and food preparation.

COVID-19

COVID-19 is a contagious respiratory disease caused by the SARS-CoV-2 virus. It was identified in 2019 and the first case was diagnosed in the state of Ohio in early 2020.

Symptoms of COVID-19 can vary depending on the disease variant and individual vaccination status. Possible symptoms include:

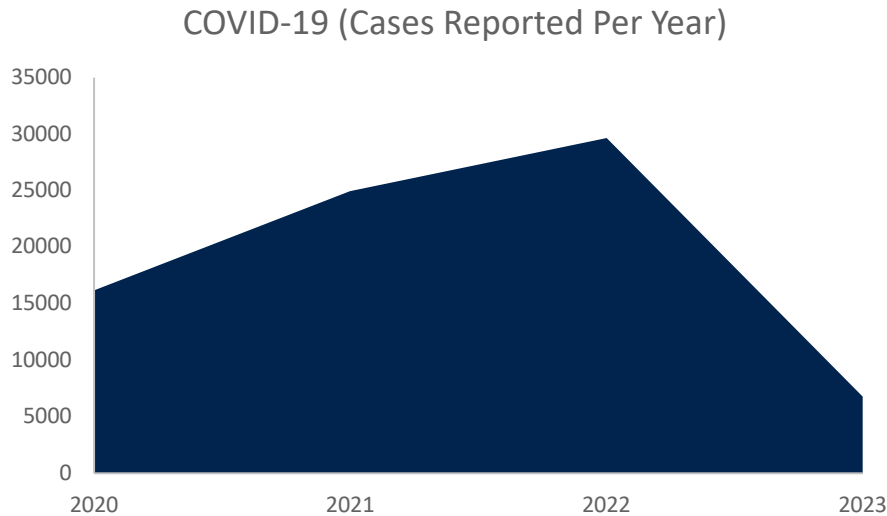


- Fever or chills
- Cough
- Shortness of breath/difficulty breathing
- Sore throat
- Congestion or runny nose
- New loss of taste or smell
- Fatigue
- Muscle or body aches
- Headache
- Nausea or vomiting
- Diarrhea

Symptoms of COVID-19 infection generally appear 2 to 14 days after exposure to the virus. Illness can vary from very mild or even asymptomatic to life-threatening (Centers for Disease Control and Prevention, 2024).

The number of cases reported per year can be seen in the graph below. While the graph shows an increase from 2020 to the peak in 2022 and then a significant decline in 2023, it is important to note that some of these variations may be the result of testing availability. Cases in 2020 were likely underreported to a significant degree. In the early days of COVID-19, testing options were not as available and many people were afraid to go into the public areas where testing was performed (hospitals, health departments, etc.). Since then, at-home testing

options have made it possible to confirm positive COVID-19 status without a case report being submitted.



Chlamydia

Chlamydia is a common, treatable, sexually transmitted infection. You can get chlamydia from having vaginal, oral, or anal sex without a condom with someone who is infected. Chlamydia can also be spread to a baby during childbirth if the mother is infected.

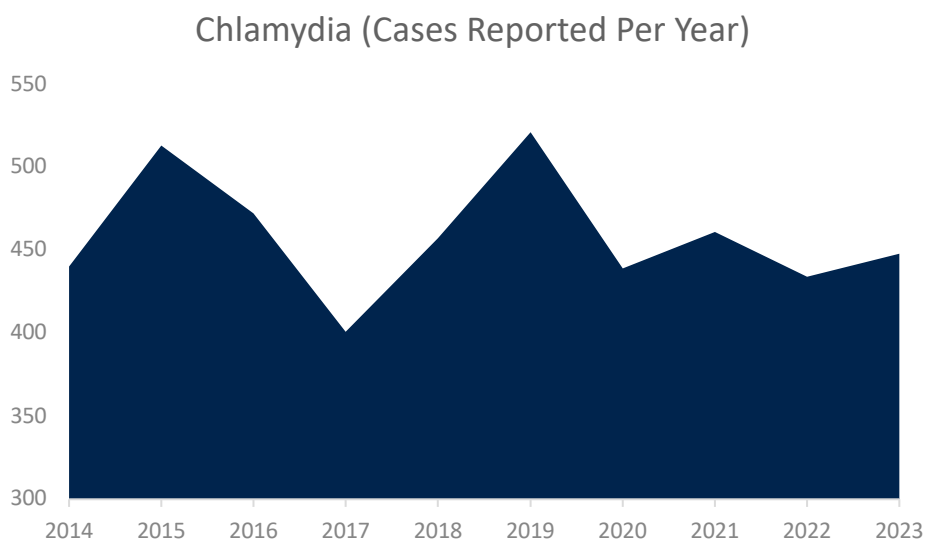
2014-2023
4,586
cases

It is very common to have no symptoms with a chlamydia infection. Even without symptoms, though, chlamydia can still cause serious health problems. When symptoms are present, they are more common amongst women than men. Both sexes can experience a burning sensation when peeing as a result of chlamydia infection. Women may notice abnormal vaginal discharge and men may notice discharge from their penis. While less common, men can also experience pain and swelling in one or both testicles. Men and women can also get chlamydia in their rectum. These infections often have no symptoms, but can cause rectal pain, discharge, and bleeding.

Men rarely have health problems from chlamydia, although it can infrequently lead to infertility in men. In women, untreated chlamydia can cause pelvic inflammatory disease (PID).

Complications from developing PID can include formation of scar tissue that blocks the fallopian tubes, ectopic pregnancy, infertility, and long-term pelvic or abdominal pain (Centers for Disease Control and Prevention, 2024).

During the ten-year period covered in this report, 2017 had the lowest number of chlamydia cases reported (n=401) and 2019 had the highest number of cases reported (n=521). Cases from 2020 to 2023 remained fairly level overall.



**Y-axis has been truncated to begin at 300 cases/year to better visualize yearly trends.*

Hepatitis C (Chronic)

Hepatitis C is the most common type of viral hepatitis in the United States. It is a liver disease that can present in either [acute](#) or [chronic](#) forms. Acute hepatitis C can be a mild illness that lasts only a few weeks or it can be a serious condition potentially requiring hospitalization. Less than half of the people who acquire hepatitis C will clear the virus in the first six months without treatment.

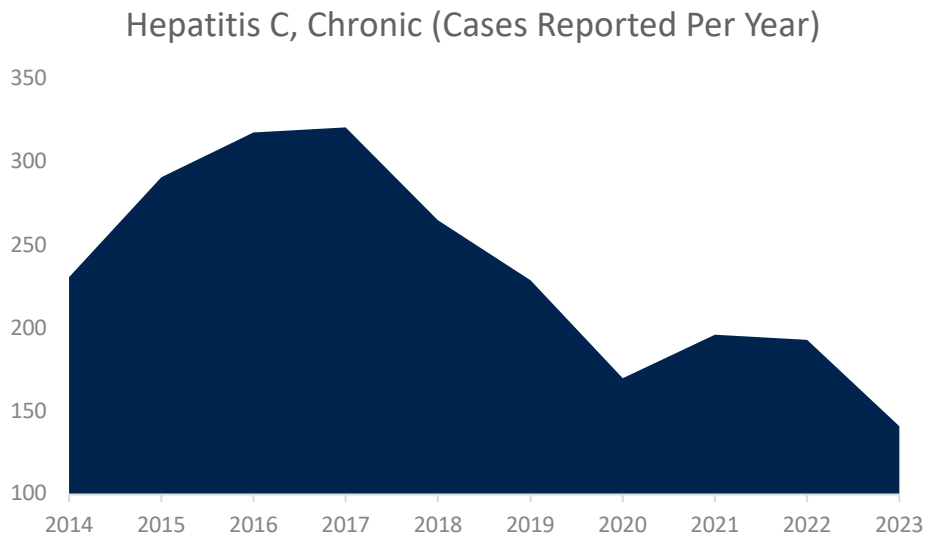
2014-2023
2,355
cases

Most people who become infected with hepatitis C will develop a chronic, lifelong, infection. Untreated chronic hepatitis C can lead to liver disease, liver failure, liver cancer, and potentially death.

Many people who develop hepatitis C will have no symptoms. Symptoms that someone with the infection may develop include dark urine or clay-colored stools, feeling tired, fever, joint pain, loss of appetite, nausea, stomach pain, vomiting, and jaundice (yellow skin or eyes). Even if you don't have symptoms, you can still spread hepatitis C.

Hepatitis C is spread when blood from an infected person (even microscopic amounts) enters the body of an uninfected person. The most common route for this is the sharing of needles, although it can also be spread through sexual contact. Hepatitis C is treatable through medication, which will cure about 95% of infected individuals. Reinfection is possible after having been successfully treated (Centers for Disease Control and Prevention, 2024).

Cases of [chronic hepatitis C](#) were notably higher during the first half of the reporting period. Case reports peaked in 2017 (n=321), then fell significantly through 2020. Reports have stayed somewhat level since then, with 2023 having the fewest number of chronic hepatitis C cases reported (n=141).



**Y-axis has been truncated to begin at 100 cases/year to better visualize yearly trends.*

Influenza (Flu) Associated with Hospitalization

Flu is a contagious respiratory illness caused by the influenza virus. It can cause symptoms that range from mild to severe. Only flu cases severe enough to result in hospitalization are reportable.

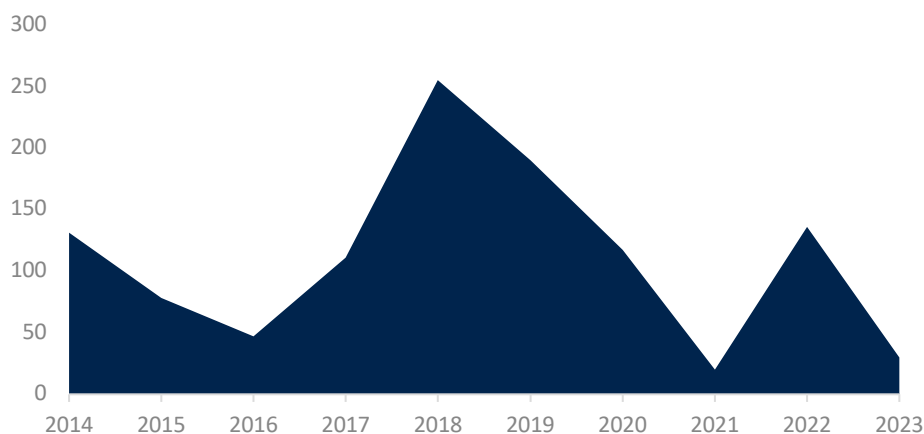
Flu symptoms can include fever, chills, cough, sore throat, runny or stuffy nose, muscle or body aches, headaches, fatigue, and vomiting or diarrhea (more common in children than adults). Complications from flu can include bacterial pneumonia, ear infections, sinus infections, and worsening of chronic conditions such as congestive heart failure, asthma, or diabetes.

The best prevention for flu is getting a yearly flu vaccine. While the vaccine is not 100% effective in preventing influenza infection, flu vaccines have been shown to reduce flu-related illnesses and complications in those who do become infected. Other actions you can take to prevent the spread of flu are distancing from those who are sick, covering coughs and sneezes, and frequent handwashing (Centers for Disease Control and Prevention, 2024).

There has been a lot of variation in cases of flu associated with hospitalization over the ten-year reporting period. 2018 had the highest number of reported cases (n=255) and 2021 reported the fewest number of cases (n=20).

2014-2023
1,115
cases

Influenza Associated with Hospitalization
(Cases Reported Per Year)



Gonococcal Infection (Gonorrhea)

Gonorrhea is a common sexually transmitted infection that can impact the genitals, rectum, and throat. It can be spread through vaginal, anal, and oral sex without a condom with someone who is already infected. It can also be spread to infants by an infected mother during childbirth. Gonorrhea often has no symptoms, but can cause serious health problems even when it is asymptomatic.

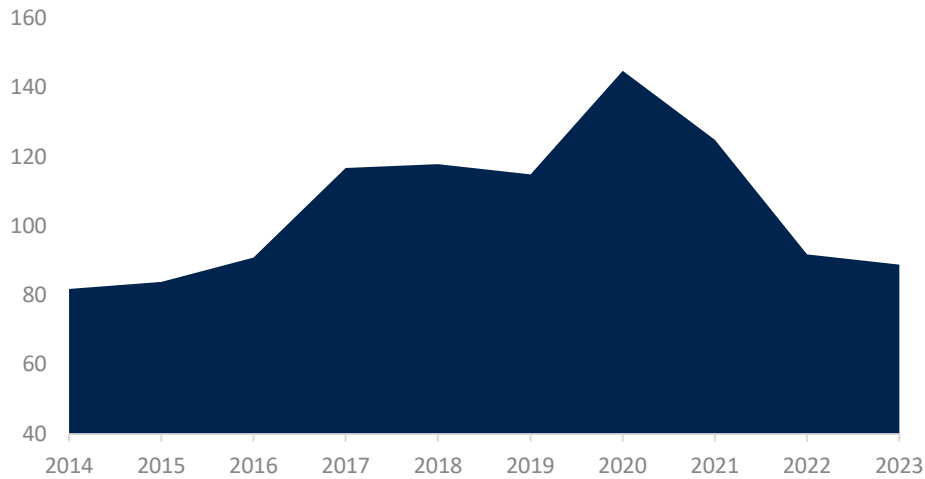


When gonorrhea does present with symptoms, it can include painful or burning sensations when urinating for both men and women. For women, it can include increased vaginal discharge and bleeding between periods. For men, it can include white, yellow, or green discharge from the penis and (less commonly) painful or swollen testicles. Rectal infections in both men and women can include discharge, anal itching, soreness, bleeding, and painful bowel movements.

Gonorrhea is curable with medication, although drug-resistant strains are making it harder to treat some cases. While medication will stop the infection, it will not undo any permanent damage that may have already been done. The best ways to prevent gonorrhea is to properly utilize condoms, and have sex in long-term, monogamous relationship with a partner who has been tested (Centers for Disease Control and Prevention, 2024).

The lowest number of cases reported of gonococcal infection was in 2014 (n=82). Cases rose consistently from 2014 to the peak in 2020 (n=145) before once again declining. 2023 cases (n=89) returned to a similar range as was seen in 2014.

Gonococcal Infection (Cases Reported Per Year)



**Y-axis has been truncated to begin at 40 cases/year to better visualize yearly trends.*

Hepatitis B (Chronic)

Hepatitis B is a vaccine-preventable liver disease caused when blood, semen, or other bodily fluids from an infected person enter the body of an uninfected person. Infections with hepatitis B can be either acute or chronic and symptoms range from very mild to serious.

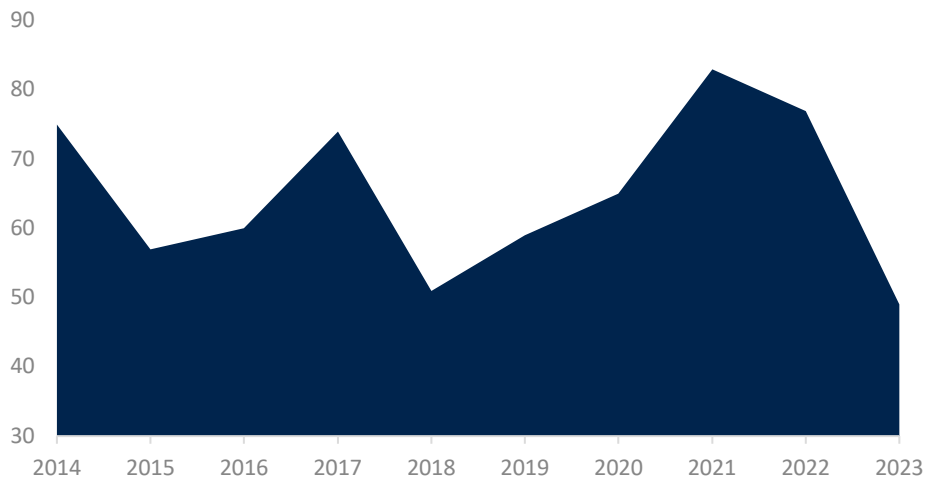
Most people with chronic hepatitis B don't experience symptoms until much later in life—often decades after exposure. Symptoms of hepatitis B can include dark urine or clay-colored stools, feeling tired, fever, joint pain, loss of appetite, nausea, stomach pain, vomiting, and jaundice (yellow skin or eyes). People who are infected and experiencing no symptoms can still spread hepatitis B to others.

While hepatitis B is preventable through vaccination, there is no cure once you have acquired it (Centers for Disease Control and Prevention, 2024).

The highest number of cases of chronic hepatitis B reported in Warren County were in 2021 (n=83) and 2022 (n=77). This was followed by a steep decline, with 2023 having the fewest new reports over the ten-year period (n=49).

2014-2023
651
cases

Hepatitis B, Chronic (Cases Reported Per Year)



**Y-axis has been truncated to begin at 30 cases/year to better visualize yearly trends.*

Pertussis (Whooping Cough)

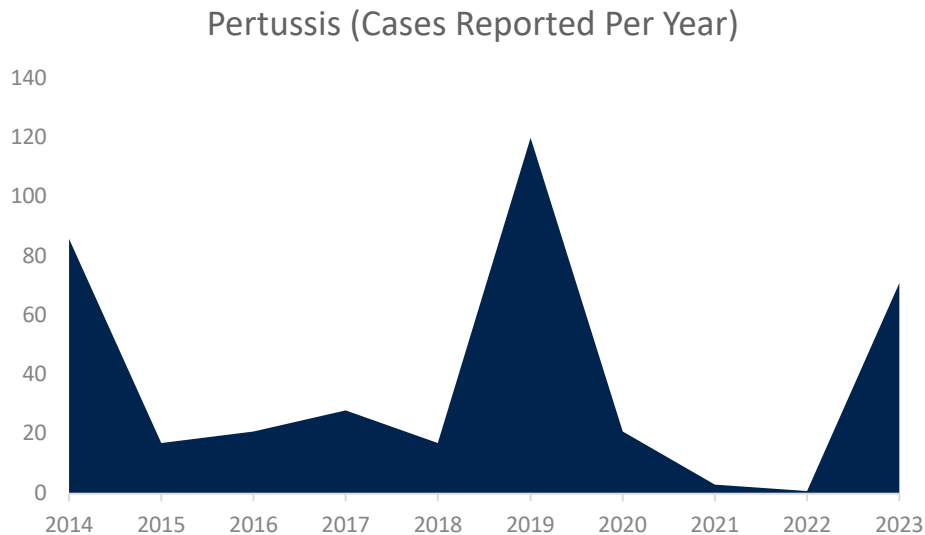
[Pertussis](#) (aka: whooping cough) is a very contagious respiratory illness that is spread from person to person through the air when an infected person coughs or sneezes. A person infected with pertussis is contagious for about two weeks after they are first infected. Pertussis is most common and most dangerous among babies younger than 1 year old (Centers for Disease Control and Prevention, 2024).

2014-2023
385
cases

It usually takes about 5 to 10 days (sometimes as long as 3 weeks) from exposure for symptoms of pertussis to appear. In the first week or two, symptoms may appear very similar to a common cold. One to two weeks after symptoms first develop, a person with pertussis may develop coughing fits which usually last 1 to 6 weeks, but can last as long as 10 weeks. These coughing fits may cause people to make a high-pitched “whoop” noise when inhaling after coughing, vomit during or after a coughing fit, feel tired after a fit (but seem well between fits), have difficulty sleeping at night, struggle to breathe, and even break ribs from the severity of the coughing fit. In babies, serious and potentially deadly consequences can develop with pertussis. These include sleep apnea, pneumonia, convulsions, and encephalopathy (disease of the brain).

There is a vaccine for pertussis, although it is not perfect at preventing illness. In those for whom the vaccine does not prevent illness, symptoms are still generally milder than for those who are unvaccinated (Centers for Disease Control and Prevention, 2024).

Significant spikes were seen in pertussis cases in 2014 (n=86), 2019 (n=120), and 2023 (n=71). The lowest rates reported were in 2021 (n=3) and 2022 (n=1).



Campylobacteriosis

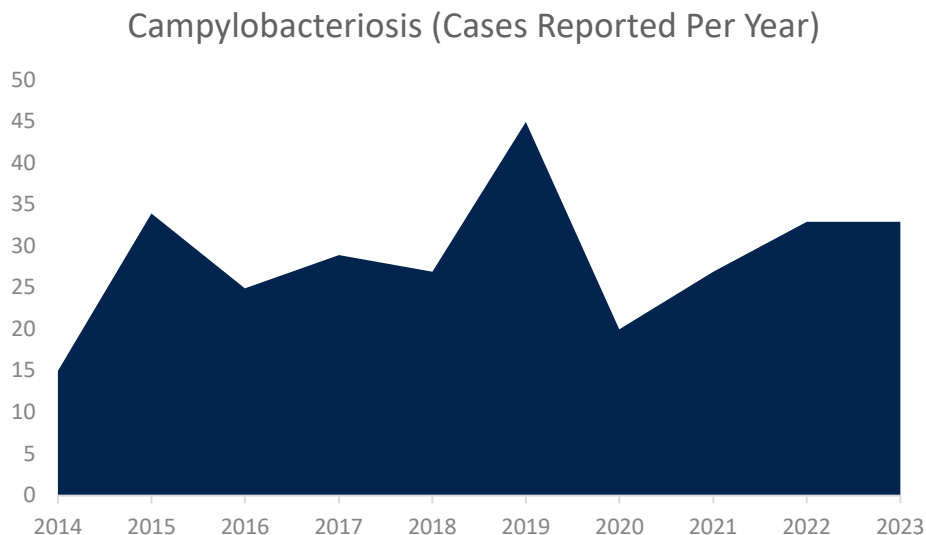
Campylobacter are the bacteria that cause the greatest number of bacterial diarrheal illnesses (called campylobacteriosis) in the United States. The CDC estimated that 1.5 million residents of the United States get campylobacteriosis each year (although a large number of cases go unreported).

2014-2023
288
cases

Campylobacter live in the intestines, liver, and other organs of chickens, cows, and other animals. These animals do not have to be sick to be carrying the bacteria. It only takes a very small amount of Campylobacter to make a person sick. Common routes of infection include eating raw or undercooked poultry, seafood, meat, or produce, preparing raw or lightly cooked foods like fruit or salads on a cutting board that was used for raw poultry, seafood, or meat, touching animals, their belongings, or their feces, and drinking untreated water (Centers for Disease Control and Prevention, 2024).

There are several ways to prevent campylobacteriosis. First, focus on good handwashing habits (when preparing or eating food, after using the bathroom, after blowing your nose, before caring for someone who is sick or wounded, after touching animals and their belongings, and after touching garbage). Be sure to keep raw meat away from other foods and use a different cutting board for fresh fruits and veggies than what you have used for raw meat. Clean all cutting boards, countertops, and utensils used for preparing raw meat. Make sure that foods are cooked to the right temperature, and that you drink only treated water and pasteurized milk (Centers for Disease Control and Prevention, 2024).

The most significant spike in campylobacter infections occurred in 2019 (n=45). The lowest number of reported campylobacter infections was in 2014 (n=15).



Salmonellosis

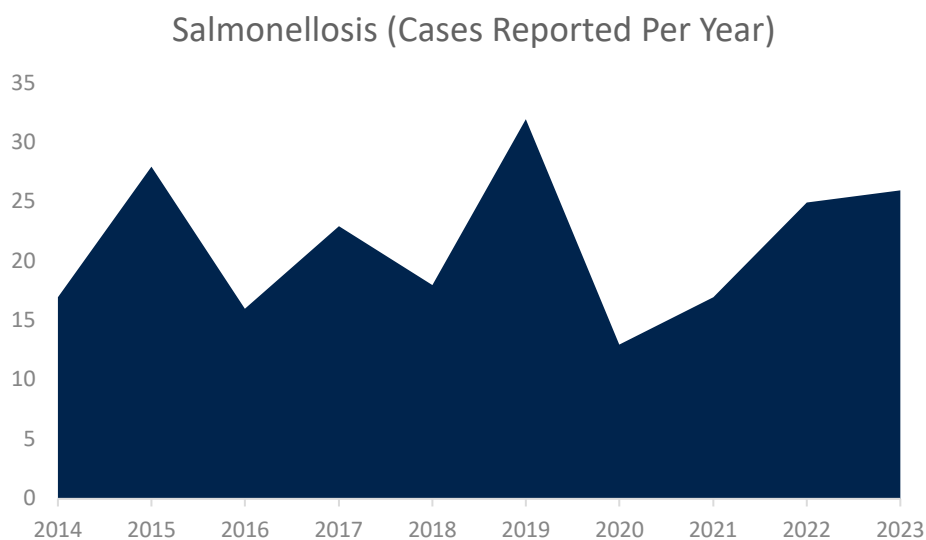
Salmonella is a bacteria that causes about 1.35 million infections (called salmonellosis), 26,500 hospitalizations, and 420 deaths in the United States per year (Centers for Disease Control and Prevention, 2024). Symptoms generally begin six hours to six days after infection, and include diarrhea, fever, and stomach cramps that generally last from four to seven days. Most people infected with salmonella will recover with

2014-2023
215
cases

just supportive treatment like extra fluids. People with severe illness or other risk factors may require antibiotic treatment.

Salmonella live in the intestines of people and animals. Infection can be caused from eating contaminated foods, drinking contaminated water, or touching infected animals, their feces, or objects from their environment (Centers for Disease Control and Prevention, 2023). To prevent salmonella infection, it is important to have good handwashing practices, separate raw meat from uncooked foods, cook foods to their proper temperatures, chill foods appropriately after serving, and be mindful of contact with animals (particularly turtles, frogs, chickens, and ducks, which are higher risk for carrying salmonella) (Centers for Disease Control and Prevention, 2019).

The largest spike in salmonella infections occurred in 2019 (n=32), followed by the fewest number of cases reported in 2020 (n=13).



Hepatitis A

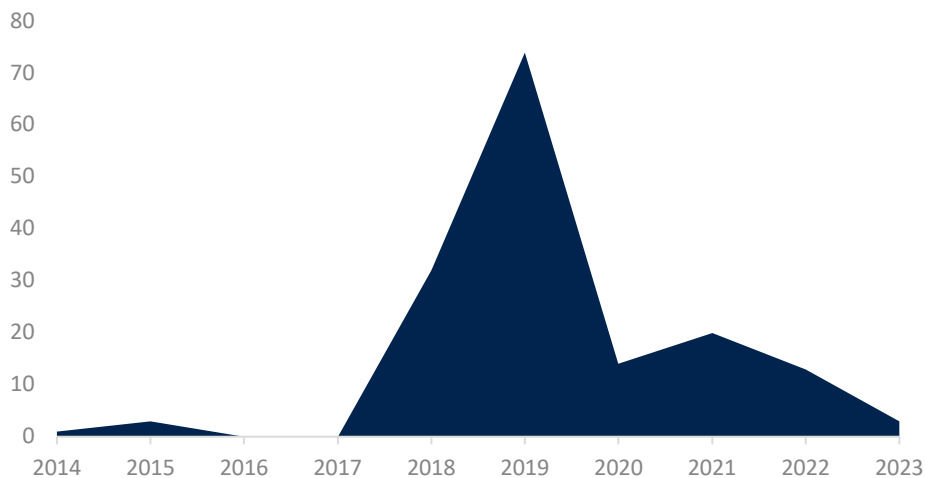
[Hepatitis A](#) is a vaccine-preventable disease of the liver. Illness usually lasts a few weeks to several months, but people usually recover without lasting liver damage. In rare cases, though, it can cause liver failure or death. Like other hepatitis infections, symptoms can include dark urine or clay-colored stool, diarrhea, tiredness, fever, joint pain, loss of appetite, nausea, stomach pain, vomiting, and jaundice (yellow skin or eyes).



Hepatitis A is spread by ingesting the virus. This generally occurs either through person-to-person contact with the blood or feces of an infected person or by eating or drinking contaminated food or drinks. Treatment for hepatitis A infection is generally rest, eating a well-balanced diet, and staying well-hydrated. Vaccination is the best way to prevent infection with hepatitis A (Centers for Disease Control and Prevention, 2024).

The majority of hepatitis A infections reported in Warren County during the reporting period occurred between 2018 to 2022, with the biggest spike in 2019 (n=74). The remaining years varied from zero to three cases reported each year.

Hepatitis A (Cases Reported Per Year)

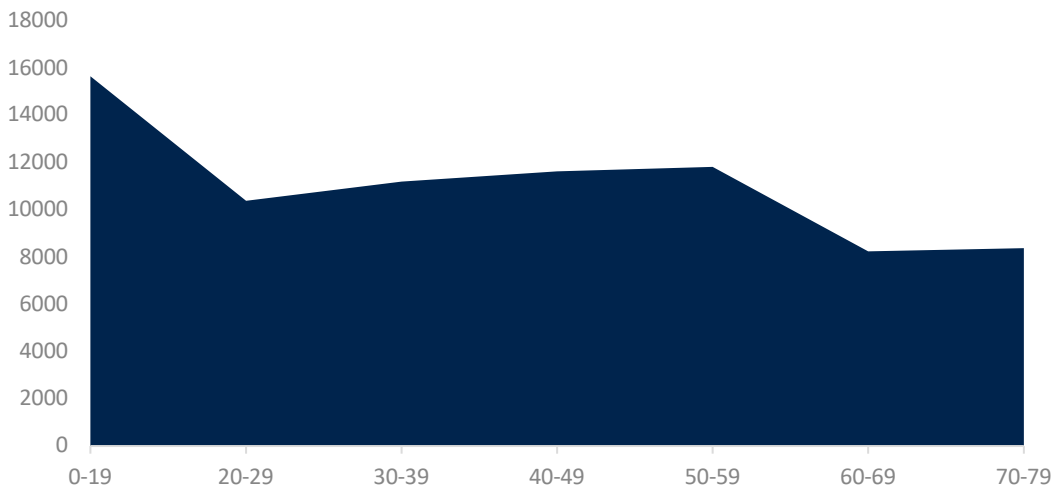


Class A Diseases

Class A diseases are defined as diseases of major public health concern based on the severity of the disease or its potential for epidemic spread. A list of all Class A diseases can be found in the [appendix](#). In addition to the diseases specified, any unexpected pattern of cases, suspected cases, deaths or increased incidence of any other disease of major public health concern because of the severity of disease or potential for epidemic spread may fall under Class A reporting (Ohio Department of Health, 2019).

During the previous decade, Warren County did not have any listed Class A diseases that met the threshold of ten reported cases set for evaluation in this report. COVID-19 and MIS-C (a COVID-19 related illness in youth), however, are both reported as Class A diseases based on their severity and epidemic spread.

The highest rate of reported COVID-19 infection was in 0-19 year olds.



Reported cases of selected notifiable diseases by year

CLASS A DISEASES	2020				2021				2022		2023	
	#	Rate	National Rate	RR	#	Rate	National Rate	RR	#	Rate	#	Rate
COVID-19	16185	6971.09	6419.04	1.09	24940	10630.77	10955.46	0.97	29661	12441.07	6762	2742.62
MIS-C	2	3.49	-	-	14	24.66	-	-	2	3.50	0	-
SUB-TOTAL	16187	6974.58	6419.04	1.09	24954	10655.43	10955.46	0.97	29663	12444.56	6762	2742.62

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by sex

CLASS A DISEASES	2020					2021				
	Female		Male		Unknown	Female		Male		Unknown
	#	Rate	#	Rate	#	#	Rate	#	Rate	#
COVID-19	8241	3549.51	7833	3373.78	111	12832	5469.69	11832	5043.44	276
MIS-C	0	-	2	3.49	0	6	10.57	8	14.09	0
SUB-TOTAL	8241	3549.51	7835	3377.26	111	12838	5480.26	11840	5057.53	276

CLASS A DISEASES	2022					2023				
	Female		Male		Unknown	Female		Male		Unknown
	#	Rate	#	Rate	#	#	Rate	#	Rate	#
COVID-19	15900	6669.13	12929	5422.97	832	3945	1600.06	2771	1123.90	46
MIS-C	1	1.75	1	1.75	0	0	-	0	-	0
SUB-TOTAL	15901	6670.88	12930	5424.71	832	3945	1600.06	2771	1123.90	46

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by age

CLASS A DISEASES	0-19		20-29		30-39		40-49		50-59		60-69		70-79		Unknown	Total	
	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	#	Rate
COVID-19	15662	6462.90	10400	4291.54	11196	4620.01	11622	4795.80	11816	4875.85	8253	3405.59	8395	3464.18	204		0.00
MIS-C	18	7.43	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	18	7.43
SUB-TOTAL	15680	6470.33	10400	4291.54	11196	4620.01	11622	4795.80	11816	4875.85	8253	3405.59	8395	3464.18	204	77566	7.43

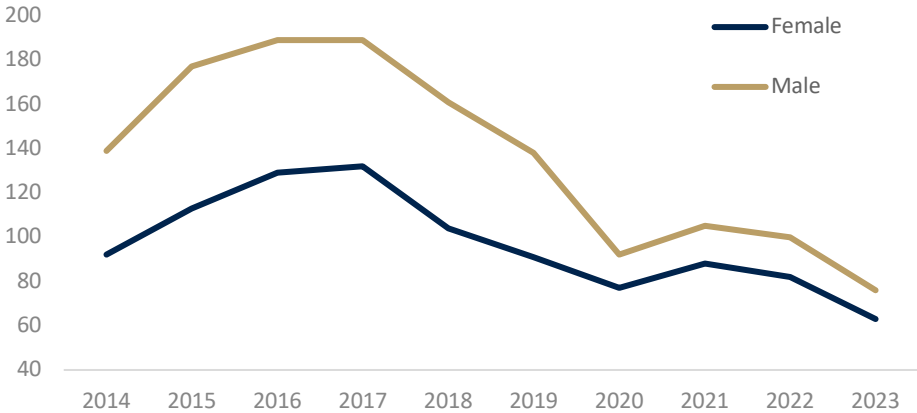
*Rate is the number of cases per 100,000 Warren County residents

Class B: General Infectious Diseases

Class B reportable diseases are diseases of public health concern that require a timely response due to their potential for epidemic spread. Warren County had eighteen class B general infectious diseases that met the criteria for analysis of at least ten cases over the reporting period. A list of all Class B diseases can be found in the [appendix](#).

[Chronic hepatitis C](#) is the most common class B general infectious disease reported in Warren County. Over the past decade, reports of new cases have dropped significantly from the highest total in 2017 (n=321) to the lowest total in 2023 (n=141). During that time, the difference in cases reported between men and women has also narrowed. From 2014 to 2019, men reported between forty-seven and sixty-four more cases per year than women. From 2020 on, that gap has stayed consistently in the teens, with a low of men reporting only thirteen more cases than women in 2023.

Chronic Hepatitis C Cases By Gender



*Y-axis has been truncated to 40 for better data visualization

Reported cases of selected notifiable diseases by year

CLASS B GENERAL INFECTIOUS DISEASES	2014				2015				2016					
	#	Rate	State Rate	RR	#	Rate	State Rate	RR	#	Rate	State Rate	RR	National Rate	RR
Campylobacteriosis	15	6.90	8.00	0.86	34	15.51	15.40	1.01	25	11.28	16.90	0.67	18.61	0.61
Coccidioidomycosis	0	-	0.10	-	0	-	0.10	-	0	-	0.20	-	9.01	-
CPO	0	-	-	-	0	-	-	-	0	-	-	-	-	-
Cryptosporidiosis	1	0.46	2.80	0.16	1	0.46	3.70	0.12	12	5.41	16.80	0.32	4.16	1.30
E. coli, Shiga Toxin-Producing	6	2.76	-	-	8	3.65	-	-	3	1.35	-	-	2.53	0.53
Giardiasis	8	3.68	3.30	1.12	5	2.28	3.20	0.71	12	5.41	3.40	1.59	6.43	0.84
Haemophilus influenzae (invasive disease)	2	0.92	1.10	0.84	4	1.83	1.40	1.30	7	3.16	1.50	2.11	1.51	2.09
Hepatitis C - acute	1	0.46	-	-	1	0.46	-	-	3	1.35	-	-	0.97	1.40
Hepatitis C - chronic	231	106.33	-	-	291	132.77	-	-	318	143.46	-	-	-	-
Legionellosis	1	0.46	3.50	0.13	6	2.74	4.90	0.56	2	0.90	4.40	0.21	1.90	0.47
Meningitis - aseptic/viral	9	4.14	4.60	0.90	22	10.04	6.40	1.57	17	7.67	5.70	1.35	-	-
Meningitis - bacterial (Not N. meningitidis)	2	0.92	0.80	1.15	3	1.37	0.70	1.96	2	0.90	1.20	0.75	-	-
Mycobacterial disease - other than tuberculosis	9	4.14	-	-	2	0.91	-	-	1	0.45	-	-	-	-
Salmonellosis	17	7.83	10.20	0.77	28	12.78	11.80	1.08	16	7.22	13.20	0.55	16.67	0.43
Shigellosis	5	2.30	5.10	0.45	4	1.83	6.40	0.29	13	5.86	9.30	0.63	6.53	0.90
Streptococcal - Group A -invasive	3	1.38	2.80	0.49	3	1.37	2.70	0.51	14	6.32	3.60	1.75	-	-
Tuberculosis	1	0.46	-	-	1	0.46	-	-	1	0.45	-	-	2.87	0.16
Yersiniosis	2	0.92	0.40	2.30	0	-	0.40	-	2	0.90	0.50	1.80	-	-
SUB-TOTAL	313	144.07	42.70	9.18	413	188.44	57.10	9.10	448	202.11	76.70	11.73	71.19	8.73

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by year

CLASS B GENERAL INFECTIOUS DISEASES	2017						2018					
	#	Rate	State Rate	RR	National Rate	RR	#	Rate	State Rate	RR	National Rate	RR
Campylobacteriosis	29	12.92	17.80	0.73	20.73	0.62	27	11.89	18.80	0.63	21.46	0.55
Coccidioidomycosis	1	0.45	0.20	2.23	10.93	0.04	1	0.44	0.20	2.20	11.58	0.04
CPO	0	-	-	-	-	-	1	0.44	3.40	0.13	3	1.32
Cryptosporidiosis	9	4.01	5.50	0.73	3.50	1.15	8	3.52	5.50	0.64	3.83	0.92
E. coli, Shiga Toxin-Producing	4	1.78	-	-	2.66	0.67	3	1.32	-	-	4.89	0.27
Giardiasis	8	3.56	3.70	0.96	5.94	0.60	7	3.08	4.30	0.72	6.06	0.51
Haemophilus influenzae (invasive disease)	5	2.23	2.20	1.01	1.70	1.31	5	2.20	2.30	0.96	1.70	1.30
Hepatitis C - acute	4	1.78	-	-	1.36	1.31	3	1.32	-	-	1.54	0.86
Hepatitis C - chronic	321	143.00	-	-	-	-	265	116.71	-	-	-	-
Legionellosis	3	1.34	5.00	0.27	2.29	0.58	9	3.96	8.10	0.49	3.04	1.30
Meningitis - aseptic/viral	10	4.45	4.10	1.09	-	-	17	7.49	5.40	1.39	-	-
Meningitis - bacterial (Not N. meningitidis)	1	0.45	1.30	0.34	-	-	3	1.32	1.20	1.10	-	-
Mycobacterial disease - other than tuberculosis	0	-	-	-	-	-	0	-	-	-	-	-
Salmonellosis	23	10.25	11.90	0.86	16.67	0.61	18	7.93	12.90	0.61	18.64	0.43
Shigellosis	7	3.12	5.30	0.59	4.58	0.68	9	3.96	4.40	0.90	4.99	0.79
Streptococcal - Group A -invasive	9	4.01	5.40	0.74	-	-	12	5.28	5.80	0.91	-	-
Tuberculosis	1	0.45	-	-	2.80	0.16	7	3.08	-	-	2.76	1.12
Yersiniosis	2	0.89	0.40	2.23	-	-	1	0.44	0.50	0.88	-	-
SUB-TOTAL	437	194.68	62.80	11.78	73.16	7.74	396	174.40	72.80	11.56	83.49	9.41

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by year

CLASS B GENERAL INFECTIOUS DISEASES	2019						2020			
	#	Rate	State Rate	RR	National Rate	RR	#	Rate	National Rate	RR
Campylobacteriosis	45	19.66	20.90	0.94	21.79	0.90	20	8.61	15.71	0.55
Coccidioidomycosis	2	0.87	0.20	4.37	13.43	0.07	4	1.72	13.70	0.13
CPO	0	-	4.89	0.27	0.49	5.35	2	0.86	0.61	1.41
Cryptosporidiosis	7	3.06	5.90	0.52	4.26	0.72	4	1.72	2.32	0.74
E. coli, Shiga Toxin-Producing	5	2.18	-	-	5.16	0.42	11	4.74	3.01	1.57
Giardiasis	5	2.18	3.90	0.56	5.78	0.38	4	1.72	3.66	0.47
Haemophilus influenzae (invasive disease)	9	3.93	3.00	1.31	1.87	2.10	1	0.43	0.91	0.47
Hepatitis C - acute	9	3.93	-	-	1.74	2.26	3	1.29	1.89	0.68
Hepatitis C - chronic	229	100.05	-	-	-	-	170	73.22	-	-
Legionellosis	7	3.06	6.90	0.44	2.71	1.13	9	3.88	1.92	2.02
Meningitis - aseptic/viral	15	6.55	5.50	1.19	-	-	7	3.01	-	-
Meningitis - bacterial (Not N. meningitidis)	3	1.31	1.30	1.01	-	-	2	0.86	-	-
Mycobacterial disease - other than tuberculosis	0	-	-	-	-	-	0	-	-	-
Salmonellosis	32	13.98	13.70	1.02	17.78	0.79	13	5.60	13.79	0.41
Shigellosis	1	0.44	3.60	0.12	5.66	0.08	3	1.29	2.76	0.47
Streptococcal - Group A -invasive	7	3.06	6.70	0.46	-	-	13	5.60	-	-
Tuberculosis	1	0.44	-	-	2.72	0.16	3	1.29	2.18	0.59
Yersiniosis	2	0.87	1.00	0.87	-	-	2	0.86	-	-
SUB-TOTAL	379	165.58	77.49	13.09	83.39	14.36	271	116.72	62.46	9.52

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by year

CLASS B GENERAL INFECTIOUS DISEASES	2021				2022		2023	
	#	Rate	National Rate	RR	#	Rate	#	Rate
Campylobacteriosis	27	11.51	19.24	0.60	33	13.84	33	13.38
Coccidioidomycosis	8	3.41	14.40	0.24	2	0.84	0	-
CPO	8	3.41	0.78	4.37	5	2.10	18	7.30
Cryptosporidiosis	1	0.43	2.78	0.15	4	1.68	12	4.87
E. coli, Shiga Toxin-Producing	3	1.28	4.23	0.30	11	4.61	8	3.24
Giardiasis	14	5.97	4.44	1.34	13	5.45	10	4.06
Haemophilus influenzae (invasive disease)	0	-	0.92	-	2	0.84	8	3.24
Hepatitis C - acute	3	1.28	1.89	0.68	0	-	0	-
Hepatitis C - chronic	196	83.55	-	-	193	80.95	141	57.19
Legionellosis	12	5.12	2.56	2.00	9	3.77	7	2.84
Meningitis - aseptic/viral	9	3.84	-	-	10	4.19	5	2.03
Meningitis - bacterial (Not N. meningitidis)	3	1.28	-	-	6	2.52	4	1.62
Mycobacterial disease - other than tuberculosis	0	-	-	-	0		0	-
Salmonellosis	17	7.25	14.95	0.48	25	10.49	26	10.55
Shigellosis	3	1.28	3.03	0.42	3	1.26	3	1.22
Streptococcal - Group A -invasive	17	7.25	-	-	18	7.55	25	10.14
Tuberculosis	4	1.71	2.39	0.71	3	1.26	2	0.81
Yersiniosis	2	0.85	-	-	3	1.26	2	0.81
SUB-TOTAL	327	139.39	71.61	11.30	340	142.61	304	123.30

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by sex

CLASS B GENERAL INFECTIOUS DISEASES	2014					2015					2016				
	Female		Male		Unknown	Female		Male		Unknown	Female		Male		Unknown
	#	Rate	#	Rate	#	#	Rate	#	Rate	#	#	Rate	#	Rate	#
Campylobacteriosis	6	2.76	9	4.14	0	17	7.76	17	7.76	0	8	3.61	17	7.67	0
Coccidioidomycosis	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0
CPO	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0
Cryptosporidiosis	0	-	1	0.46	0	0	-	1	0.46	0	6	2.71	6	2.71	0
E. coli, Shiga Toxin-Producing	2	0.92	3	1.38	1	5	2.28	3	1.37	0	1	0.45	2	0.90	0
Giardiasis	4	1.84	4	1.84	0	3	1.37	2	0.91	0	4	1.80	8	3.61	0
Haemophilus influenzae (invasive disease)	0	-	2	0.92	0	2	0.91	2	0.91	0	2	0.90	5	2.26	0
Hepatitis C - acute	0	0.00	1	0.46	0	0	-	1	0.46	0	0	-	3	1.35	0
Hepatitis C - chronic	92	42.35	139	63.98	0	113	51.56	177	80.76	1	129	58.20	189	85.27	0
Legionellosis	1	0.46	0	-	0	2	0.91	4	1.83	0	1	0.45	1	0.45	0
Meningitis - aseptic/viral	3	1.38	6	2.76	0	13	5.93	9	4.11	0	11	4.96	6	2.71	0
Meningitis - bacterial (Not N. meningitidis)	1	0.46	1	0.46	0	3	1.37	0	-	0	1	0.45	1	0.45	0
Mycobacterial disease - other than tuberculosis	7	3.22	2	0.92	0	0	-	2	0.91	0	0	-	1	0.45	0
Salmonellosis	7	3.22	10	4.60	0	22	10.04	6	2.74	0	10	4.51	6	2.71	0
Shigellosis	3	1.38	2	0.92	0	3	1.37	1	0.46	0	6	2.71	7	3.16	0
Streptococcal - Group A -invasive	3	1.38	0	-	0	1	0.46	1	0.46	1	7	3.16	7	3.16	0
Tuberculosis	0	-	1	0.46	0	1	0.46	0	-	0	1	0.45	0	-	0
Yersiniosis	0	-	2	0.92	0	0	-	0	-	0	2	0.90	0	-	0
SUB-TOTAL	129	59.38	183	84.24	1	185	84.41	226	103.12	2	189	85.27	259	116.85	0

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by sex

CLASS B GENERAL INFECTIOUS DISEASES	2017					2018					2019				
	Female		Male		Unknown	Female		Male		Unknown	Female		Male		Unknown
	#	Rate	#	Rate	#	#	Rate	#	Rate	#	#	Rate	#	Rate	#
Campylobacteriosis	12	5.35	17	7.57	0	8	3.52	19	8.37	0	16	6.99	29	12.67	0
Coccidioidomycosis	0	-	1	0.45	0	0	-	1	0.44	0	1	0.44	1	0.44	0
CPO	0	-	0	-	0	1	0.44	0	-	0	3	1.31	3	1.31	0
Cryptosporidiosis	9	4.01	0	-	0	4	1.76	4	1.76	0	2	0.87	5	2.18	0
E. coli, Shiga Toxin-Producing	1	0.45	3	1.34	0	1	0.44	2	0.88	0	3	1.31	2	0.87	0
Giardiasis	6	2.67	2	0.89	0	2	0.88	5	2.20	0	2	0.87	3	1.31	0
Haemophilus influenzae (invasive disease)	4	1.78	1	0.45	0	1	0.44	4	1.76	0	4	1.75	5	2.18	0
Hepatitis C - acute	1	0.45	3	1.34	0	2	0.88	1	0.44	0	1	0.44	8	3.50	0
Hepatitis C - chronic	132	58.81	189	84.20	0	104	45.80	161	70.91	0	91	39.76	138	60.29	0
Legionellosis	2	0.89	1	0.45	0	1	0.44	8	3.52	0	2	0.87	5	2.18	0
Meningitis - aseptic/viral	3	1.34	7	3.12	0	10	4.40	7	3.08	0	10	4.37	5	2.18	0
Meningitis - bacterial (Not N. meningitidis)	0	-	1	0.45	0	0	-	3	1.32	0	3	1.31	0	-	0
Mycobacterial disease - other than tuberculosis	-	-	0	-	0	0	-	0	-	0	0	-	-	-	0
Salmonellosis	16	7.13	7	3.12	0	8	3.52	10	4.40	0	19	8.30	13	5.68	0
Shigellosis	3	1.34	4	1.78	0	6	2.64	3	1.32	0	0	-	1	0.44	0
Streptococcal - Group A -invasive	4	1.78	5	2.23	0	7	3.08	4	1.76	1	3	1.31	4	1.75	0
Tuberculosis	1	0.45	0	-	0	2	0.88	5	2.20	0	1	0.44	0	-	0
Yersiniosis	1	0.45	1	0.45	0	1	0.44	0	-	0	0	-	2	0.87	0
SUB-TOTAL	195	86.87	242	107.81	0	158	69.58	237	104.38	1	161	70.34	224	97.87	0

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by sex

CLASS B GENERAL INFECTIOUS DISEASES	2020					2021				
	Female		Male		Unknown	Female		Male		Unknown
	#	Rate	#	Rate	#	#	Rate	#	Rate	#
Campylobacteriosis	10	4.31	10	4.31	0	9	3.84	18	7.67	0
Coccidioidomycosis	1	0.43	3	1.29	0	0	-	8	3.41	0
CPO	0	-	2	0.86	0	4	1.71	4	1.71	0
Cryptosporidiosis	1	0.43	3	1.29	0	0	-	1	0.43	0
E. coli, Shiga Toxin-Producing	7	3.01	4	1.72	0	2	0.85	1	0.43	0
Giardiasis	2	0.86	2	0.86	0	9	3.84	5	2.13	0
Haemophilus influenzae (invasive disease)	1	0.43	-	-	0	0	-	0	-	0
Hepatitis C - acute	0	-	3	1.29	0	2	0.85	1	0.43	0
Hepatitis C - chronic	77	33.16	92	39.63	1	88	37.51	105	44.76	3
Legionellosis	4	1.72	5	2.15	0	3	1.28	9	3.84	0
Meningitis - aseptic/viral	2	0.86	5	2.15	0	1	0.43	8	3.41	0
Meningitis - bacterial (Not N. meningitidis)	0	-	2	0.86	0	2	0.85	1	0.43	0
Mycobacterial disease - other than tuberculosis	0	-	0	-	0	0	-	0	-	0
Salmonellosis	10	4.31	3	1.29	0	9	3.84	8	3.41	0
Shigellosis	1	0.43	2	0.86	0	2	0.85	1	0.43	0
Streptococcal - Group A -invasive	4	1.72	9	3.88	0	10	4.26	7	2.98	0
Tuberculosis	2	0.86	1	0.43	0	0	-	4	1.71	0
Yersiniosis	2	0.86	0	-	0	1	0.43	1	0.43	0
SUB-TOTAL	124	53.41	146	62.88	1	142	60.53	182	77.58	3

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by sex

CLASS B GENERAL INFECTIOUS DISEASES	2022					2023				
	Female		Male		Unknown	Female		Male		Unknown
	#	Rate	#	Rate	#	#	Rate	#	Rate	#
Campylobacteriosis	18	7.55	13	5.45	2	17	6.90	16	6.49	0
Coccidioidomycosis	1	0.42	1	0.42	0	0	-	0	-	0
CPO	3	1.26	2	0.84	0	7	2.84	11	4.46	0
Cryptosporidiosis	1	0.42	3	1.26	0	11	4.46	1	0.41	0
E. coli, Shiga Toxin-Producing	6	2.52	5	2.10	0	5	2.03	3	1.22	0
Giardiasis	6	2.52	7	2.94	0	6	2.43	4	1.62	0
Haemophilus influenzae (invasive disease)	1	0.42	1	0.42	0	4	1.62	4	1.62	0
Hepatitis C - acute	0	-	0	-	0	0	-	0	-	0
Hepatitis C - chronic	82	34.39	100	41.94	11	63	25.55	76	30.83	2
Legionellosis	4	1.68	5	2.10	0	1	0.41	6	2.43	0
Meningitis - aseptic/viral	3	1.26	7	2.94	0	1	0.41	4	1.62	0
Meningitis - bacterial (Not N. meningitidis)	3	1.26	3	1.26	0	1	0.41	2	0.81	1
Mycobacterial disease - other than tuberculosis	0	-	0	-	0	0	-	0	-	0
Salmonellosis	14	5.87	11	4.61	0	16	6.49	10	4.06	0
Shigellosis	1	0.42	2	0.84	0	0	-	3	1.22	0
Streptococcal - Group A -invasive	8	3.36	10	4.19	0	13	5.27	12	4.87	0
Tuberculosis	1	0.42	2	0.84	0	0	-	2	0.81	0
Yersiniosis	2	0.84	1	0.42	0	2	0.81	0	-	0
SUB-TOTAL	154	64.59	173	72.56	13	147	59.62	154	62.46	3

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by age

CLASS B GENERAL INFECTIOUS DISEASES	0-19		20-29		30-39		40-49		50-59		60-69		70-79		Unknown	Total	
	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	#	Rate
Campylobacteriosis	78	32.19	18	7.43	22	9.08	39	16.09	38	15.68	47	19.39	45	18.57	1	288	118.84
Coccidioidomycosis	1	0.41	2	0.83	3	1.24	2	0.83	3	1.24	3	1.24	4	1.65	0	18	7.43
CPO	2	0.83	2	0.83	5	2.06	7	2.89	2	0.83	7	2.89	15	6.19	0	40	16.51
Cryptosporidiosis	18	7.43	6	2.48	7	2.89	8	3.30	6	2.48	6	2.48	8	3.30	0	59	24.35
E. coli, Shiga Toxin-Producing	33	13.62	6	2.48	6	2.48	3	1.24	6	2.48	7	2.89	1	0.41	0	62	25.58
Giardiasis	16	6.60	11	4.54	7	2.89	15	6.19	20	8.25	10	4.13	7	2.89	0	86	35.49
Haemophilus influenzae (invasive disease)	3	1.24	2	0.83	2	0.83	3	1.24	5	2.06	7	2.89	21	8.67	0	43	17.74
Hepatitis C - acute	0	0.00	4	1.65	9	3.71	4	1.65	6	2.48	4	1.65	0	0.00	0	27	11.14
Hepatitis C - chronic	48	19.81	604	249.24	582	240.16	359	148.14	346	142.78	305	125.86	104	42.92	7	2355	971.79
Legionellosis	0	0.00	2	0.83	7	2.89	3	1.24	21	8.67	15	6.19	17	7.02	0	65	26.82
Meningitis - aseptic/viral	32	13.20	16	6.60	19	7.84	9	3.71	11	4.54	4	1.65	13	5.36	17	121	49.93
Meningitis - bacterial (Not N. meningitidis)	6	2.48	1	0.41	4	1.65	6	2.48	5	2.06	3	1.24	1	0.41	3	29	11.97
Mycobacterial disease - other than tuberculosis	2	0.83	0	0.00	0	0.00	1	0.41	3	1.24	3	1.24	3	1.24	0	12	4.95
Salmonellosis	76	31.36	17	7.02	22	9.08	20	8.25	27	11.14	25	10.32	26	10.73	2	215	88.72
Shigellosis	27	11.14	3	1.24	5	2.06	4	1.65	9	3.71	0	0.00	3	1.24	0	51	21.05
Streptococcal - Group A -invasive	9	3.71	5	2.06	15	6.19	11	4.54	14	5.78	16	6.60	51	21.05	0	121	49.93
Tuberculosis	3	1.24	5	2.06	3	1.24	2	0.83	2	0.83	5	2.06	4	1.65	0	24	9.90
Yersiniosis	6	2.48	0	0.00	2	0.83	2	0.83	2	0.83	3	1.24	3	1.24	0	18	7.43
SUB-TOTAL	360	148.55	704	290.50	720	297.11	498	205.50	526	217.05	470	193.94	326	134.52	30	3634	1499.56

*Rate is the number of cases per 100,000 Warren County residents

Class B: Vaccine-Preventable Diseases

Class B vaccine-preventable diseases are diseases of concern due to their potential for epidemic spread for which an effective preventative vaccine exists.

Eight vaccine-preventable diseases met the qualifications for analysis in this report. Of those eight, hepatitis A and pertussis were of special interest due to having several years with over ten cases reported per year and a [rate ratio](#) indicating that Warren County rates were more than double either a state or national rate. As a result, hepatitis A and pertussis are discussed in further detail below.

Hepatitis A

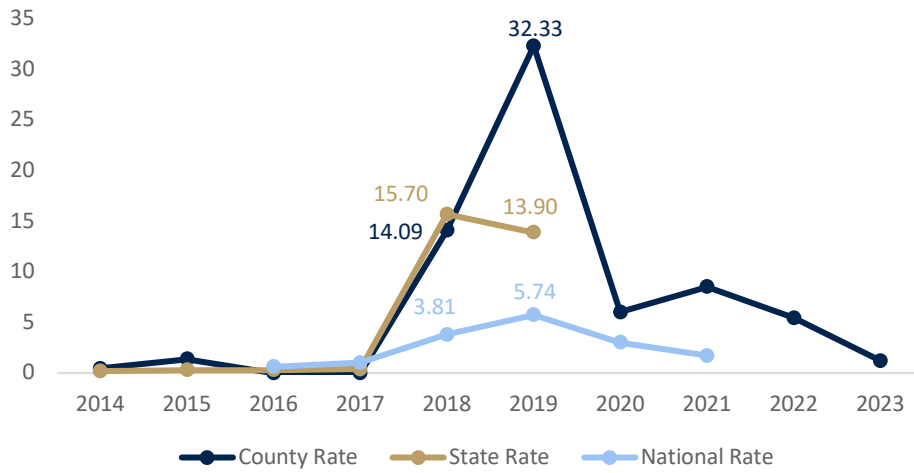
Hepatitis A is a vaccine-preventable disease of the liver. It was included in the previous list of the ten diseases with the highest case count in Warren County from 2014 to 2023. A full description of illness characteristics can be found in [that section](#).

There were multiple years where hepatitis A rates were more than double either state or national rates. The biggest deviation happened in 2019, where Warren County was 133% above the rate for the state of Ohio (RR=2.33) and 463% above the national rate (RR=5.63).

Year	Number	Warren County Rate	Rate	Rate Ratio (RR)
2018	32	14.09	3.81**	3.70
2019	74	32.33	13.90*	2.33
2019	74	32.33	5.74**	5.63
2020	14	6.03	3.02**	2.00
2021	20	8.53	1.74**	4.90

*State Rate
**National Rate

Hepatitis A (Rate Per 100,000 Residents)



Pertussis

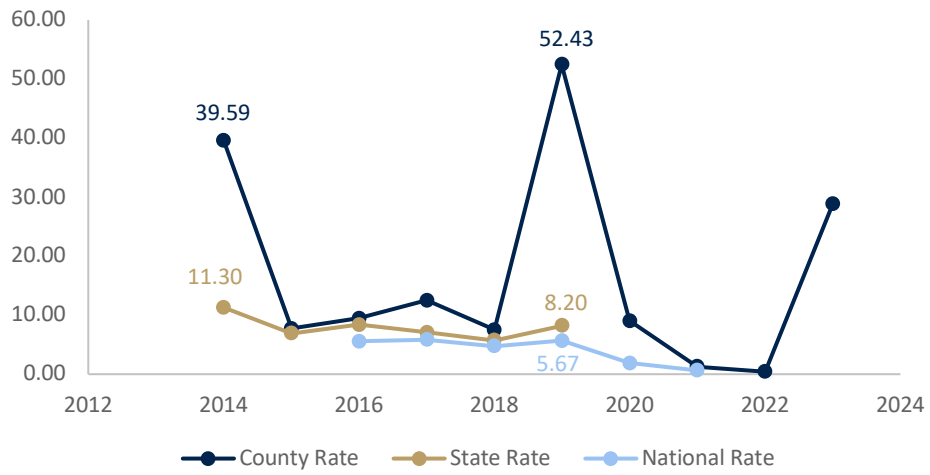
Pertussis, also known as whooping cough, is a highly contagious respiratory disease that is spread through respiratory droplets. It is especially dangerous to infants and young children. Pertussis was the seventh most reported disease in Warren County during the period from 2014 to 2023 and was covered in the discussion of the ten most common diseases previously in this report. Further discussion of pertussis can be found in [that section](#).

There were multiple years where pertussis rates in Warren County exceeded state or national rates by more than a 100% increase. This gap was most notable in 2019, where Warren County rates were 539% higher than the state of Ohio (RR=6.39) and 825% higher than the national rate (RR=9.25).

Year	Number	Warren County Rate	Rate	Rate Ratio (RR)
2014	86	39.59	11.30*	3.50
2017	28	12.47	5.83**	2.14
2019	120	52.43	5.67**	9.25
2019	120	52.43	8.20*	6.39
2020	21	9.04	1.86**	4.86

*State Rate
 **National Rate

Pertussis (Rate Per 100,000 Residents)



Reported cases of selected notifiable diseases by year

VACCINE-PREVENTABLE DISEASES	2014				2015				2016					
	#	Rate	State Rate	RR	#	Rate	State Rate	RR	#	Rate	State Rate	RR	National Rate	RR
Hepatitis A	1	0.46	0.20	2.30	3	1.37	0.30	4.56	0	-	0.30	-	0.62	-
Hepatitis B (including delta) - acute	7	3.22	-	-	7	3.19	-	-	6	2.71	-	-	1.00	2.71
Hepatitis B (including delta) - chronic	75	34.52	-	-	57	26.01	-	-	60	27.07	-	-	-	-
Influenza-associated hospitalization	131	60.30	71.10	0.85	78	35.59	32.70	1.09	47	21.20	35.60	0.60	-	-
Mumps	6	2.76	4.80	0.58	1	0.46	0.10	4.56	0	-	0.60	-	1.97	-
Pertussis	86	39.59	11.30	3.50	17	7.76	6.90	1.12	21	9.47	8.40	1.13	5.56	1.70
Streptococcus pneumoniae invasive disease	8	3.68	8.00	0.46	15	6.84	8.30	0.82	15	6.77	8.40	0.81	7.32	0.92
Varicella	17	7.83	4.40	1.78	9	4.11	4.30	0.95	17	7.67	3.90	1.97	3.45	2.22
SUB-TOTAL	330	151.90	99.60	7.17	184	83.96	52.30	8.55	166	74.89	56.90	4.50	19.30	7.56

VACCINE-PREVENTABLE DISEASES	2017						2018					
	#	Rate	State Rate	RR	National Rate	RR	#	Rate	State Rate	RR	National Rate	RR
Hepatitis A	0	-	0.40	-	1.03	-	32	14.09	15.70	0.90	3.81	3.70
Hepatitis B (including delta) - acute	4	1.78	-	-	1.05	1.70	5	2.20	-	-	1.02	2.16
Hepatitis B (including delta) - chronic	74	32.97	-	-	-	-	51	22.46	-	-	-	-
Influenza-associated hospitalization	111	49.45	101.40	0.49	-	-	255	112.30	123.50	0.91	-	-
Mumps	2	0.89	0.50	1.78	1.88	0.47	0	-	-	-	-	-
Pertussis	28	12.47	7.10	1.76	5.83	2.14	17	7.49	5.70	1.31	4.77	1.57
Streptococcus pneumoniae invasive disease	21	9.36	10.60	0.88	8.15	1.15	18	7.93	11.10	0.71	8.14	0.97
Varicella	12	5.35	4.00	1.34	3.30	1.62	12	5.28	3.80	1.39	3.07	1.72
SUB-TOTAL	252	112.26	123.60	6.24	20.21	7.07	358	157.67	144.10	4.33	17.00	6.42

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by year

VACCINE-PREVENTABLE DISEASES	2019						2020			
	#	Rate	State Rate	RR	National Rate	RR	#	Rate	National Rate	RR
Hepatitis A	74	32.33	13.90	2.33	5.74	5.63	14	6.03	3.02	2.00
Hepatitis B (including delta) - acute	6	2.62	-	-	1.09	2.40	1	0.43	0.66	0.65
Hepatitis B (including delta) - chronic	59	25.78	-	-	-	-	65	28.00	-	-
Influenza-associated hospitalization	190	83.01	93.10	0.89	-	-	117	50.39	-	-
Mumps	2	0.87	0.60	1.46	1.15	0.76	2	0.86	0.21	4.10
Pertussis	120	52.43	8.20	6.39	5.67	9.25	21	9.04	1.86	4.86
Streptococcus pneumoniae invasive disease	15	6.55	10.90	0.60	8.15	0.80	9	3.88	4.86	0.80
Varicella	7	3.06	3.50	0.87	3.09	0.99	6	2.58	1.05	2.46
SUB-TOTAL	399	174.32	116.30	10.22	19.15	14.21	221	95.19	8.64	12.87

VACCINE-PREVENTABLE DISEASES	2021				2022		2023	
	#	Rate	National Rate	RR	#	Rate	#	Rate
Hepatitis A	20	8.53	1.74	4.90	13	5.45	3	1.22
Hepatitis B (including delta) - acute	1	0.43	0.62	0.69	2	0.84	2	0.81
Hepatitis B (including delta) - chronic	83	35.38	-	-	77	32.30	49	19.87
Influenza-associated hospitalization	20	8.53	-	-	136	57.04	30	12.17
Mumps	0	-	-	-	2	0.84	1	0.41
Pertussis	3	1.28	0.64	2.00	1	0.42	71	28.80
Streptococcus pneumoniae invasive disease	14	5.97	4.92	1.21	18	7.55	23	9.33
Varicella	5	2.13	1.24	1.72	7	2.94	8	3.24
SUB-TOTAL	126	53.71	7.42	5.62	243	101.93	184	74.63

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by sex

VACCINE-PREVENTABLE DISEASES	2014					2015					2016				
	Female		Male		Unknown	Female		Male		Unknown	Female		Male		Unknown
	#	Rate	#	Rate	#	#	Rate	#	Rate	#	#	Rate	#	Rate	#
Hepatitis A	1	0.46	0	-	0	3	1.37	0	-	0	0	-	0	-	0
Hepatitis B (including delta) - acute	1	0.46	6	2.76	0	1	0.46	6	2.74	0	4	1.80	2	0.90	0
Hepatitis B (including delta) - chronic	28	12.89	47	21.63	0	24	10.95	33	15.06	0	25	11.28	35	15.79	0
Influenza-associated hospitalization	84	38.67	47	21.63	0	46	20.99	32	14.60	0	30	13.53	17	7.67	0
Mumps	3	1.38	3	1.38	0	0	0.00	1	0.46	0	0	-	0	-	0
Pertussis	41	18.87	44	20.25	1	13	5.93	4	1.83	0	12	5.41	9	4.06	0
Streptococcus pneumoniae invasive disease	4	1.84	4	1.84	0	7	3.19	8	3.65	0	6	2.71	8	3.61	1
Varicella	6	2.76	11	5.06	0	4	1.83	5	2.28	0	3	1.35	14	6.32	0
SUB-TOTAL	167	76.87	162	74.57	1	95	43.35	89	40.61	0	80	36.09	85	38.35	1

VACCINE-PREVENTABLE DISEASES	2017					2018					2019				
	Female		Male		Unknown	Female		Male		Unknown	Female		Male		Unknown
	#	Rate	#	Rate	#	#	Rate	#	Rate	#	#	Rate	#	Rate	#
Hepatitis A	0	-	0	-	0	12	5.28	20	8.81	0	34	14.85	40	17.48	0
Hepatitis B (including delta) - acute	1	0.45	3	1.34	0	2	0.88	3	1.32	0	3	1.31	3	1.31	0
Hepatitis B (including delta) - chronic	22	9.80	52	23.17	0	22	9.69	29	12.77	0	20	8.74	39	17.04	0
Influenza-associated hospitalization	63	28.07	48	21.38	0	141	62.10	113	49.77	1	108	47.19	81	35.39	1
Mumps	1	0.45	1	0.45	0	0	-	0	-	0	1	0.44	1	0.44	0
Pertussis	17	7.57	11	4.90	0	8	3.52	8	3.52	1	66	28.84	53	23.16	1
Streptococcus pneumoniae invasive disease	10	4.45	11	4.90	0	8	3.52	10	4.40	0	9	3.93	6	2.62	0
Varicella	5	2.23	7	3.12	0	6	2.64	6	2.64	0	5	2.18	2	0.87	0
SUB-TOTAL	119	53.01	133	59.25	0	187	82.36	169	74.43	2	212	92.62	185	80.83	2

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by sex

VACCINE-PREVENTABLE DISEASES	2020					2021				
	Female		Male		Unknown	Female		Male		Unknown
	#	Rate	#	Rate	#	#	Rate	#	Rate	#
Hepatitis A	6	2.58	8	3.45	0	11	4.69	9	3.84	0
Hepatitis B (including delta) - acute	0	-	1	0.43	0	1	0.43	0	-	0
Hepatitis B (including delta) - chronic	24	10.34	41	17.66	0	35	14.92	48	20.46	0
Influenza-associated hospitalization	61	26.27	55	23.69	1	11	4.69	9	3.84	0
Mumps	1	0.43	1	0.43	0	0	-	0	-	0
Pertussis	14	6.03	7	3.01	0	3	1.28	0	-	0
Streptococcus pneumoniae invasive disease	4	1.72	5	2.15	0	6	2.56	7	2.98	1
Varicella	2	0.86	4	1.72	0	2	0.85	3	1.28	0
SUB-TOTAL	106	45.66	114	49.10	1	58	24.72	67	28.56	1

VACCINE-PREVENTABLE DISEASES	2022					2023				
	Female		Male		Unknown	Female		Male		Unknown
	#	Rate	#	Rate	#	#	Rate	#	Rate	#
Hepatitis A	7	2.94	6	2.52	0	1	0.41	2	0.81	0
Hepatitis B (including delta) - acute	0	-	2	0.84	0	2	0.81	0	-	0
Hepatitis B (including delta) - chronic	44	18.46	32	13.42	1	19	7.71	29	11.76	1
Influenza-associated hospitalization	70	29.36	66	27.68	0	16	6.49	14	5.68	0
Mumps	1	0.42	1	0.42	0	1	0.41	0	-	0
Pertussis	1	0.42	0	-	0	28	11.36	42	17.03	1
Streptococcus pneumoniae invasive disease	8	3.36	9	3.77	1	12	4.87	11	4.46	0
Varicella	4	1.68	3	1.26	0	7	2.84	1	0.41	0
SUB-TOTAL	128	53.69	113	47.40	2	85	34.48	97	39.34	2

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by age

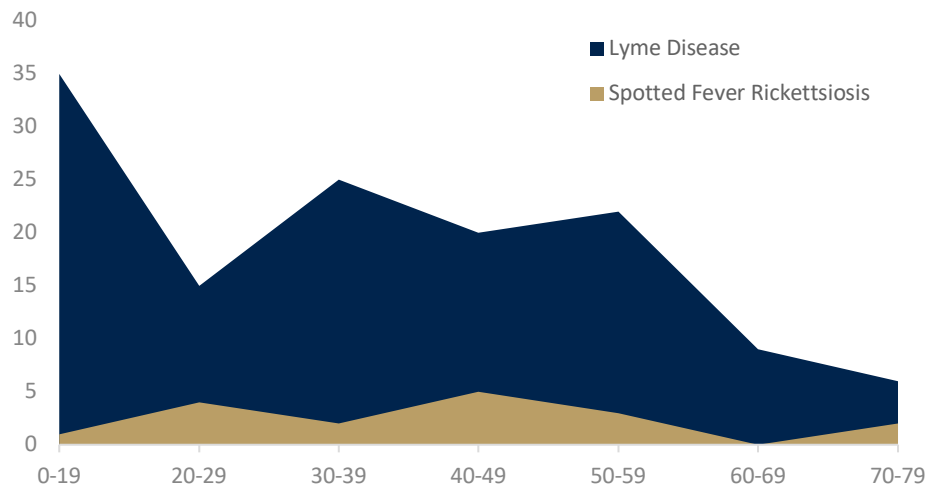
VACCINE-PREVENTABLE DISEASES	0-19		20-29		30-39		40-49		50-59		60-69		70-79		Unknown	Total	
	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	#	Rate
Hepatitis A	4	1.65	25	10.32	47	19.39	37	15.27	23	9.49	11	4.54	13	5.36	0	160	66.02
Hepatitis B (including delta) - acute	0	0.00	2	0.83	13	5.36	11	4.54	8	3.30	6	2.48	1	0.41	0	41	16.92
Hepatitis B (including delta) - chronic	10	4.13	96	39.61	174	71.80	131	54.06	112	46.22	69	28.47	58	23.93	1	651	268.63
Influenza-associated hospitalization	132	54.47	32	13.20	53	21.87	54	22.28	136	56.12	214	88.31	493	203.44	1	1115	460.10
Mumps	8	3.30	1	0.41	2	0.83	1	0.41	3	1.24	1	0.41	0	0.00	0	16	6.60
Pertussis	353	145.66	2	0.83	6	2.48	9	3.71	3	1.24	4	1.65	4	1.65	4	385	158.87
Streptococcus pneumoniae invasive disease	12	4.95	5	2.06	10	4.13	9	3.71	35	14.44	34	14.03	50	20.63	1	156	64.37
Varicella	78	32.19	6	2.48	6	2.48	5	2.06	3	1.24	1	0.41	1	0.41	0	100	41.26
SUB-TOTAL	593	244.70	144	59.42	264	108.94	220	90.78	300	123.79	329	135.76	607	250.48	7	2464	1016.77

*Rate is the number of cases per 100,000 Warren County residents

Class B: Zoonotic Diseases

Class B [zoonotic diseases](#) are diseases of public health concern that are transmissible from animals to humans. Within Warren County, the only zoonotic diseases that reached the threshold of at least ten cases over the past ten years (Lyme Disease and spotted fever rickettsiosis) are specifically [vector-borne](#) diseases, with the [vector](#) for both analyzed diseases being ticks.

[Lyme disease](#) was most common in the [0-19](#) age group, while [spotted fever rickettsiosis](#) peaked at ages [40-49](#).



Lyme disease was chosen for further analysis in this report based on it having years where the number of cases reported was ten or above and the rate ratio was 2.0 or above when compared to either state or national rates.

Lyme Disease

Lyme disease is a bacterial infection spread to people through the bite of the blacklegged (Ixodes) tick. Early signs and symptoms appear within 3 to 30 days after a tick bite and include fever, chills, headache, fatigue, muscle and joint aches, and swollen lymph nodes. Approximately 70-80% of those infected will develop erythema migrans (EM), a rash that can have the appearance of a bullseye, although it can also have other manifestations.

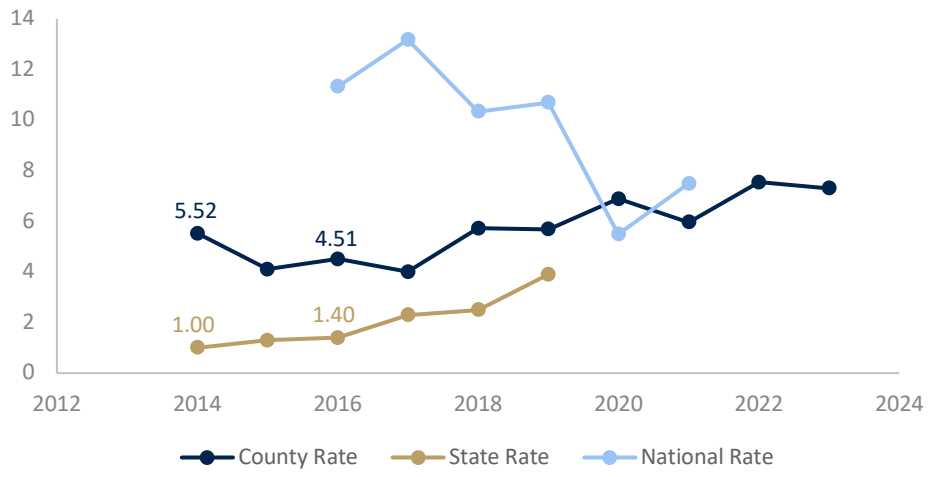
Later signs and symptoms that may appear days to months after a tick bite include severe headaches and stiffness, additional EM rashes on other areas of the body, facial palsy (loss of muscle tone or drooping on one or both sides of the face), arthritis with severe joint pain and swelling, pain in tendons, muscles, joints, and bones, heart palpitations, dizziness, shortness of breath, inflammation of the brain and spinal cord, nerve pain, and shooting pains, numbness, or tingling in the hands or feet (Centers for Disease Control and Prevention, 2024).

The best prevention against Lyme disease is to limit exposure to tick bites. This involves being aware of where ticks are most likely to live and avoiding contact, treating clothing and gear with products containing 0.5% permethrin, and using EPA-registered insect repellents containing DEET, picaridin, IR3535, Oil of Lemon Eucalyptus (OLE), para-menthane-diol (PMD), or 2-undecanone (Centers for Disease Control and Prevention, 2024).

Warren County had three years where its rate ratios exceeded 2.0 during the period from 2014 to 2023. The largest gap existed in 2014, where Warren County rates were 452% above Ohio rates. It is notable that Warren County rates remained below national rates for all years in the reporting period except for 2020.

Year	Number	Warren County Rate	State Rate	Rate Ratio (RR)
2014	12	5.52	1.00	5.52
2016	10	4.51	1.40	3.22
2018	13	5.73	2.50	2.29

Lyme Disease (Rate Per 100,000 Residents)



Reported cases of selected notifiable diseases by year

ZOO NOTIC DISEASES	2014				2015				2016					
	#	Rate	State Rate	RR	#	Rate	State Rate	RR	#	Rate	State Rate	RR	National Rate	RR
Lyme Disease*	12	5.52	1.00	5.52	9	4.11	1.30	3.16	10	4.51	1.40	3.22	11.32	0.40
Spotted Fever Rickettsiosis, including Rocky Mountain spotted fever (RMSF)*	1	0.46	0.10	4.6	1	0.46	0.10	4.56	2	0.90	0.20	4.51	1.33	0.68
SUB-TOTAL	13	5.98	1.10	10.12	10	4.57	1.40	7.72	12	5.41	1.60	7.73	12.65	1.08

ZOO NOTIC DISEASES	2017						2018					
	#	Rate	State Rate	RR	National Rate	RR	#	Rate	State Rate	RR	National Rate	RR
Lyme Disease*	9	4.01	2.30	1.74	13.18	0.30	13	5.73	2.50	2.29	10.34	0.55
Spotted Fever Rickettsiosis, including Rocky Mountain spotted fever (RMSF)*	0	-	0.30	-	1.93	-	0	-	0.30	-	1.71	-
SUB-TOTAL	9	4.01	2.60	1.74	15.11	0.30	13	5.73	2.80	2.29	12.05	0.55

ZOO NOTIC DISEASES	2019						2020			
	#	Rate	State Rate	RR	National Rate	RR	#	Rate	National Rate	RR
Lyme Disease*	13	5.68	3.90	1.46	10.69	0.53	16	6.89	5.49	1.26
Spotted Fever Rickettsiosis, including Rocky Mountain spotted fever (RMSF)*	2	0.87	0.40	2.18	0.87	1.60	2	0.86	0.36	2.39
SUB-TOTAL	15	6.55	4.30	3.64	11.56	2.13	18	7.75	5.85	3.65

ZOO NOTIC DISEASES	2021				2022		2023	
	#	Rate	National Rate	RR	#	Rate	#	Rate
Lyme Disease*	14	5.97	7.50	0.80	18	7.55	18	7.30
Spotted Fever Rickettsiosis, including Rocky Mountain spotted fever (RMSF)*	3	1.28	0.38	3.37	2	0.84	4	1.62
SUB-TOTAL	17	7.25	7.88	4.17	20	8.39	22	8.92

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by sex

ZOOTIC DISEASES	2014					2015					2016				
	Female		Male		Unknown	Female		Male		Unknown	Female		Male		Unknown
	#	Rate	#	Rate	#	#	Rate	#	Rate	#	#	Rate	#	Rate	#
Lyme Disease*	6	2.76	6	2.76	0	3	1.37	6	2.74	0	5	2.26	5	2.26	0
Spotted Fever Rickettsiosis, including Rocky Mountain spotted fever (RMSF)*	1	0.46	0	-	0	1	0.46	0	-	0	0	-	2	0.90	0
SUB-TOTAL	7	3.22	6	2.76	0	4	1.83	6	2.74	0	5	2.26	7	3.16	0

ZOOTIC DISEASES	2017					2018					2019				
	Female		Male		Unknown	Female		Male		Unknown	Female		Male		Unknown
	#	Rate	#	Rate	#	#	Rate	#	Rate	#	#	Rate	#	Rate	#
Lyme Disease*	8	3.56	1	0.45	0	9	3.96	4	1.76	0	9	3.93	4	1.75	0
Spotted Fever Rickettsiosis, including Rocky Mountain spotted fever (RMSF)*	0	-	0	-	0	0	-	0	-	0	1	0.44	1	0.44	0
SUB-TOTAL	8	3.56	1	0.45	0	9	3.96	4	1.76	0	10	4.37	5	2.18	0

ZOOTIC DISEASES	2020					2021				
	Female		Male		Unknown	Female		Male		Unknown
	#	Rate	#	Rate	#	#	Rate	#	Rate	#
Lyme Disease*	11	4.74	5	2.15	0	11	4.69	3	1.28	0
Spotted Fever Rickettsiosis, including Rocky Mountain spotted fever (RMSF)*	2	0.86	0	-	0	1	0.43	2	0.85	0
SUB-TOTAL	13	5.60	5	2.15	0	12	5.12	5	2.13	0

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by sex

ZOO NOTIC DISEASES	2022					2023				
	Female		Male		Unknown	Female		Male		Unknown
	#	Rate	#	Rate	#	#	Rate	#	Rate	#
Lyme Disease*	8	3.36	10	4.19	0	11	4.46	7	2.84	0
Spotted Fever Rickettsiosis, including Rocky Mountain spotted fever (RMSF)*	1	0.42	1	0.42	0	3	1.22	1	0.41	0
SUB-TOTAL	9	3.77	11	4.61	0	14	5.68	8	3.24	0

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by age

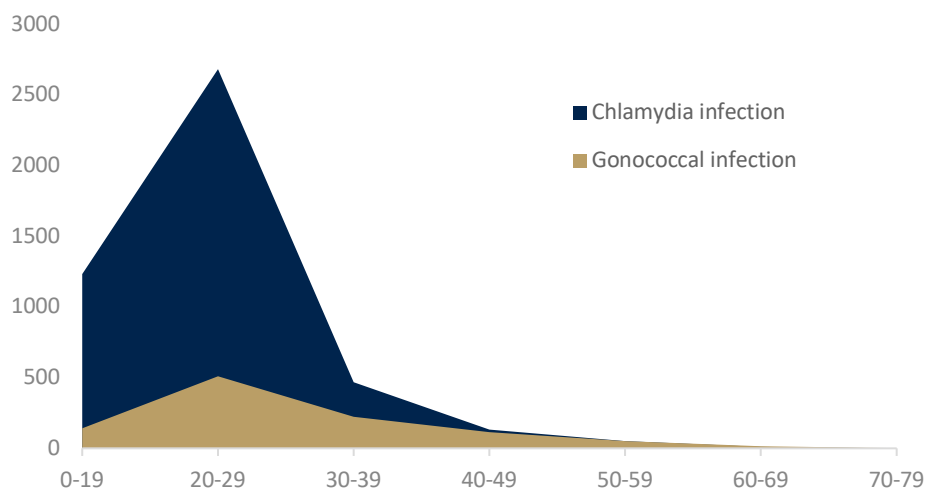
ZOO NOTIC DISEASES	0-19		20-29		30-39		40-49		50-59		60-69		70-79		Unknown	Total	
	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	#	Rate
Lyme Disease*	35	14.44	15	6.19	25	10.32	20	8.25	22	9.08	9	3.71	6	2.48	0	132	54.47
Spotted Fever Rickettsiosis, including Rocky Mountain spotted fever (RMSF)*	1	0.41	4	1.65	2	0.83	5	2.06	3	1.24	0	0.00	2	0.83	0	17	7.02
SUB-TOTAL	36	14.86	19	7.84	27	11.14	25	10.32	25	10.32	9	3.71	8	3.30	0	149	61.48

*Rate is the number of cases per 100,000 Warren County residents

Class B: Sexually Transmitted Diseases (STDs)

A sexually transmitted disease is a disease resulting from an infection caused by a virus, bacteria, fungus, or parasite that people can get through direct sexual contact (Centers for Disease Control and Prevention, 2024). Sexually transmitted infections and their resulting diseases are preventable. The diseases included in this section are transmitted primarily through sexual contact, but it is worth noting that other conditions such as viral hepatitis diseases can also be spread through sexual contact.

Chlamydia and **gonococcal infection** were most common in the **20-29** age group. **Syphilis** peaked in **30-39** year olds (not shown on graph due to small numbers).



Reported cases of selected notifiable diseases by year

SEXUALLY TRANSMITTED DISEASES (STDs)	2014		2015		2016				2017			
	#	Rate	#	Rate	#	Rate	National Rate	RR	#	Rate	National Rate	RR
Chlamydia infection	440	202.54	513	234.07	472	212.94	494.65	0.43	401	178.64	524.55	0.34
Gonococcal infection	82	37.75	84	38.33	91	41.05	144.99	0.28	117	52.12	170.58	0.31
Syphilis	0	-	0	-	0	-	27.25	-	0	-	31.18	-
SUB-TOTAL	522	240.29	597	272.39	563	253.99	666.89	0.71	518	230.77	726.31	0.65

SEXUALLY TRANSMITTED DISEASES (STDs)	2018				2019				2020			
	#	Rate	National Rate	RR	#	Rate	National Rate	RR	#	Rate	National Rate	RR
Chlamydia infection	457	201.27	537.54	0.37	521	227.63	551.03	0.41	439	189.08	479.49	0.39
Gonococcal infection	118	51.97	178.32	0.29	115	50.24	187.79	0.27	145	62.45	205.70	0.30
Syphilis	7	3.08	35.16	0.09	3	1.31	39.55	0.03	8	3.45	40.65	0.08
SUB-TOTAL	582	256.32	751.02	0.75	639	279.18	778.37	0.71	592	254.98	725.84	0.78

SEXUALLY TRANSMITTED DISEASES (STDs)	2021				2022		2023	
	#	Rate	National Rate	RR	#	Rate	#	Rate
Chlamydia infection	461	196.50	498.98	0.39	434	182.04	448	181.71
Gonococcal infection	125	53.28	216.30	0.25	92	38.59	89	36.10
Syphilis	6	2.56	53.91	0.05	7	2.94	7	2.84
SUB-TOTAL	592	252.34	769.19	0.69	533	223.56	544	220.64

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by sex

SEXUALLY TRANSMITTED DISEASES (STDs)	2014					2015					2016				
	Female		Male		Unknown	Female		Male		Unknown	Female		Male		Unknown
	#	Rate	#	Rate	#	#	Rate	#	Rate	#	#	Rate	#	Rate	#
Chlamydia infection	325	149.60	115	52.94	0	376	171.56	137	62.51	0	341	153.84	131	59.10	0
Gonococcal infection	38	17.49	44	20.25	0	47	21.44	37	16.88	0	41	18.50	50	22.56	0
Syphilis	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0
SUB-TOTAL	363	167.10	159	73.19	0	423	193.00	174	79.39	0	382	172.34	181	81.66	0

SEXUALLY TRANSMITTED DISEASES (STDs)	2017					2018					2019				
	Female		Male		Unknown	Female		Male		Unknown	Female		Male		Unknown
	#	Rate	#	Rate	#	#	Rate	#	Rate	#	#	Rate	#	Rate	#
Chlamydia infection	29	133.2	10	45.4		34	151.5	11	49.7		37	164.2	14	63.3	
	9	0	2	4	0	4	0	3	7	0	6	8	5	5	0
Gonococcal infection	64	28.51	53	23.6	1	62	27.31	56	24.6	6	54	23.59	61	26.6	5
Syphilis	0	-	0	-	0	2	0.88	5	2.20	0	0	-	3	1.31	0
SUB-TOTAL	36	161.7	15	69.0	0	40	179.6	17	76.6	0	43	187.8	20	91.3	0
	3	1	5	5	0	8	9	4	3	0	0	7	9	1	0

SEXUALLY TRANSMITTED DISEASES (STDs)	2020					2021				
	Female		Male		Unknown	Female		Male		Unknown
	#	Rate	#	Rate	#	#	Rate	#	Rate	#
Chlamydia infection	319	137.40	120	51.69	0	326	138.96	135	57.54	0
Gonococcal infection	88	37.90	57	24.55	0	71	30.26	54	23.02	0
Syphilis	3	1.29	5	2.15	0	0	0	6	2.56	0
SUB-TOTAL	410	176.59	182	78.39	0	397	169.22	195	83.12	0

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by sex

SEXUALLY TRANSMITTED DISEASES (STDs)	2022					2023				
	Female		Male		Unknown	Female		Male		Unknown
	#	Rate	#	Rate	#	#	Rate	#	Rate	#
Chlamydia infection	315	132.12	119	49.91	0	330	133.85	118	47.86	0
Gonococcal infection	41	17.20	51	21.39	0	46	18.66	43	17.44	0
Syphilis	0	-	7	2.94	0	2	0.81	5	2.03	0
SUB-TOTAL	356	149.32	177	74.24	0	378	153.31	166	67.33	0

*Rate is the number of cases per 100,000 Warren County residents

Reported cases of selected notifiable diseases by age

SEXUALLY TRANSMITTED DISEASES (STDs)	0-19		20-29		30-39		40-49		50-59		60-69		70-79		Unknown	Total	
	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	#	Rate
Chlamydia infection	1234	509.21	2684	1107.55	468	193.12	134	55.29	50	20.63	12	4.95	0	-	4	4586	1892.41
Gonococcal infection	142	58.60	510	210.45	223	92.02	113	46.63	53	21.87	13	5.36	2	0.83	2	1058	436.58
Syphilis	0	-	10	4.13	15	6.19	7	2.89	4	1.65	2	0.83	0	-	0	38	15.68
SUB-TOTAL	1376	567.80	3204	1322.13	706	291.33	254	104.81	107	44.15	27	11.14	2	0.83	6	5682	2344.67

*Rate is the number of cases per 100,000 Warren County residents

Methods

The data analyzed in this report was obtained through the Ohio Disease Reporting System (ODRS). The initial dataset included all reportable disease cases reported to ODRS during the period from January 1, 2014 to December 31, 2023. Data was cleaned to remove duplicate reports and contact tracing. Cases reported without dates were also removed, as they could not be analyzed within an appropriate context.

Warren County disease rates were calculated using yearly population estimates provided by the County Health Rankings and Roadmaps website (University of Wisconsin Population Health Institute, 2024). The rates calculated for cases by age were the one exception. Since this rate covered the entire 10-year period, the official 2020 census count was used (United States Census Bureau, n.d.). State of Ohio disease rates were taken from Ohio Department of Health publications (Ohio Department of Health Bureau of Infectious Diseases, 2018) (Ohio Department of Health Bureau of Infectious Diseases, 2019). National disease rates were obtained from the Center for Disease Control and Prevention (CDC) WONDER tool (Centers for Disease Control and Prevention, 2024). All data analysis was performed in R version 4.4.1.

Limitations

All efforts were made to analyze data as accurately as possible. There were some notable issues, however, that could impact the analysis that was done in this report. First, after initial data cleaning to remove duplicate records and contact tracing, we were left with 91,686 case reports. Of these remaining reports, 1,712 cases were reported without an associated date, disqualifying them from analysis. This means that approximately 1.87% of the dataset was removed due to incomplete information.

In addition to incomplete data, case reporting methods were not always consistent across county, state, and national reporting. Syphilis, E. coli, and CPO were specifically impacted by this with subtypes sometimes being either combined or broken apart differently from one level of reporting to another. All efforts were made to combine and report data in a way that

made for consistent comparisons. Differences in reporting methods also impacted perinatal hepatitis B and C numbers, as Warren County only reports suspected cases based on a mother's positive status at the time of birth. As state and national reporting only include confirmed cases, this initially showed Warren County with a much higher case rate than both state and national rates. Further investigation was done to determine counts for only confirmed cases in Warren County for both diseases and appropriate adjustments were made.

Finally, case reporting for varicella cannot be considered truly reliable. This is because cases of shingles come through as positive for varicella, but shingles is not considered a reportable disease. We did not have the ability to filter out cases of shingles, so the varicella numbers are likely inflated.

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Appendix

Ohio Reportable Diseases

Class A Diseases:

- Anthrax
- Botulism, foodborne
- Cholera
- Diphtheria
- Influenza A—novel virus infection
- Measles
- Meningococcal disease
- Middle East Respiratory Syndrome (MERS)
- Plague
- Rabies, human
- Rubella (not congenital)
- Severe acute respiratory syndrome (SARS)
- Smallpox
- Tularemia
- Viral hemorrhagic fever (VHF), including Ebola virus disease, Lassa fever, Marburg hemorrhagic fever, and Crimean-Congo hemorrhagic fever

Class B Diseases:

- Amebiasis
- Arboviral neuroinvasive and non-neuroinvasive disease:
 - Chikungunya virus infection
 - Eastern equine encephalitis virus disease
 - LaCrosse virus disease
 - Powassan virus disease
 - St. Louis encephalitis virus disease
 - West Nile virus infection
 - Western equine encephalitis virus disease
 - Yellow fever
 - Zika virus infection
 - Other arthropod-borne diseases
- Babesiosis
- Botulism
 - infant
 - wound
- Brucellosis
- Campylobacteriosis
- Candida auris
- Carbapenemase-producing carbapenem-resistant Enterobacteriaceae (CP-CRE)
- CP-CRE Enterobacter spp.
- CP-CRE Escherichia coli
- CP-CRE Klebsiella spp.
- CP-CRE other
- Chancroid
- Chlamydia trachomatis infections
- Coccidioidomycosis
- Creutzfeldt-Jakob disease (CJD)
- Cryptosporidiosis
- Cyclosporiasis
- Dengue
- E. coli O157:H7 and Shiga toxin-producing E. coli (STEC)
- Ehrlichiosis/anaplasmosis
- Giardiasis
- Gonorrhea (Neisseria gonorrhoeae)
- Haemophilus influenzae (invasive disease)
- Hantavirus
- Hemolytic uremic syndrome (HUS)
- Hepatitis A
- Hepatitis B (non-perinatal)
- Hepatitis B (perinatal)
- Hepatitis C (non-perinatal)
- Hepatitis C (perinatal)
- Hepatitis D (delta hepatitis)
- Hepatitis E
- Influenza-associated hospitalization
- Influenza-associated pediatric mortality
- Legionnaires' disease
- Leprosy (Hansen disease)
- Leptospirosis
- Listeriosis
- Lyme disease
- Malaria
- Meningitis:
 - Aseptic (viral)
 - Bacterial
- Mumps
- Pertussis
- Poliomyelitis (including vaccine-associated cases)
- Psittacosis
- Q fever
- Rubella (congenital)
- Salmonella Paratyphi infection
- Salmonella Typhi infection (typhoid fever)
- Salmonellosis
- Shigellosis
- Spotted Fever Rickettsiosis, including Rocky Mountain spotted fever (RMSF)
- Staphylococcus aureus, with resistance or intermediate resistance to vancomycin (VRSA, VISA)
- Streptococcal disease, group A, invasive (IGAS)
- Streptococcal disease, group B, in newborn
- Streptococcal toxic shock syndrome (STSS)
- Streptococcus pneumoniae, invasive disease (ISP)
- Syphilis
- Tetanus
- Toxic shock syndrome (TSS)
- Trichinellosis
- Tuberculosis (TB), including multi-drug resistant tuberculosis (MDR-TB)
- Varicella
- Vibriosis
- Yersiniosis

Glossary of Terms

Acute Disease: A disease that is considered to be acute has a sudden onset, is often brief, and is not necessarily clinically severe (Porta, 2014).

Case Surveillance: A public health strategy that involves collection, analysis, and interpretation of individual cases of a specific disease or condition. The information can be used by health official to identify outbreaks and control the spread of disease, as well as help researchers identify disease trends (Centers for Disease Control and Prevention, 2024)

Chronic Disease: The CDC defines chronic diseases as conditions that last 1 year or more and require ongoing medical attention or limit activities of daily living (or both). Chronic diseases are the leading cause of illness, disability, and death in the United States (Centers for Disease Control and Prevention, 2024).

Epidemic: The occurrence of illness or other health-related effects in a community that is clear above what is normally expected

Health Factors: Specific elements and conditions that influence health status in both individuals and whole populations. This includes health behaviors (smoking, drinking, activity level, etc.), aspect of clinical care (access to doctors, vaccination rates, etc.), social and economic factors such as education level, employment rates, and income inequality, and aspects of the physical environment like air pollution and water safety.

Heath Outcomes: Measurable changes in health that result from specific interventions, policies, or exposures. They include measures related to length and quality of life.

Notifiable Disease: Diseases and conditions identified by The Council of State and Territorial Epidemiologists (CSTE) and the CDC that are then voluntarily reported to the CDC by states. This data does not contain personally identifiable information. It is used to monitor and measure data and alert communities or the nation to outbreaks and other public health threats. There are approximately 120 nationally notifiable diseases (Centers for Disease Control and Prevention, n.d.).

Rate: A way of expressing the frequency with which an event occurs in a defined population (Porta, 2014). For this document, disease rates are determined by dividing the number of reported events in the population by the total number of people in the population, then multiplying by 100,000. A rate of 3.5 can be read as, “For every 100,000 people in the population, 3.5 people reported this disease.”

Rate Ratio (RR): Literally a ratio of two rates. This is a way to compare the differences between two rates. In this document, we compare Warren County rates to Ohio rates and to national rates. A rate ratio can be read as a percentage. A ratio of 1.00 (100%) indicates no difference between the two populations. If a state ratio is 1.50 (150%), that means the rate in Warren County is 50% greater than the rate for the whole state. If a state ratio is 0.75 (75%), that means that the rate in Warren County is 25% lower than the rate for the state as a whole.

Reportable Disease: Diseases and conditions that must be reported to public health departments by healthcare professionals, laboratories, hospitals, and other providers as determined on a state or territory level. The public health department will collect information about the person and how they became ill, then use that information to locate the source of an outbreak and prevent spread (Centers for Disease Control and Prevention, n.d.). Ohio has just over 90 reportable diseases (Ohio Department of Health, 2019).

Vector: An insect or other living carrier of a disease-causing pathogen, which typically multiplies or develops within the vector before being transmitted to a new person. Common disease vectors are mosquitoes, ticks, and fleas.

Vector-borne: A disease that is transmitted via an insect or other living carrier.

Zoonotic Disease: An infectious disease that is transmitted between animals and humans through either direct contact with animals or animal products, through inhaling particles from infected animals, or through vectors.