

Annual Summary of Reportable Communicable Diseases



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Tuscarawas County
Ohio
2017

ANNUAL SUMMARY OF REPORTABLE COMMUNICABLE DISEASES
TUSCARAWAS COUNTY, OHIO
2017

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TABLE OF CONTENTS

Summary.....	3
Communicable Disease Highlight: Bacterial Meningitis	5
 Communicable Disease Statistics 2017	
Table 1. Communicable Disease Count and Percentage Reported to Tuscarawas County Health Department, Ohio, 2017	7
Table 2. Communicable Disease Count and Percentage Reported to New Philadelphia City Health Department, Ohio, 2017.....	8
Table 3. Total Communicable Disease Count and Percentage, Tuscarawas County, Ohio, 2017	9
Table 4. Reportable Communicable Disease Rates, Tuscarawas County, Ohio, 2015 – 2017	10
Figure 1. Monthly Total Reportable Disease Cases, Tuscarawas County, OH, 2017	12
Figure 2. Monthly Influenza-associated Hospitalizations, Tuscarawas County, 2017	12
Figure 3. Monthly Chronic Hepatitis C Cases, Tuscarawas County, OH, 2017	13
Figure 4: Distribution of Chronic Hepatitis C by Age Groups, Tuscarawas County, OH, 2017	13
Figure 5. Monthly Gonorrhea Cases, Tuscarawas County, OH, 2017	14
Figure 6. Distribution of Gonorrhea Cases by Age Groups, Tuscarawas County, OH, 2017	14

Figure 7. Monthly Chlamydia Cases, Tuscarawas County, OH, 2017	15
Figure 8. Distribution of Chlamydia Cases by Age Groups, Tuscarawas County, OH, 2017	15
Basic Information on Reportable Communicable Diseases Observed in Tuscarawas County, Ohio in 2017	16
Sources Referenced	20

SUMMARY

This report provides a summary of ‘suspected’ (n=56), ‘probable’ (n=58), and ‘confirmed’ (n=471) cases of infectious diseases reported to Tuscarawas County Health Department and New Philadelphia City Health Department, Ohio in year 2017. The two local health departments report new cases of reportable communicable diseases to the Ohio Department of Health using the Ohio Disease Reporting System ([ODRS](#)), the state’s electronic communicable disease surveillance system.

A communicable disease is “an illness caused by an infectious agent or its toxins that occurs through the direct or indirect transmission of the infectious agent or its products from an infected individual or via an animal, vector or the inanimate environment to a susceptible animal or human host” ([CDC](#)).

The Ohio Department of Health (ODH) publishes the full list of [reportable communicable diseases](#) and their reporting classification (Class A, Class B, or Class C). These diseases, by the Ohio Law, require reporting to the local health jurisdiction by “[h]ealthcare providers with knowledge of a case or suspect case”, [l]aboratorians that examine specimens of human origin with evidence of diseases, or “[a]ny individual having knowledge of a person suffering from a disease suspected of being communicable” ([Ohio Communicable Disease Control Manual](#)). A Class A disease must be reported to the local health jurisdiction immediately by phone and the health jurisdiction in turn must immediately report it by phone to the Ohio Department of Health. The Class B and C diseases must be reported by the end of the next business and can be reported electronically to the local health jurisdiction and the local health jurisdiction report it the state through the ODRS.

The Administrative, the Emergency Preparedness, the Environmental Health Epidemiology, and the Nursing units in the Tuscarawas County Health Department collectively and collaboratively work on the routine surveillance and the outbreak investigation of communicable diseases within its jurisdiction. The key personnel responsible for communicable disease surveillance, and prevention and control in the county include:

Katie Seward, MPH, CHES, CTTS, Health Commissioner

Madhav P. Bhatta, PhD, MPH, Consultant Epidemiologist

Andrea L. Dominick, MA.Ed., Director, Health Education and Grants

Paul R. Westlake, Public Health Emergency Coordinator

Caroline Terakedis, RS, Director of Environmental Health

Amy Kaser, RN, Director of Nursing

The cases reported to the ODRS are defined as “*suspected*”, “*probable*” or “*confirmed*” based on the following case definitions:

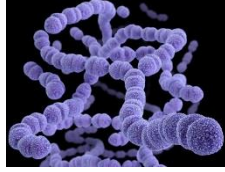
- ***Suspected***: An infection that shows signs of a specific disease (a clinical case), but is not verified by laboratory tests.
- ***Probable***: A clinical infection that is supported by general lab tests.
- ***Confirmed***: A clinical infection that is supported by laboratory tests that strain type.

The data from the ODRS were used to produce statistics presented in this report. All the “suspected”, “probable” and “confirmed” cases that occurred in Tuscarawas County and reported to one of the two local health jurisdictions (Tuscarawas County Health Department and New Philadelphia City Health Department) during 2017 were included in the analyses..

This report includes the number of cases and rates of reportable communicable diseases occurring in the entire county, as well as the yearly count of diseases reported to the two jurisdictions separately. In addition, monthly disease count for the entire county is also presented. The following are highlights of the epidemiology of communicable diseases in Tuscarawas County in 2017:

- There were 585 cases (an overall incidence rate of 633 per 100,000 people) of communicable diseases reported to the Tuscarawas County Health Department and the New Philadelphia City Health Department in 2017. Of the total, 463 cases (79.1%) reported were to the Tuscarawas County Health Department while 122 (20.9%) were reported to the New Philadelphia City Health Department.
- The overall rate of reportable communicable diseases in the entire county in 2017 remained almost the same as in 2016 (633 vs. 624 per 100,000).
- Although the incidence rates in 2016 and 2017 were similar, the pattern of types of diseases reported differ between 2016 and 2017. These differences include:
 - Almost one and half times increase in the incidence of Campylobacteriosis, two-times increase in *E. coli* infections rate, and almost two-times increase in *Giardiasis* rates in 2017 compared to 2016. There was three cases of Hepatitis A infections reported in 2017 while none were reported in 2016. All four diseases are fecal-orally transmitted gastrointestinal diseases with food and water and potential sources of infections.
 - Almost a third decline in Cryptosporidiosis rates between 2016 and 2017. Cryptosporidiosis is also a fecal-orally transmitted infection.
 - Between 2016 and 2017, there was a 44.8% increase in influenza- associated hospitalization rates and a 200% increase in the varicella incidence rate. Both are respiratory droplet transmitted infections.
 - There was almost three-fold increase in the incidence of Lyme disease in 2017 than 2016.
 - While there was a slight decline in the incidence of chlamydial infections, there was an increase in the incidence of gonococcal infections in 2017 than 2016.
 - In 2017, there was a 26% decline in number of chronic Hepatitis C cases diagnosed compared to 2016.
- In 2017, chlamydia (309.5 per 100,000), gonorrhea (34.6 per 100,000), influenza- related hospitalizations (49.8 per 100,000), and Lyme disease (31.4 per 100,000) were the four diseases with the highest incidence rates for Tuscarawas County.
- The County also had its first case of West Nile virus in three years.
- January and May 2017 had the two highest monthly counts of reportable communicable diseases in Tuscarawas County (70 and 56 cases respectively). During both months, Chlamydia (35.3% of the cases in January and 59.3% in May) and chronic Hepatitis C (19.1% of the cases in January and 13.0% in May) were the highest percentage of all reported cases.
- Influenza-related hospitalizations in Tuscarawas County peaked in February with 15 cases.

COMMUNICABLE DISEASE HIGHLIGHT



BACTERIAL MENINGITIS

TWO DEATHS DUE TO BACTERIAL MENINGITIS IN TUSCARAWAS COUNTY IN 2017

During the second half of December 2017, two cases of Bacterial Meningitis, both resulting in deaths, were reported to the Tuscarawas County Health Department. An immediate investigation by the Health Department's Communicable Disease Surveillance and Control Team led to the preliminary conclusion that the two were unrelated cases. The initial assessment was based on the facts that two individuals lived in different parts of the county, had no known common contacts or source of exposure, and had not been in contact with each other. The preliminary epidemiology-based conclusion was subsequently confirmed by laboratory results. The causal agents for the two cases were different; *Streptococcus pneumoniae* caused the first case and Group B *Streptococcus* caused the second case.

Two deaths due to Meningitis in the county in two-week time period was a cause for concern among the public about a possible outbreak of the disease. To keep the public informed, alleviate unnecessary fear, and provide the most accurate situational analysis and educational information on the disease the Tuscarawas County Health Department released several press releases. Additionally, the Health Commissioner held a [press conference on December 28, 2017](#) to address the meningitis deaths. The immediate contacts of the cases were recommended to be up to date on the appropriate vaccines and to seek immediate medical care if they start showing any signs and symptoms.

The timely reporting of cases, immediate investigation by the Health Department, and accurate dissemination of the epidemiologic information to the public highlights the ongoing efforts of the Tuscarawas County Health Department to keep public safe from and informed about ongoing communicable disease risks.

WHAT IS MENINGITIS?

Meningitis is an inflammation or swelling of the membranes covering the brain and the spinal cord. Infection of the fluid surrounding the brain and the spinal cord by pathogens (bacteria, viruses, fungi, or parasites) can cause meningitis. Bacterial and viral meningitis are more common than fungal or parasitic meningitis. Bacterial meningitis is often more severe than viral meningitis and can be deadly.

Bacterial meningitis is a Class B reportable disease in Ohio meaning it must be reported by the close of next business day to the local public health department where the patient resides. Approximately 4,000 cases and 500 deaths due to bacterial meningitis are reported annually in the United States.

WHAT CAUSES BACTERIAL MENINGITIS?

Several types of bacteria can cause bacterial meningitis and age is an important risk factor for bacterial meningitis and the associated causal agent. The leading bacterial agents of meningitis in the United States include *Streptococcus*

pneumoniae; Group B *Streptococcus*; *Neisseria meningitidis*; *Haemophilus influenzae* type b; and *Listeria monocytogenes*.

Depending on the age of an individual, different bacteria pose different risk of meningitis.

- Newborns: Group B *Streptococcus*, *Streptococcus pneumoniae*, *Listeria monocytogenes*, *Escherichia coli*
- Babies and children: *Streptococcus pneumoniae*, *Neisseria meningitidis*, *Haemophilus influenzae* type b, Group B *Streptococcus*
- Teens and young adults: *Neisseria meningitidis*, *Streptococcus pneumoniae*
- Older adults: *Streptococcus pneumoniae*, *Neisseria meningitidis*, *Haemophilus influenzae* type b, Group B *Streptococcus*, *Listeria monocytogenes*

HOW IS IT SPREAD?

Generally, bacteria causing meningitis are spread by direct contact between person-to-person.

However, bacteria such as *Listeria monocytogenes* and *Escherichia coli* are also transmitted via food.

WHAT ARE THE SIGNS AND SYMPTOMS?

Signs and symptoms of bacterial meningitis often occur abruptly and include fever, chills, headache, and stiff neck. The progression of the disease is usually rapid. Individual symptoms can vary widely from patient to patient and can be non-specific. Early diagnosis and treatment are very important. Treatment reduces the risk of dying from meningitis to less than 15%.

RECOMMENDATIONS FOR PREVENTION?

Vaccination against several types of bacterial meningitis causing bacteria is the most effective tool we currently have for the prevention of the disease. Vaccines against three types of bacteria that can cause meningitis are currently available and recommended include

- Hib vaccine against *Haemophilus influenzae* type b
- Pneumococcal vaccines (PCV13 and PPSV23) *Streptococcus pneumoniae*
- Meningococcal vaccines (MenACWY and MenB) vaccines against *Neisseria meningitidis*

The [immunization schedules](#) for children, pre-teens and teens, and adults for these vaccines are available from the Centers for Disease Control and Prevention (CDC).

For other types of bacteria causing bacterial meningitis, precautions such as avoiding close contact with an individual with the disease, proper food hygiene, and hand hygiene are recommended. The CDC also recommends prophylactic antibiotic treatment for close contact of an individual with *Neisseria meningitidis* meningitis, and family members of someone with serious *Haemophilus influenzae* type b infection.

SOURCE: CDC. [Bacterial Meningitis](#)

COMMUNICABLE DISEASE STATISTICS 2017

Table 1. Communicable Disease †Count and Percentage Reported to Tuscarawas County Health Department, Ohio, 2017

Reportable Communicable Disease	Number of Cases	Percent of Total Cases
Campylobacteriosis	18	3.9
Chlamydia infection	221	47.7
Cryptosporidiosis	3	0.7
<i>E. coli</i> , Shiga toxin producing (O157:H7, not O157, unknown serotype), infection	4	0.9
Giardiasis	10	2.2
Gonococcal infection (Gonorrhoea)	25	5.4
Hepatitis A	3	0.7
Hepatitis B (including delta) – chronic	7	1.5
Hepatitis C – chronic	58	12.5
Influenza-associated hospitalizations	38	8.2
Lyme Disease	25	5.4
Meningitis – aseptic/viral	2	0.4
Meningitis – bacterial (not <i>Neisseria meningitidis</i>)	1	0.2
Mumps	1	0.2
Pertussis	11	2.4
Salmonellosis	10	2.2
Shigellosis	1	0.2
<i>Streptococcus pneumoniae</i> , Group A – invasive	4	0.9
<i>Streptococcus pneumoniae</i> – invasive antibiotic resistance unknown, or non-resistant	4	0.9
<i>Streptococcus pneumoniae</i> – invasive antibiotic resistant/intermediate	2	0.4
Tuberculosis	2	0.4
Varicella (Chickenpox)	9	2.0
West Nile virus disease or current infection	1	0.2
Yersiniosis	3	0.7
Total	463	100.0

†Includes 370 ‘confirmed’ cases, 47 ‘probable’ cases and 45 ‘suspected’ cases.

Table 2. Communicable Disease †Count and Percentage Reported to New Philadelphia City Health Department, Ohio, 2017

Reportable Communicable Disease	Number of Cases	Percent of Total Cases
Campylobacteriosis	2	1.6
Chlamydia infection	65	53.3
<i>E. coli</i> , Shiga toxin producing (O157:H7, not O157, unknown serotype), infection	2	1.6
Giardiasis	2	1.6
Gonococcal infection (Gonorrhea)	7	5.7
<i>Haemophilus influenzae</i> – invasive disease	1	0.8
Hepatitis B (including delta) – chronic	4	3.3
Hepatitis C – chronic	17	13.9
Influenza-associated hospitalizations	8	6.6
Lyme Disease	4	3.3
Meningitis – aseptic/viral	5	4.1
Pertussis	2	1.6
Salmonellosis	2	1.6
<i>Streptococcus pneumoniae</i> – invasive antibiotic resistance unknown, or non-resistant	1	0.8
Total	122	100.0

†Includes 101 ‘confirmed’ cases, 11 ‘probable’ cases and 10 ‘suspected’ cases.

Table 3. Total Communicable Disease †Count and Percentage, Tuscarawas County, Ohio, 2017

Reportable Communicable Disease	Number of Cases	Percent of Total Cases
Campylobacteriosis	20	3.4
Chlamydia infection	286	49.0
Cryptosporidiosis	3	0.5
<i>E. coli</i> , Shiga toxin producing (O157:H7, not O157, unknown serotype)	6	1.0
Giardiasis	12	2.1
Gonococcal infection (Gonorrhea)	32	5.5
Haemophilus influenzae- invasive disease	1	0.2
Hepatitis A	3	0.5
Hepatitis B (including delta) – chronic	11	1.9
Hepatitis C – chronic	75	12.8
Influenza-associated hospitalizations	46	7.9
Lyme Disease	29	5.0
Meningitis – aseptic/viral	7	1.2
Meningitis – bacterial (not <i>Neisseria meningitidis</i>)	1	0.2
Mumps	1	0.2
Pertussis	13	2.2
Salmonellosis	12	2.1
Shigellosis	1	0.2
Streptococcal infection– Group A invasive	4	0.7
<i>Streptococcus pneumoniae</i> infection – invasive antibiotic resistance unknown, or non-resistant	5	0.9
<i>Streptococcus pneumoniae</i> infection – invasive antibiotic resistant/intermediate	2	0.3
Tuberculosis	2	0.3
Varicella (Chickenpox)	9	1.5
West Nile virus disease or current infection	1	0.2
Yersiniosis	3	0.5
Total	584	100.0

†Includes 471 ‘confirmed’ cases, 58 ‘probable’ cases and 55 ‘suspected’ cases. Includes cases reported to both the Tuscarawas County and New Philadelphia City Health Departments.

Table 4. Communicable Disease Rates, Tuscarawas County, Ohio, 2015 - 2017

Reportable Communicable Disease	2015		2016		2017	
	No. of Cases [†]	Rate per 100,000 [*]	No. of Cases ^{††}	Rate per 100,000 ^{**}	No. of Cases ^{†††}	Rate per 100,000 ^{***}
Campylobacteriosis	16	17.2	14	15.1	20	21.6
Chlamydia infection	243	261.9	298	320.7	286	309.5
Cryptosporidiosis	2	2.2	11	11.8	3	3.2
<i>E. coli</i> , Shiga toxin producing (O157:H7, Not O157, Unknown Serotype), infection	3	3.2	3	3.2	6	6.5
Giardiasis	5	5.4	7	7.5	12	13.0
Gonococcal infection (Gonorrhea)	25	26.9	26	28.0	32	34.6
<i>Haemophilus influenzae</i> (invasive disease)	1	1.1	1	1.1	1	1.1
Hepatitis A	1	1.1	0	0	3	3.2
Hepatitis B (including delta) - acute	4	4.3	0	0	0	0
Hepatitis B (including delta) - chronic	12	12.9	10	10.8	11	11.9
Hepatitis C – acute	2	2.2	2	2.2	0	0
Hepatitis C – chronic	80	86.2	102	109.8	75	81.2
Influenza-associated hospitalizations	51	54.9	32	34.4	46	49.8
Lyme Disease	8	8.6	10	10.8	29	31.4
Meningitis – aseptic/viral	2	2.2	8	8.6	7	7.6
Meningitis – bacterial (not <i>Neisseria meningitidis</i>)	8	8.6	0	0	1	1.1
Mumps	1	1.1	1	1.1	1	1.1
Pertussis	3	3.2	12	12.9	13	14.1
Salmonellosis	19	20.5	17	18.3	12	13.0
Shigellosis	1	1.1	0	0	1	1.1
Streptococcal infection – Group A invasive	0	0	2	2.2	4	4.3
<i>Streptococcus pneumoniae</i> – invasive antibiotic resistance unknown or non-resistant	4	4.3	2	2.2	5	5.4
<i>Streptococcus pneumoniae</i> – invasive antibiotic resistant/intermediate- infection	1	1.1	1	1.1	2	2.2
Tuberculosis	2	2.2	1	1.1	2	2.2

Table 4. Communicable Disease Rates, Tuscarawas County, Ohio, 2015- 2017 (contd.)

Reportable Communicable Disease	2015		2016		2017	
	No. of Cases [†]	Rate per 100,000 [*]	No. of Cases ^{††}	Rate per 100,000 ^{**}	No. of Cases ^{†††}	Rate per 100,000 ^{***}
Varicella (Chickenpox)	7	7.5	3	3.2	9	9.7
West Nile virus disease or current infection	0	0	0	0	1	1.1
Vibriosis (not cholera)	0	0	1	1.1	0	0
Yersinosis	7	7.5	0	0	3	3.2
Total	517	557.2	579	624.0	585	633.0

[†]For 2015 rate calculations confirmed (n=463), probable (n=21), or suspected (n=33) cases of diseases reported to both the Tuscarawas County Health Department and the New Philadelphia City Health Department are included.

^{††}For 2016 rate calculations confirmed (n=471), probable (n=73), or suspected (n=35) cases of diseases reported to both the Tuscarawas County Health Department and the New Philadelphia City Health Department are included.

^{†††}For 2017 rate calculations confirmed (n=471), probable (n=58), or suspected (n=55) cases of diseases reported to both the Tuscarawas County Health Department and the New Philadelphia City Health Department are included.

*2015 rates based on 2014 county population estimates (92,788) (U.S. Census Bureau)

**2016 rates based on 2015 county population estimates (92,916) (U.S. Census Bureau)

***2017 rates based on 2016 county population estimates (92,420) ([U.S. Census Bureau](#))

Figure 1: Monthly Total Communicable Disease Case Count in Tuscarawas County, OH, 2017

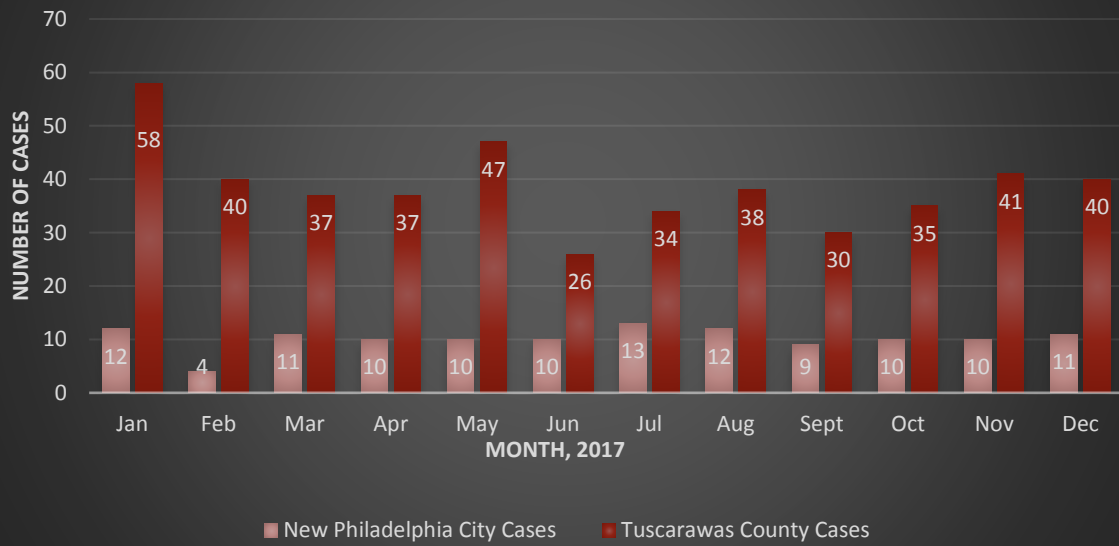


Figure 2: Monthly Influenza-Associated Hospitalizations, Tuscarawas County, OH, 2017



Figure 3: Monthly Chronic Hepatitis C Case Count, Tuscarawas County, OH, 2017

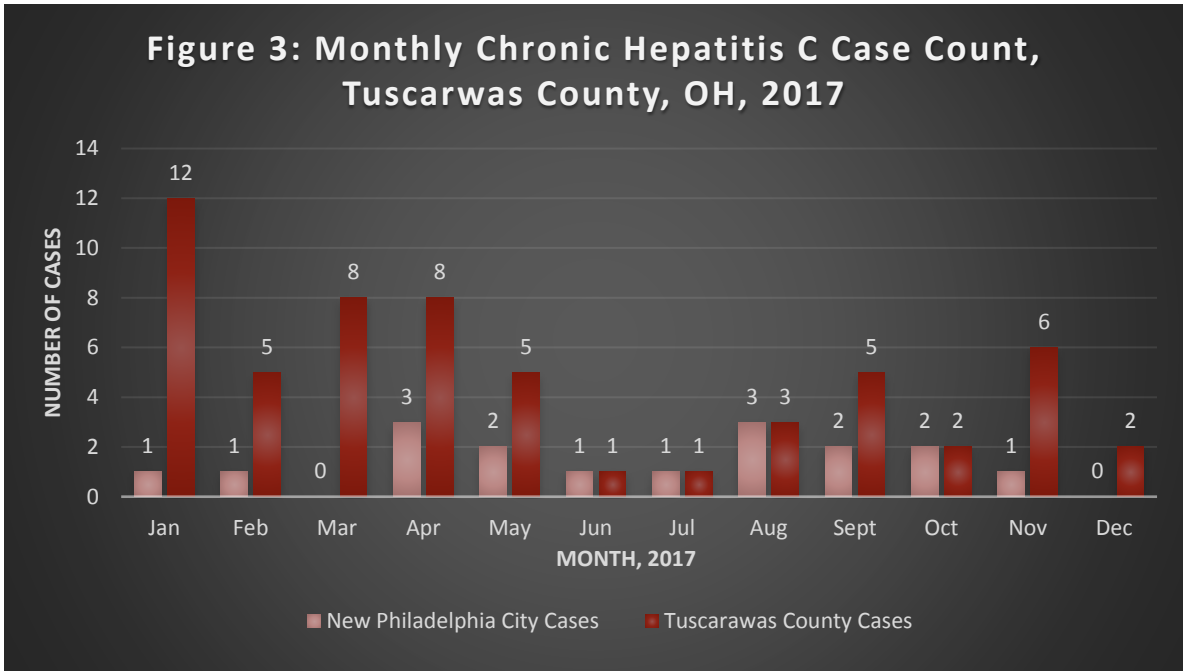


Figure 4: Distribution of Chronic Hepatitis C by Age Groups, Tuscarawas County, OH, 2017 (N=75)

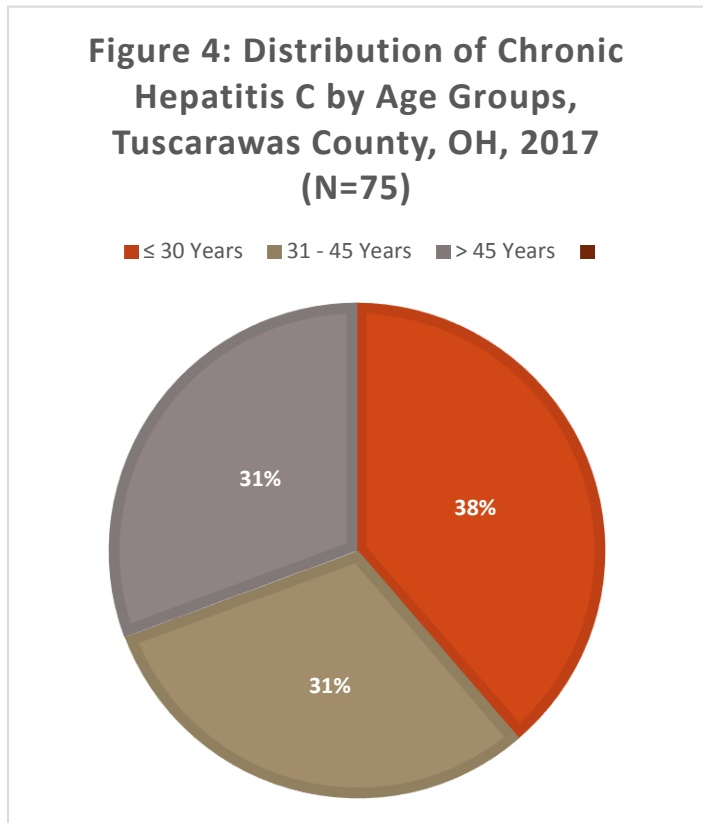


Figure 5: Monthly Gonorrhea Case Count, Tuscarawas County, OH

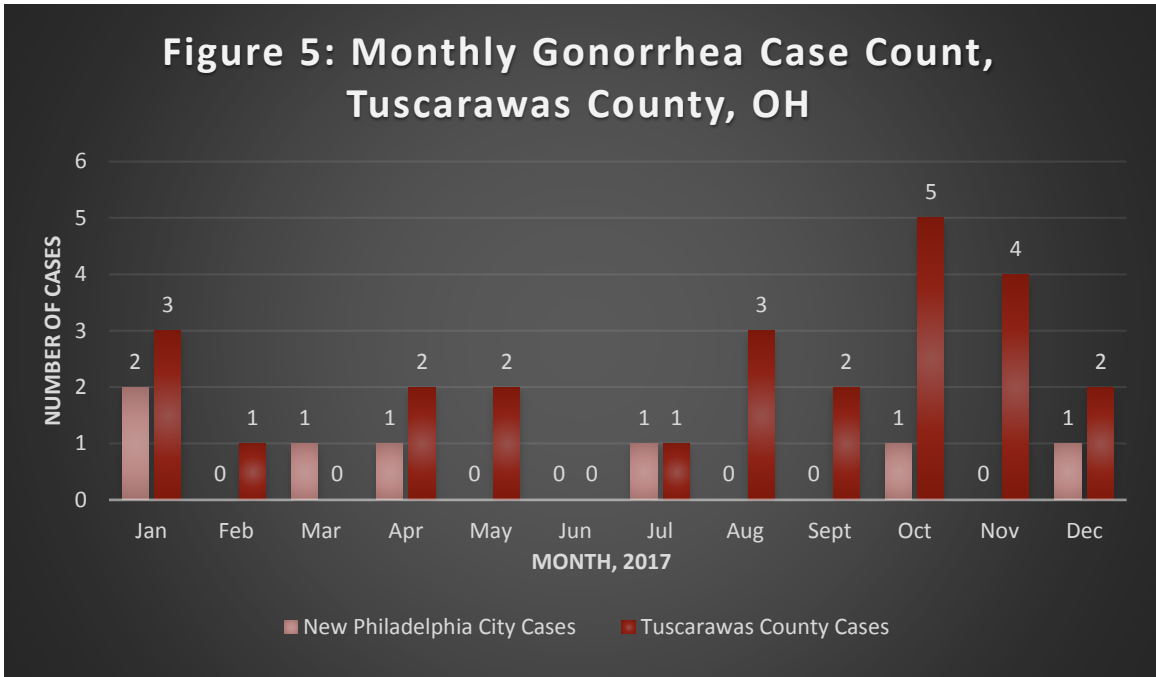


Figure 6: Distribution of Gonorrhea Cases by Age Groups, Tuscarawas County, OHIO, 2017 (N=32)

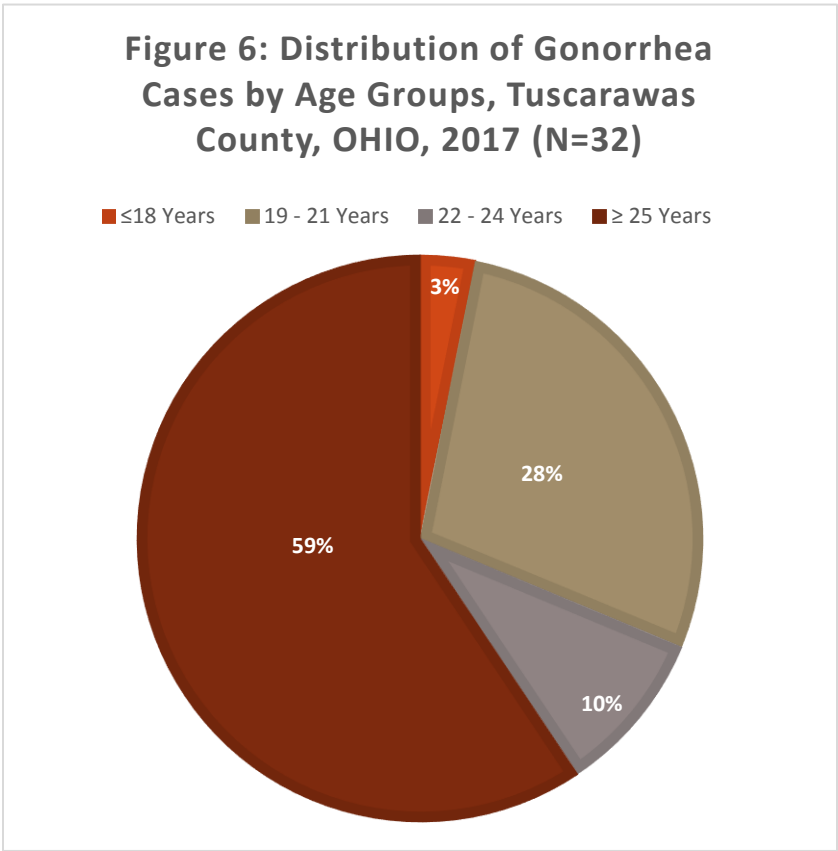


Figure 7: Monthly Chlamydia Case Count, Tuscarawas County, OH

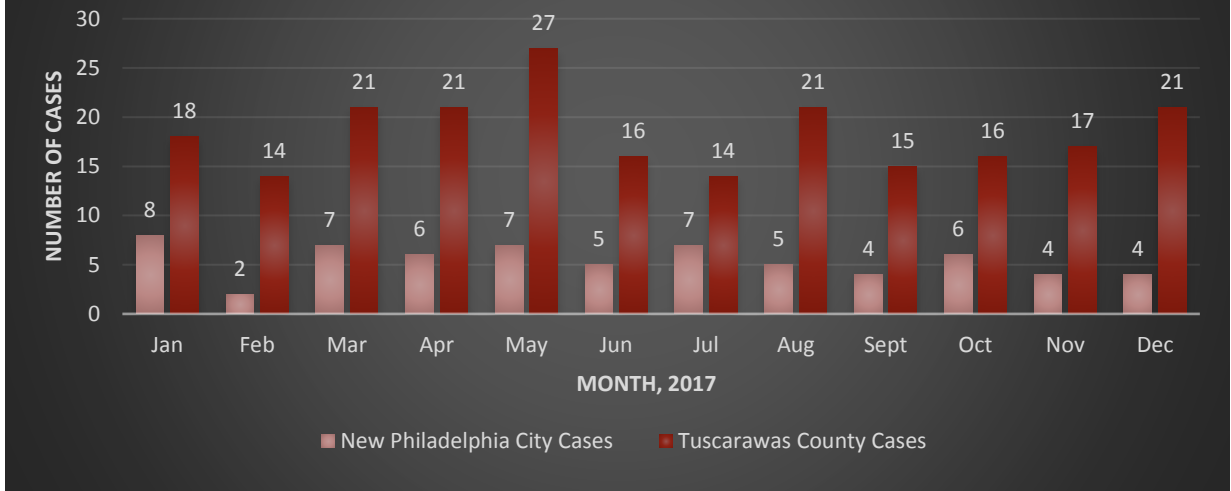
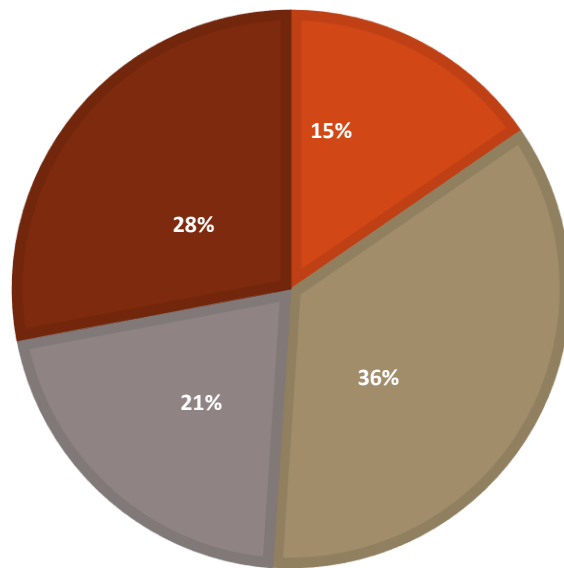


Figure 8: Distribution of Chlamydia Cases by Age Groups, Tuscarawas County, OH, 2017 (N = 286)

■ ≤ 18 Years
 ■ 19 - 21 Years
 ■ 22 - 24 Years
 ■ ≥ 25 Years



BASIC INFORMATION ON REPORTABLE COMMUNICABLE DISEASES OBSERVED IN TUSCARAWAS COUNTY IN 2017

Campylobacteriosis

Infectious Agent: *Campylobacter jejuni*, *Campylobacter Coli*.

Reservoir: Poultry, cattle, farm animals. Most raw poultry meat is contaminated.

Mode of Transmission: Ingestion of undercooked poultry, contaminated water or milk from an infected cow, improper hand sanitization after handling farm animals.

Incubation Period: 2-5 day, range 1-10 days.

Prevention Measures: Pasteurize all milk, boil/chlorinate all water. Thoroughly cook meat and sanitize utensils/cutting boards. Implement stringent hand washing practices.

Cryptosporidiosis

Infectious Agent: *Cryptosporidium parvum* – a coccidian protozoan parasite.

Reservoir: Humans, cattle, domesticated animals.

Mode of Transmission: Fecal-oral – including person-to-person, animal-to-person, waterborne and foodborne

Incubation Period: 7 days, range 1-12 days.

Prevention Measures: Personal hygiene education, sanitary handling of feces, stringent hand washing practices and boiling and filtering water.

E. coli Infection– enterohemorrhagic – Not O157:H7

Infectious Agent: The enterotoxins of most subtypes of *Escherichia Coli* except O157:H7.

Reservoir: Humans.

Mode of Transmission: Contaminated food and, less likely, water.

Incubation Period: As short as 10-12 hours, usually 24-72 hours.

Prevention Measures: Prophylactic antibiotics if traveling to an area where bacteria are endemic. Else, implement universal precautions to minimize fecal-oral food contamination.

Giardiasis

Infectious Agent: *Giardia lamblia*, *Giardia intestinalis*, *Giardia duodenalis*, a flagellate protozoan parasite.

Reservoir: Humans, possibly Beaver and other domesticated animals.

Mode of Transmission: Fecal-oral. Hand-to-mouth transfer; most common at day care centers; also, anal intercourse, contamination of foodstuffs and unfiltered stream and lake waters (given human or animal fecal contamination).

Incubation Period: 3 to >25 days, median 7-10 days.

Prevention Measures: Protect public water supplies against contamination, implement emergency boiling procedures, and promote stringent hand washing procedures.

Gonococcal Infection

Infectious Agent: *Neisseria gonorrhoeae*

Reservoir: Humans.

Mode of Transmission: Sexual Contact (an indicator of sexual abuse in children).

Incubation Period: 2-7 days.

Prevention Measures: Safe sex practices, monogamy or abstinence.

Haemophilus influenzae Disease

Infectious Agent: *Haemophilus influenzae*

Reservoir: Humans (asymptomatic carriers).

Mode of Transmission: Person-to-person, direct contact or inhalation of droplets of respiratory tract secretions containing the bacteria.

Incubation Period: Unknown.

Prevention Measures: Vaccine against serotype B available, else, universal precautions and hand washing when in contact with infected respiratory excretions.

Hepatitis A

Infectious Agent: Hepatitis A Virus (HAV), a member of the family Picornaviridae.

Reservoir: Humans, rarely primates.

Mode of Transmission: Fecal-oral, person-to-person. Infected foodstuffs and water.

Incubation Period: 28-30 days, range 15-50 days.

Prevention Measures: Vaccination (with Immunoglobulin/Antibody supplement if needed), education on sanitary practices, thoroughly cook all shellfish and boil all water where disease is endemic.

Hepatitis B (including Delta) – Chronic

Infectious Agent: Hepatitis B Virus (HBV) and Hepatitis Delta Virus (HDV) – Requires existing HBV infection to be virulent.

Reservoir: Humans

Mode of Transmission: Sexual activities, IV drug use, close contact with: blood, saliva, semen, vaginal secretions, cerebrospinal fluid, and amniotic, synovial, peritoneal and pericardial fluids.

Prevention Measures: Immunization of all children, screening of donated blood products. Safe sex practices and eliminate recreational drug use.

Hepatitis C – Acute (chronic cases are prevalent)

Infectious Agent: Hepatitis C Virus (HCV).

Reservoir: Humans.

Mode of Transmission: Usually by skin puncture (needlestick, cut, abrasion, etc). No evidence for oral route.

Incubation Period: 6-9 weeks. Chronic infections may persist up to 20 years before onset of cirrhosis or hepatoma.

Prevention Measures: See HBV prevention.

Influenza

Infectious Agent: Multiple (ex: H1N1, H3N2)

Reservoir: Humans, Birds, Swine.

Mode of Transmission: Airborne spread of droplets or direct contact with mucous membranes of infected individual.

Incubation Period: 1-3 days.

Prevention Measures: Education on sanitization, annual vaccination, universal precautions.

Lyme Disease

Infectious Agent: *Borrelia burgdorferi*, *Borrelia garinii*, *Barrelia afzelii*

Reservoir: Deer Ticks

Mode of Transmission: Tick bite (Experimental evidence shows ticks attached for less than 24 hours may not pass on the disease.)

Incubation Period: 7-10 days.

Prevention Measures: Education on tick habitat, prevention and removal. Avoidance of tick infested areas, application of tick repellent and use of long shirts and pants.

Mumps

Infectious Agent: Mumps Virus, family Paramyxoviridae genus *Rubulavirus*.

Reservoir: Humans.

Mode of Transmission: Airborne, droplet or direct contact with saliva of infected.

Incubation Period: 16-18 days.

Prevention Measures: Mumps vaccination as part of standard MMR.

Mycobacterial Disease – other than Tuberculosis

Disease/Infectious Agent:

- Cervical Lymphadenitis – *Mycobacterium avium*, *M. scrofulaceum*, *M. kansasii*.
- Skin Ulcers – *M. ulcerans*, *M. marinum*.
- Nosocomial (hospital acquired) disease – *M. fortuitum*, *M. chelonae*, *M. abscessus*
- Crohn disease – *M. paratuberculosis*

Reservoir: Contaminated soil, milk, water; Infected Humans.

Mode of Transmission: Contact with ulcerated skin lesions or sputum. (Not common)

Incubation Period: Varies by agent.

Prevention Measures: Avoid the ill if immunocompromised. Take prophylactic antibiotics before undergoing surgery.

Pertussis

Infectious Agent: *Bordetella Pertussis*.

Reservoir: Humans.

Mode of Transmission: Airborne, droplets.

Incubation Period: 9-10 days.

Prevention Measures: Pertussis vaccination as part of standard DPT.

Pneumococcal Disease (*Streptococcus pneumoniae* infection)

Infectious Agent: *Streptococcus pneumoniae* (*pneumococcus*)

Reservoir: Humans.

Mode of Transmission: Droplet spread, oral contact, direct contact with respiratory discharges.

Incubation Period: 1-3 days, not well determined.

Prevention Measures: Avoid crowding, vaccinate, encourage prophylactic ingestion of xylitol, a sugar that inhibits pneumococcal growth.

Note: Some strains, such as MRSA are resistant to antibacterial medication. As such, strict sanitation practices (wiping down most surfaces with antiseptic chemicals) should be implemented as such infections frequently involve hospitalization.

Salmonellosis

Infectious Agent: *Salmonella typhi*, *S. enterica*.

Reservoir: Wild and domestic animals.

Mode of Transmission: Ingestion of contaminated animal products (meat, dairy) or of foodstuffs cross-contaminated (ex: lettuce, tomatoes prepared alongside contaminated meat or dairy).

Incubation Period: 12-36 Hours.

Prevention Measures: Educate food handlers/preparers on sanitary practices, thoroughly cook all foods to specified temperatures, and mandate irradiation of at risk foods (eggs, milk).

Shigellosis

Infectious Agent: *Shigella dysenteriae*, *S. flexneri*, *S. boydii*, *S. Sonnei*.

Reservoir: Humans, primates.

Mode of Transmission: Direct or indirect fecal-oral contact by infected individual. Most commonly, poor hand washing followed by food preparation. Also flies may land on an infected latrine and subsequently on an exposed food.

Incubation Period: 1-3 days.

Prevention Measures: Educate on proper hand-washing techniques, implement fly-proof latrines, pasteurize, refrigerate and thoroughly cook all foods. Enforce quality control measures in food preparation (restaurants and industry).

Tuberculosis

Infectious Agent: *Mycobacterium tuberculosis*.

Reservoir: Humans. Less frequently, cattle, swine and other mammals.

Mode of Transmission: Airborne, droplet. (Coughing, sneezing, singing).

Incubation Period: 2-10 weeks.

Prevention Measures: Identify cases, have adequate x-ray facilities for rapid preliminary diagnosis, educate public on awareness and prevention measures.

Varicella (Chickenpox)

Infectious Agent: Human α -Herpesvirus 3 (Varicella-Zoster Virus, VZV).

Reservoir: Humans.

Mode of Transmission: Direct contact, airborne, droplets from spread of vesicle fluid or secretions of the respiratory tract. Indirect contact, surfaces or fabrics contaminated with discharges from vesicles or membranes of the infected.

Incubation Period: 2-3 weeks.

Prevention Measures: Vaccination of children, isolate infected children.

West Nile virus Disease

Infectious Agent: West Nile virus

Reservoir: Birds

Mode of Transmission: Bite of mosquito that has been infected from a bird; blood transfusion and organ donations; mother-to-infant.

Incubation Period: 3-7 days.

Prevention Measures: Preventing standing water near the home, using insect repellent, window screens and mosquito netting, and avoiding areas such as woods and stagnant ponds (especially from dusk until dawn).

Vibriosis

Infectious Agent: *Vibrrio species*—a bacteria

Reservoir: Environment—coastal waters

Mode of Transmission: consumption of raw or undercooked seafood or exposure of a wound to seawater

Incubation Period: 24 hours

Prevention Measures: Avoid consumption of raw seafood; avoid exposure to brackish water, especially if compromised skin, i.e. skin with wounds, cuts, or scrapes

Yersiniosis

Infectious Agent: *Yersinia pseudotuberculosis*, *Y. enterocolitica*.

Reservoir: Swine, rodents

Mode of Transmission: Fecal-oral transmission through contaminated food or water. Consumption of raw pork.

Incubation Period: 3-7 days.

Prevention Measures: Prepare foods in a sanitary manner, protect and sanitize the water supply, control the rodent population, wash hands thoroughly after caring for or slaughtering animals.

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