

# Summary of Selected Reportable Diseases

## 2008-2017



**Bureau of Assessment, Statistics & Epidemiology**

**Allegheny County Health Department**

542 Fourth Avenue

Pittsburgh, PA 15219

**412-687-2243**

[www.achd.net](http://www.achd.net)



## Table of Contents

Table of Contents .....	2
Introduction.....	4
Methodology .....	5
Vaccine preventable diseases.....	6
Influenza .....	6
Measles, Mumps, Rubella.....	9
Pertussis (whooping cough) .....	9
Invasive meningococcal disease .....	10
Invasive pneumococcal disease.....	11
Invasive Haemophilus influenzae .....	12
Varicella (chickenpox).....	13
Hepatitis A .....	14
Acute hepatitis B infections.....	15
Chronic hepatitis B infections.....	16
Perinatal hepatitis B .....	17
Enteric diseases .....	17
Salmonellosis .....	17
Typhoid fever.....	19
Shigellosis .....	19
Campylobacteriosis.....	20
Shiga-toxin producing <i>E.coli</i> .....	22
Toxoplasmosis .....	23
Listeriosis .....	23
Cryptosporidiosis .....	24
Giardiasis .....	25
Amebiasis.....	27
Infant botulism .....	27
Respiratory diseases.....	27

Tuberculosis.....	27
Legionellosis .....	28
Vectorborne.....	30
Lyme disease.....	30
Zika virus disease .....	32
West Nile virus disease.....	32
Malaria.....	32
Dengue.....	33
Chikungunya .....	33
Other diseases .....	34
Hepatitis C.....	34
Invasive Group A Streptococcus infection.....	36
Guillain-Barre Syndrome .....	37
Creutzfeldt-Jakob Disease (CJD) .....	38
Outbreaks .....	39
References .....	40
<b>Appendix A: Number of cases reported by disease, Allegheny County, 2008-2017 .....</b>	<b>41</b>
Appendix B. Comparison of reported incidence rates per 100,000 of selected notifiable diseases - United States, Pennsylvania, and Allegheny County, 2017.....	42
Appendix C: List of reportable diseases, Allegheny County .....	43

## Introduction

This summary describes infectious conditions reported to the Allegheny County Health Department (ACHD) from 2008 through 2017. The diseases highlighted here are those most commonly reported and those of greatest public health importance, with the exception of HIV and other sexually transmitted diseases, which are described in a separate report:

[https://www.alleghenycounty.us/uploadedFiles/Allegheny\\_Home/Health\\_Department/Health\\_Services/STD\\_and\\_HIV-AIDS\\_Clinic/2017-STD-Report-Feb-11-2019.pdf](https://www.alleghenycounty.us/uploadedFiles/Allegheny_Home/Health_Department/Health_Services/STD_and_HIV-AIDS_Clinic/2017-STD-Report-Feb-11-2019.pdf)

Communicable diseases must be reported to the local health department as specified in Pennsylvania's Disease Control and Prevention Act of 1955. The Allegheny County Board of Health periodically revises the list of notifiable diseases, which now includes approximately 70 infectious conditions. Public health officials use reports to identify disease clusters, determine at-risk populations, assess burden of disease, monitor trends, and recommend measures to prevent disease transmission.

Cases are reported electronically through Pennsylvania's version of the National Electronic Disease Surveillance System (PA-NEDSS) by health care providers and laboratory staff. We gratefully acknowledge their contribution to identifying, treating, and preventing infectious diseases in Allegheny County.

It is important to realize that reported cases do not reflect the true burden for many conditions, given that laboratory results are often needed for reporting and many people may not seek care or get tested. Health care providers may test for or report some conditions more often than others. Nonetheless, disease reports are helpful for monitoring trends over time and identifying groups at risk.

Detailed information on disease characteristics or prevention measures is not provided in this report. Instead, a hyperlink to a fact sheet on the website of either ACHD or the Centers for Disease Control and Prevention (CDC) is provided so that with one click the reader will be able to access pertinent clinical, risk factor, and prevention information.

## Methodology

ACHD staff investigated cases of reportable conditions in Allegheny County residents by contacting health care providers and patients. After clinical and laboratory findings were verified, cases were classified as “confirmed,” “probable,” “suspected,” or “not a case” using case definitions developed by the Council of State and Territorial Epidemiologists (CSTE).<sup>1</sup> Surveillance case definitions do not always match the criteria for clinical diagnosis. Case definitions can be found on the CDC’s National Notifiable Diseases Surveillance System website at <https://wwwn.cdc.gov/nndss/case-definitions.html>

Case counts and age-specific rates for Allegheny County residents are presented. Age-specific rates for the 10-year period (2008-2017) were calculated using reported case counts for the numerator and the US Census 2010 population for Allegheny County times 10 for the denominator. Crude overall incidence rates for 2017 were calculated using the 2017 case count as the numerator and the 2017 US Census population estimate for Allegheny County as the denominator.

Data from 2008 through 2017 are presented for most diseases. For influenza, data pertain to reported cases from October 1, 2017, through September 29, 2018, and represent the 2017-2018 influenza season.

Data sources include PA-NEDSS for case reports, Health Monitoring Systems’ EpiCenter data for influenza-like illness in emergency departments, the Pennsylvania Department of Health (PADOH) EDDIE website for incidence rates of selected diseases in Pennsylvania in 2017, and the CDC’s National Notifiable Infectious Diseases and Conditions annual data for 2017 for US incidence rates of selected diseases.<sup>2-5</sup>

## Vaccine preventable diseases

### Influenza

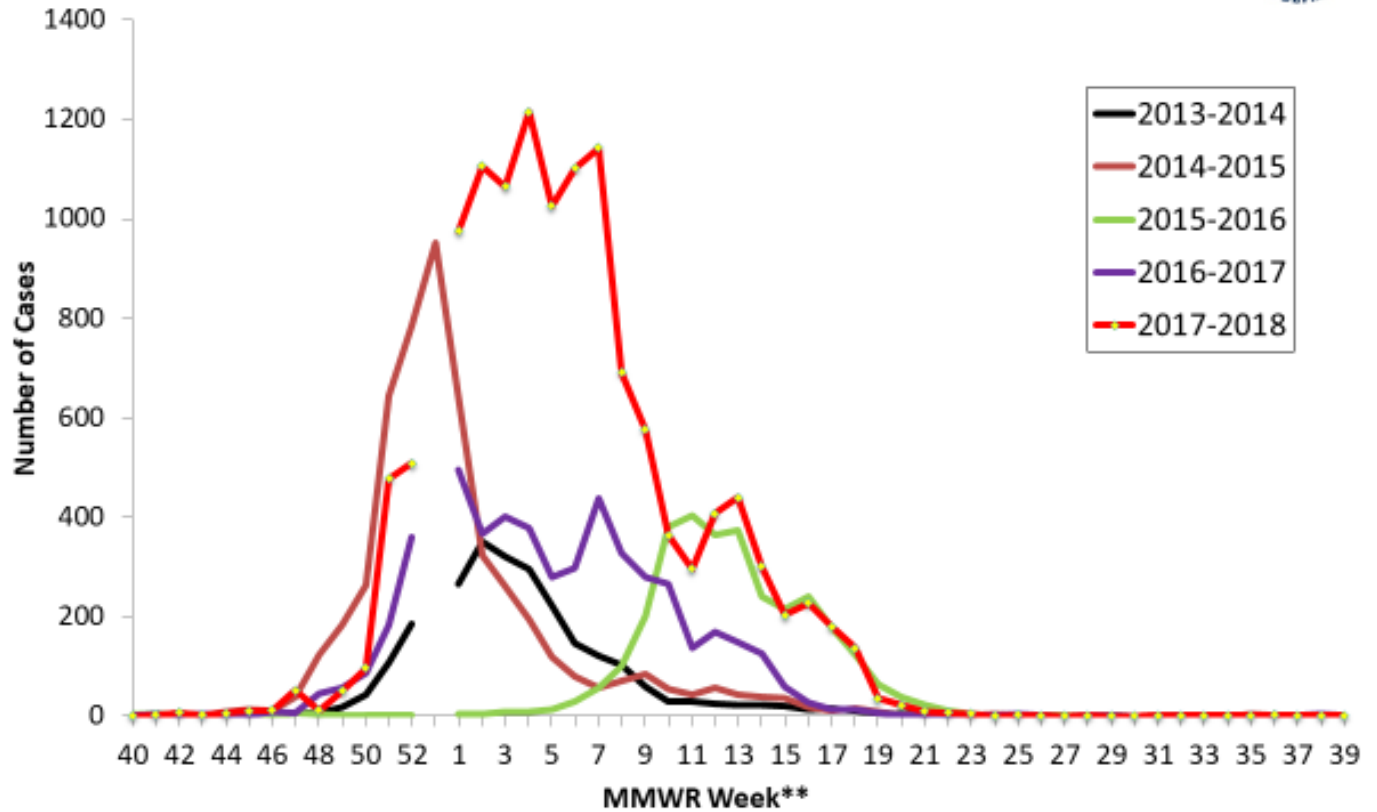
Influenza, a contagious respiratory illness, was the most commonly reported infectious disease in the county in 2017. The annual number of reported influenza cases varies dramatically from year to year, depending on the type of circulating virus, the vaccine efficacy and vaccine coverage (Figure 1). During the 2017-2018 influenza season, ACHD received reports of 12,793 laboratory confirmed cases, 803 influenza-related hospitalizations, and 31 influenza-related deaths. Most cases were reported in January and February of 2018 (Figures 1 and 2). The majority (74%) of the reported laboratory-confirmed cases with known type were type A (Figure 2).

Because many persons with influenza are not tested and are not reported, ACHD also monitors influenza activity using emergency room data for “influenza-like illness” (ILI), defined as fever  $\geq$  100°F plus cough or sore throat. Figure 3 shows the percentage of persons seen in Allegheny County hospital emergency rooms with chief complaint of ILI symptoms from October 2017 through September 2018.

CDC recommends annual influenza vaccination for all persons  $\geq$ 6 months. According to the Allegheny County Health Survey conducted in 2015-2016, only 48% of adults  $\geq$ 18 years reported having an influenza vaccination within the past 12 months.<sup>6</sup> According to the PADOH survey of child care centers, only 48% of child care attendees aged 36-59 months received an influenza vaccine.<sup>7</sup> No local surveys assess vaccination coverage in school-age children.

Figure 1

**Lab-Confirmed\* Cases of Influenza in Allegheny County  
2013-14 Flu Season to 2017-18 Flu Season  
October 1, 2017 – September 29, 2018**

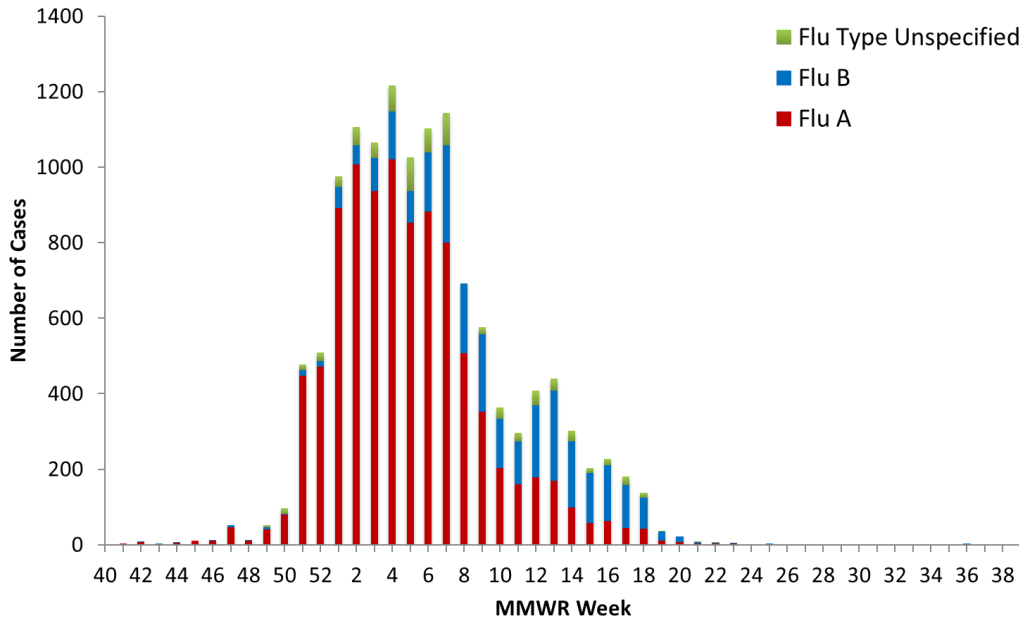


\*Lab-confirmed is a positive antigen, culture, or PCR test  
Source: PA-NEDSS

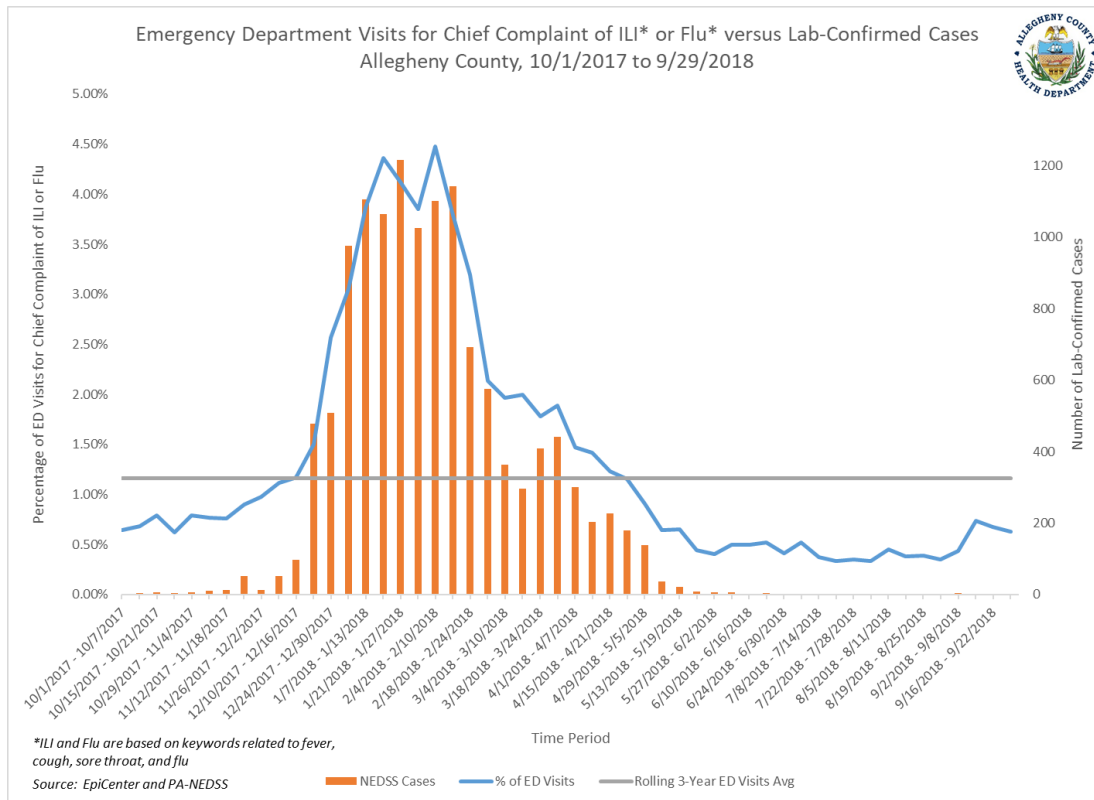
\*\*MMWR Week does not fall on the same dates every year. MMWR weeks last from Sunday through Saturday and usually range from 1 to 52. Depending on how the days of the week fall across years, it is possible to occasionally have a Week 53

**Figure 2**

**Lab-Confirmed\* Cases of Influenza in Allegheny County by Flu Type  
October 1, 2017 – September 29, 2018**



**Figure 3**



Source: EpiCenter, Health Monitoring Systems<sup>3</sup>



## **Measles, Mumps, Rubella**

**Measles**, a highly infectious respiratory illness characterized by high fever and rash, was eliminated from the US in 2000. Since then, clusters stemming from imported cases have appeared from time to time. From 2008 through 2017, six confirmed cases of measles were reported to ACHD, including two in 2014, three in 2009, and one in 2008.

**Mumps**, also now a rare respiratory illness, is characterized by swelling of the salivary glands. Nineteen cases of confirmed or probable mumps were reported from 2008 through 2017, including two in 2017 which were unrelated. Nine cases were reported in 2014, all associated with a sports team outbreak.

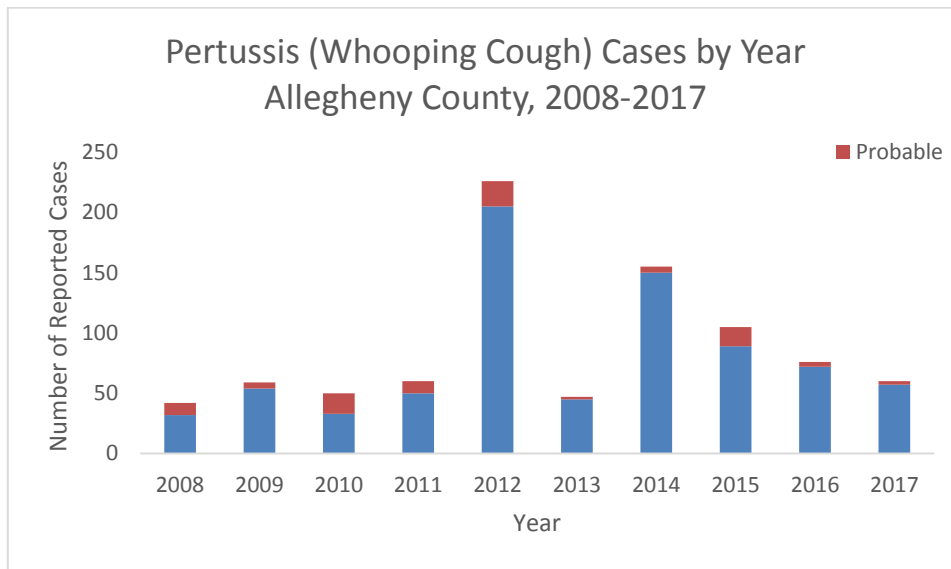
No cases of **rubella** have been reported in the past 10 years. Rubella was eliminated in the US in 2004.

## **Pertussis (whooping cough)**

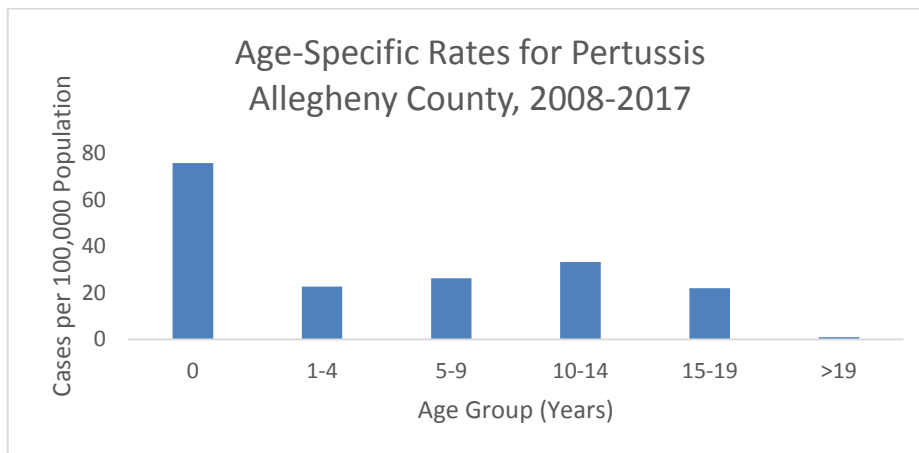
**Pertussis**, a bacterial infection commonly known as whooping cough, is characterized by violent or prolonged coughing. A resurgence of pertussis occurred locally and nationally in 2012. Among Allegheny County residents, 226 cases were reported that year (Figure 4). Allegheny County saw another resurgence in 2014, with 155 cases reported. The case count decreased to 105 in 2015, 76 in 2016, and 60 in 2017.

The incidence of pertussis in 2008-2017 in Allegheny County was highest in infants < 1 year of age (Figure 5). Pertussis is most serious for this age group, given their lack of full protection from vaccination. During the 10-year period, 96 cases in infants <1 year of age were reported, of whom one (1%) died; in 2017, 10 infants < 1 year of age were reported, the highest number of infants since 2012.

**Figure 4**



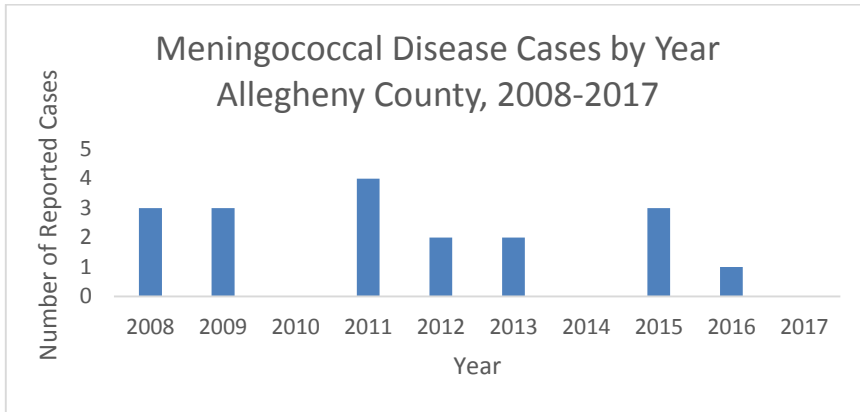
**Figure 5**



### **Invasive meningococcal disease**

*Neisseria meningitidis*, also called meningococcus, can cause meningitis and bloodstream infections. During 2008-2017, 18 cases of [invasive meningococcal disease](#) were reported in Allegheny County (Figure 6). All age groups have been affected. All cases were hospitalized and 5 (28%) died. Serogroup information was available for 9 (50%) of the reported cases; documented serogroups included B (4), Y (3), C (1), and W135 (1). The vaccine routinely given to adolescents and certain high risk groups protects against serogroups A, Y, C, and W135 but not B. Two newly licensed vaccines protect against serogroup B but routine vaccination for all adolescents is not currently recommended.

**Figure 6**

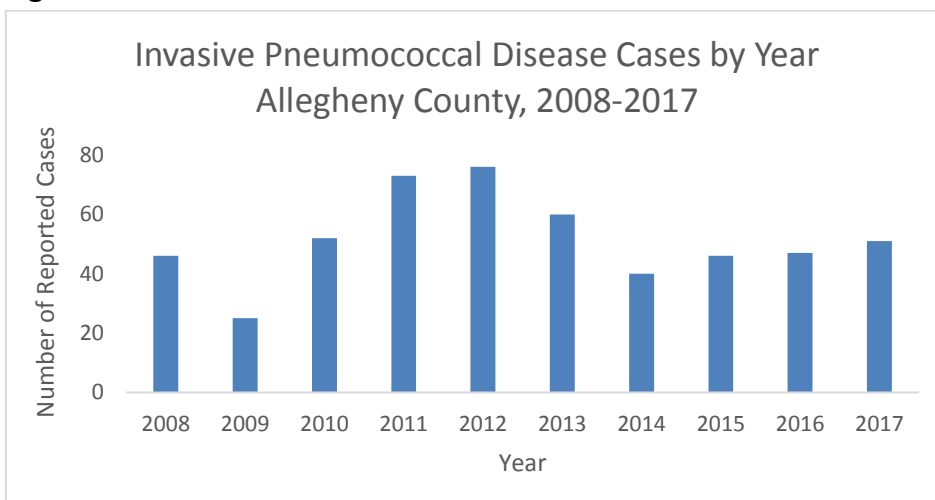


### **Invasive pneumococcal disease**

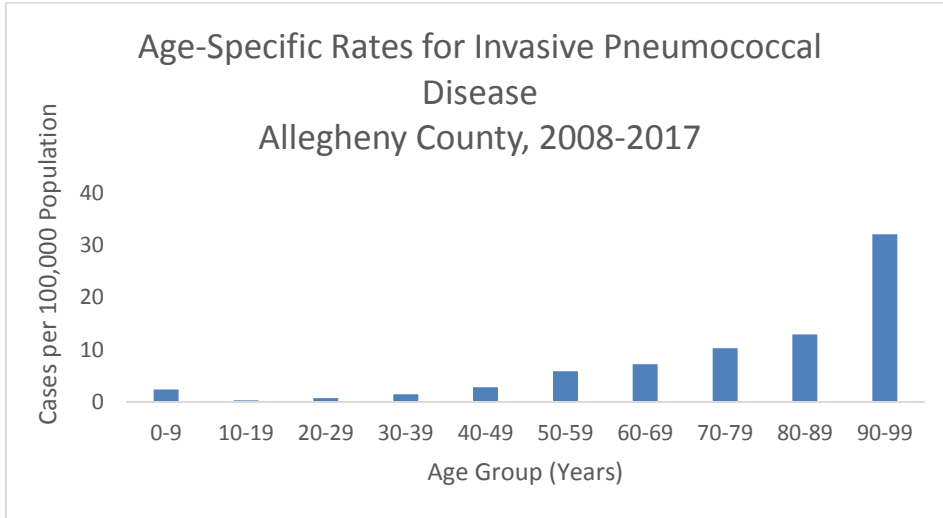
[Invasive pneumococcal disease](#) includes meningitis and bacteremia caused by the bacterium *Streptococcus pneumoniae*. *S. pneumoniae* also causes pneumonia, but pneumonia alone is not considered invasive for the purposes of public health surveillance. The incidence of invasive pneumococcal disease declined after a peak of 76 cases in 2012 (Figure 7). In 2017, 51 cases were reported. Most (90%) cases were diagnosed by positive blood culture. Of the cases reported in 2008-2017 with available hospitalization data, 98% were hospitalized and 9% died.

The incidence rate for invasive disease was highest in the elderly in 2008-2017 (Figure 8). Pneumococcal vaccination is recommended for all persons  $\geq 65$  years of age. Data from the Allegheny County Health Survey in 2015-2016 indicate that 81% of county residents  $\geq 65$  years reported ever having had a pneumonia vaccination. Since 2015, two different pneumococcal vaccines have been recommended for all adults  $\geq 65$  years but it is unknown how many persons in this age group in Allegheny County have received both.

**Figure 7**



**Figure 8**

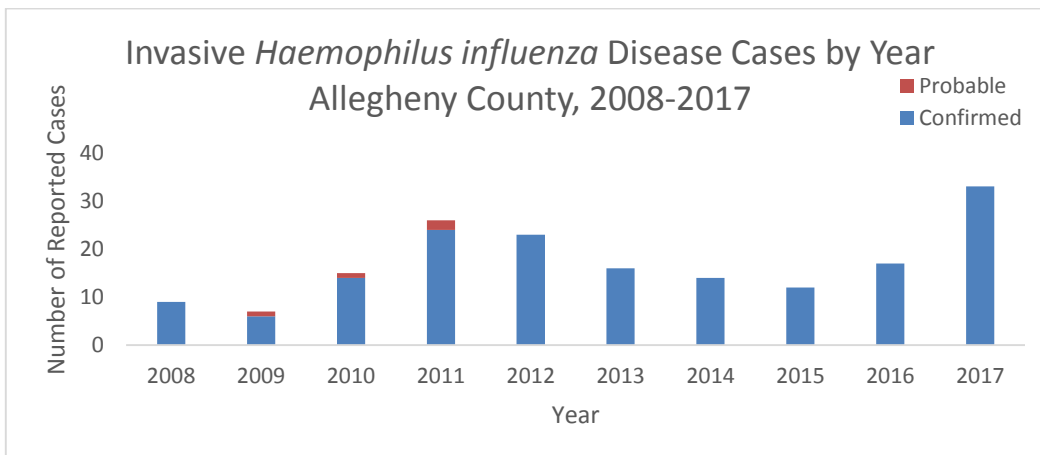


### Invasive *Haemophilus influenzae*

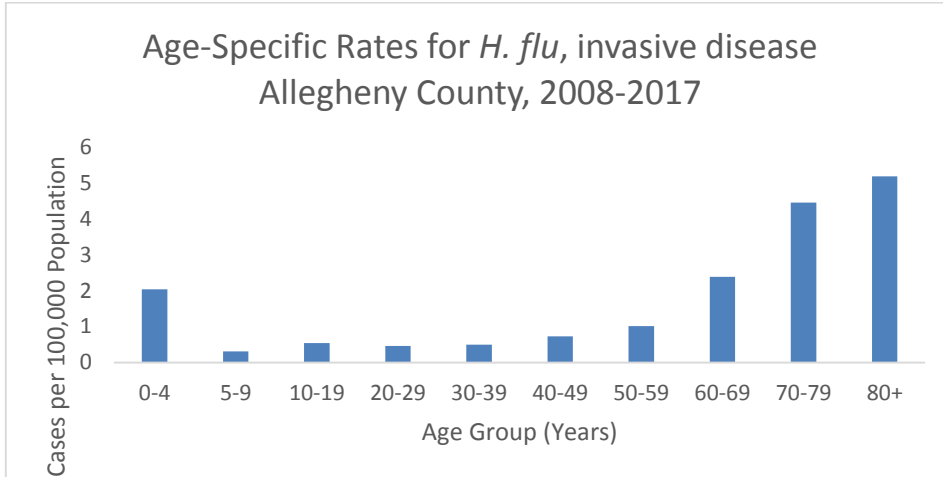
*Haemophilus influenzae* is a bacterium that may cause pneumonia, bacteremia, meningitis, epiglottitis, or other conditions. A confirmed case of invasive disease requires isolation of the organism from a normally sterile site such as blood or spinal fluid. The *Haemophilus influenzae* b (Hib) vaccine series has been recommended for routine use in children 2 months and older since 1991. Since then, the number of reported Hib cases in children has plummeted nationwide.

A total of 172 cases, 17 cases per year on average, were reported in Allegheny County in 2008-2017 (Figure 9). More females (71% of cases) than males were affected. Approximately 95% of reported cases with available hospitalization data were admitted; 16 died. Age groups most affected were those  $\geq 60$  years and  $< 5$  years (Figure 10). About a third (61 of 172) were nontypeable; of the rest, 13 were serotype f, 2 were e, 2 were b, and 87 were type unknown.

**Figure 9**



**Figure 10**

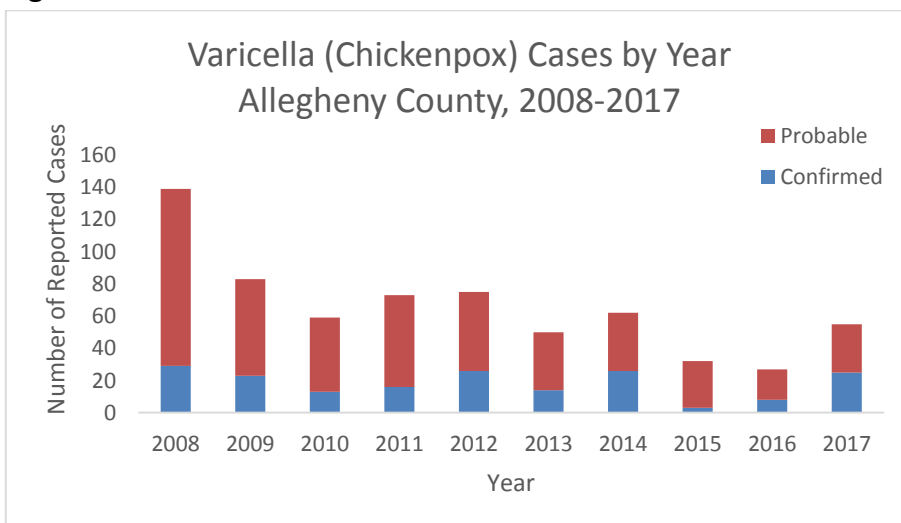


### Varicella (chickenpox)

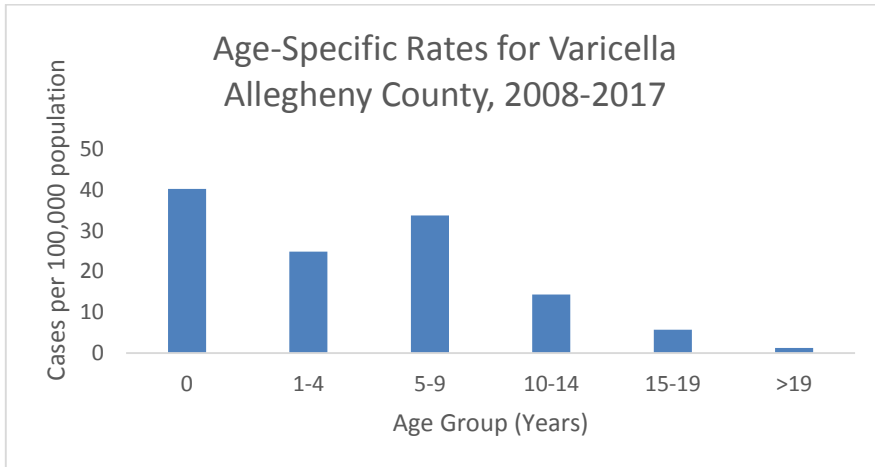
The varicella vaccine was introduced into the routine pediatric vaccine schedule in 1995, causing the number of cases of [varicella](#), more commonly known as chickenpox, to decrease dramatically. When a second dose of vaccine was added to the schedule in 2006, cases decreased further, both nationally and locally (Figure 11).

In Allegheny County, 655 confirmed and probable cases were reported in 2008-2017. The average number of cases reported in 2013-2017 (86 per year) was lower than the average number reported in 2008-2012 (46 per year). The incidence rate of reported cases was highest in infants <12 months, followed by the 5-9 year age group (Figure 12). Of the reported cases, 20 (3%) were hospitalized. Over half (59%) had a known history of vaccination.

**Figure 11**



**Figure 12**



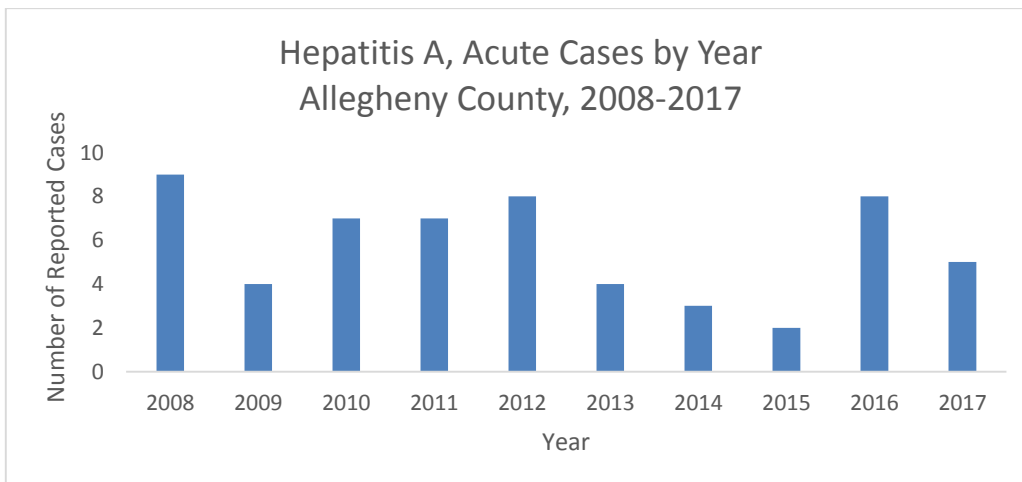
### Hepatitis A

The [hepatitis A](#) virus is transmitted via the fecal-oral route and causes inflammation of the liver. Fewer than 10 hepatitis A cases per year were reported in Allegheny County in 2008-2017 (Figure 13). Five cases were reported in 2017. Of the cases reported in 2008-2017 with known hospitalization status, 55% were admitted.

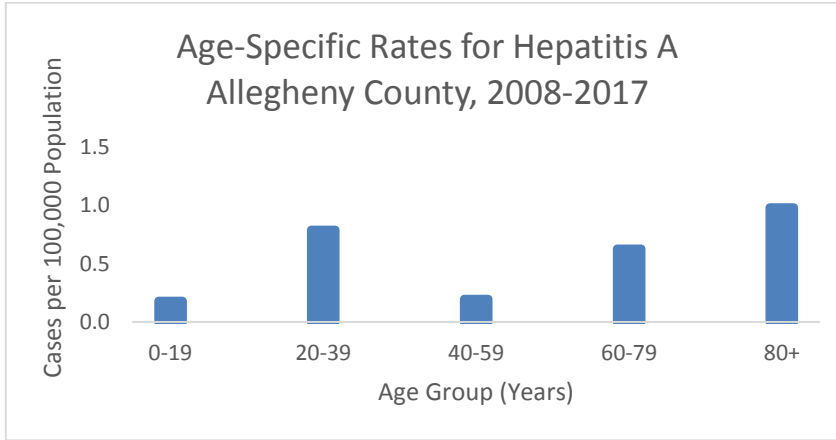
No cases were reported in children  $\leq 9$  years of age. Infections in children are often asymptomatic. In addition, a vaccine for hepatitis A has been part of the routine childhood vaccination schedule since 2006. The highest incidence was in the 20-39 and  $\geq 80$  year age groups (Figure 14).

Of the 57 cases reported in 2007-2016, 15 (26%) reported foreign travel, 7 (12%) reported eating raw shellfish, and 3 (5%) reported contact with a hepatitis A case.

**Figure 13**



**Figure 14**

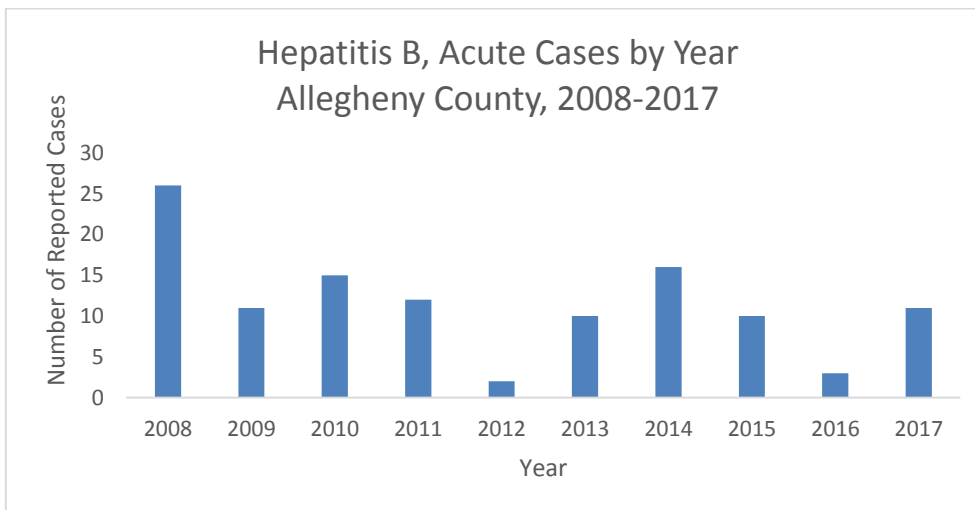


### Acute hepatitis B infections

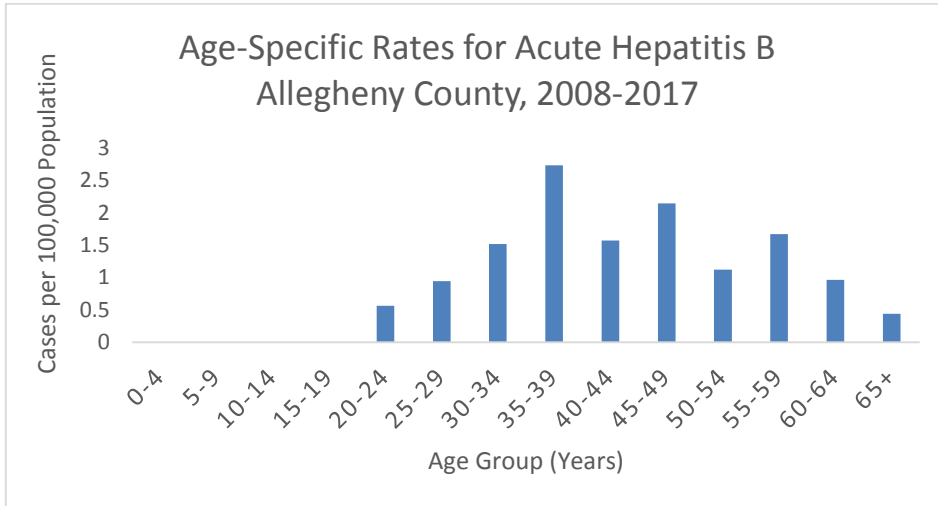
The [hepatitis B](#) virus is found in blood and other body fluids. The number of reported acute hepatitis B infections reported fluctuated in 2008-2017 with a total of 116 cases reported during this time period; 11 confirmed cases were reported in 2017 (Figure 15). During 2008-2017, rates of acute infection were highest among those 30 through 49 years of age (Figure 16). A higher percentage of cases were male (63%) than female. Over half (55%) of cases with data on hospitalization were admitted; none died.

Risk factors reported by acute hepatitis B cases include injection drug use (16%), dental work or oral surgery (12%), contact with a hepatitis B case (10%), needle stick (8%), tattoos (5%), and blood transfusion (3%). Of the 116 cases reported in 2008-2017, 78 reported on their number of sex partners; of these, 22 (28%) reported multiple partners.

**Figure 15**



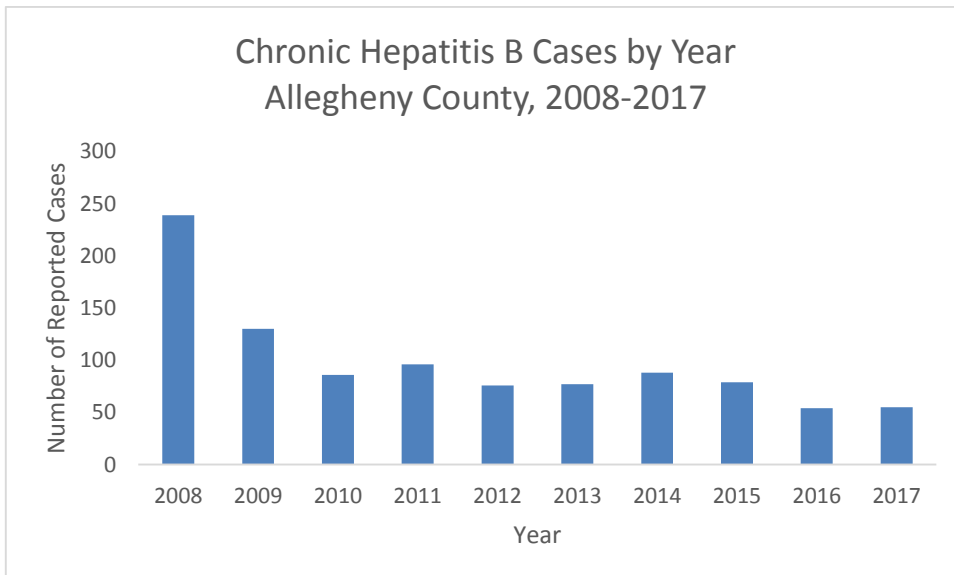
**Figure 16**



**Chronic hepatitis B infections**

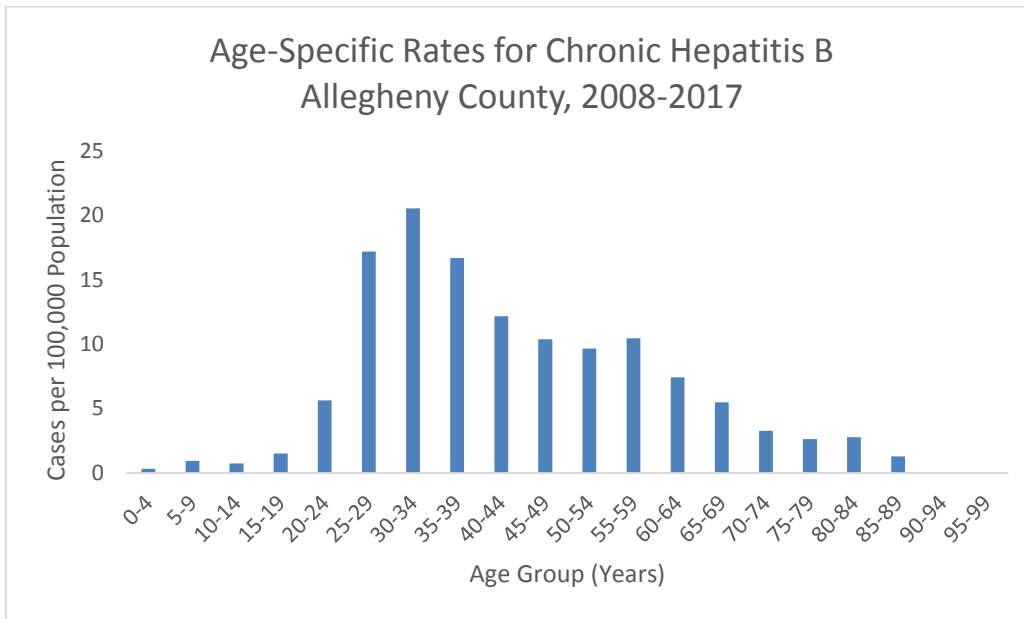
In 2008-2017, 980 confirmed cases of newly diagnosed chronic hepatitis B infections were reported to ACHD, with 55 reported in 2017 (Figure 17). Of the 980 cases reported in the 10-year period, 56% were male and most (94%) were 20-69 years of age, with highest incidence in the 30-34 year age group (Figure 18). Of 699 cases with known race, 34% were white, 31% Asian, 27% black, and 8% other. Only limited behavioral risk factor information was available for cases of chronic hepatitis B.

**Figure 17**





**Figure 18**



### **Perinatal hepatitis B**

In 2017, 26 infants born to women with chronic hepatitis B virus were followed by ACHD. All 26 infants received a dose of hepatitis B vaccine and hepatitis B immune globulin (HBIG) within 24 hours of birth. The complete vaccine series was known to be completed by 23 (88%) infants by 10 months of age. Of the 26 infants, 18 (83%) had serologic evidence of immunity; eight failed to respond to follow-up requests for serologic testing.

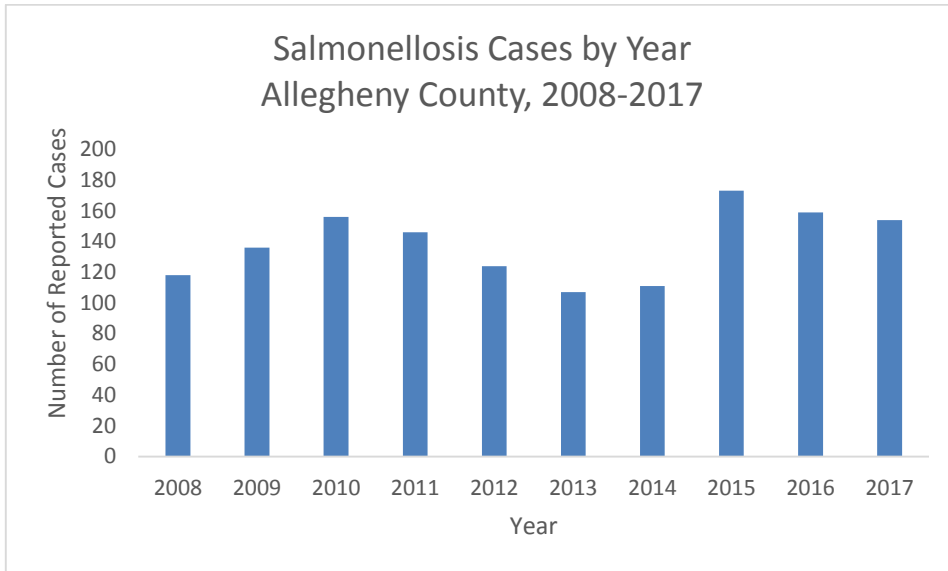
## **Enteric diseases**

### **Salmonellosis**

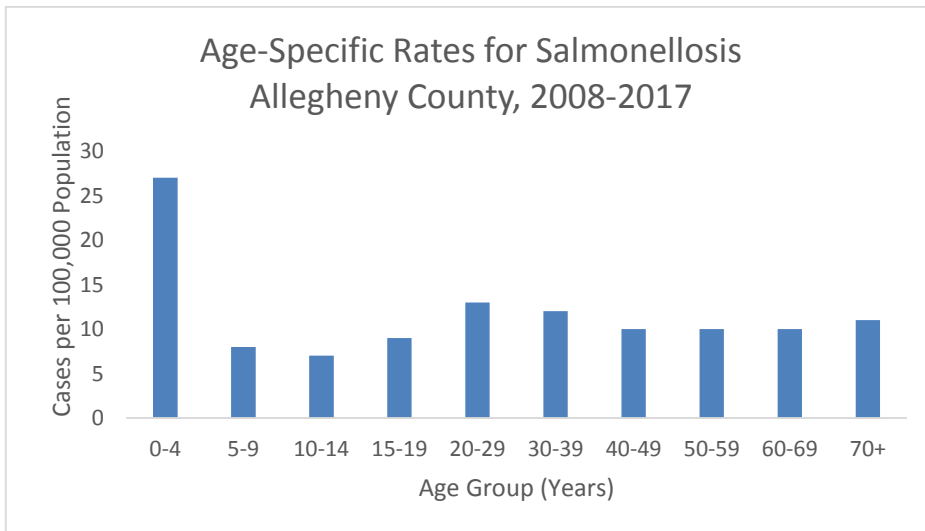
Salmonellosis is a diarrheal disease transmitted via contaminated food or by contact with animal feces. On average, 138 salmonellosis cases per year were reported to ACHD in 2008-2017 (Figure 19). In 2017, 154 cases were reported for a crude incidence rate of 12.6 per 100,000, above the Healthy People 2020 target of 11.4 per 100,000.<sup>8</sup> All ages were affected but children <5 years of age had the highest incidence rate (Figure 20). More specifically, infants < 1 year of age were at highest risk (39 per 100,000). Slightly more females than males were affected (56% of cases vs 44%). More cases were reported during the summer months (Figure 21). Of 1,248 reported cases with available data, 476 (38%) were hospitalized; four persons died.

In 2017, species was known for 137 (89%) of the 154 reported cases. Of these, the most common serotypes were *S. Enteritidis* (34%), *S. Typhimurium* (20%), *S. Newport* (7%), *S. Braenderup* (4%), *S. Infantis* (4%), with 24 other species identified (1 to 4 cases of each).

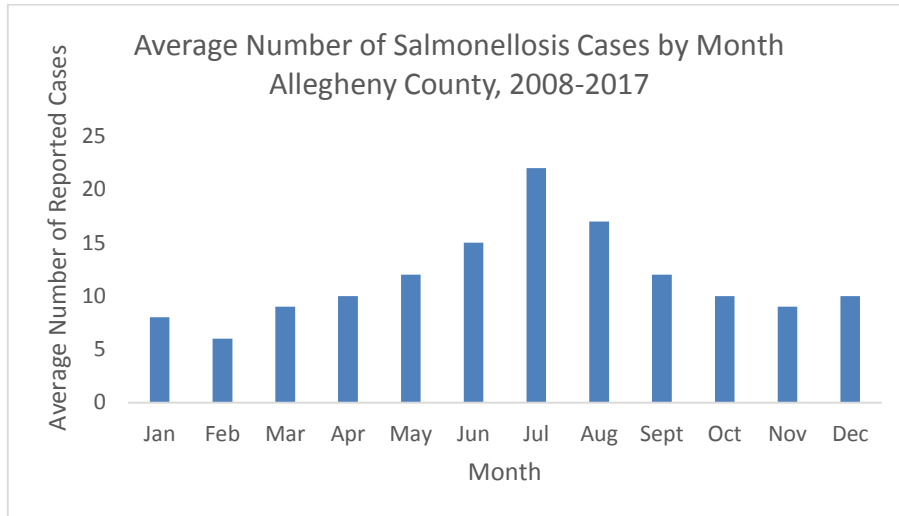
**Figure 19**



**Figure 20**



**Figure 21**



### **Typhoid fever**

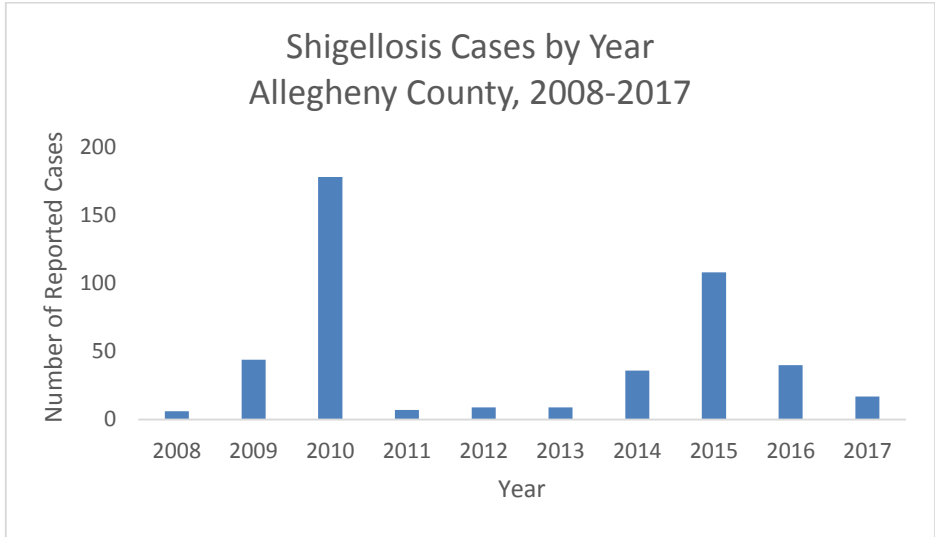
In 2008-2017, 27 cases of [typhoid fever](#), caused by *Salmonella typhi*, were reported to ACHD. Of 25 with available risk factor information, 21 (84%) reported travel outside of the US and Canada. Twenty-four (89%) cases were hospitalized, but no deaths were reported. In 2017, one case was diagnosed and reported after travel to India.

### **Shigellosis**

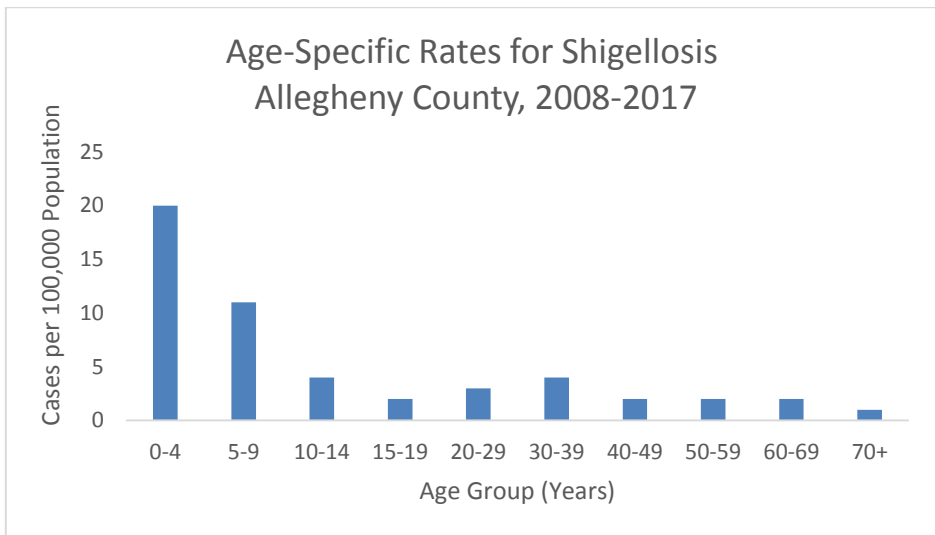
[Shigellosis](#) is a diarrheal disease with outbreaks common at childcare facilities and among men who have sex with men (MSM). Fewer than 20 cases per year of shigellosis were reported, except in 2009-2010 and 2014-2016 when several childcare facilities experienced outbreaks (Figure 22). A total of 454 cases were reported in 2008-2017. The incidence was highest in children 0-4 years of age (Figure 23). Cases ranged in age from 7 months to 91 years with a median of 15 years. Of 385 cases with available data, 114 (30%) were hospitalized. One associated death was reported.

Of the 454 cases reported in 2008-2017, species was known for 431 (95%) cases. Of these, 365 (85%) were *S sonnei*, 63 (15%) were *S flexneri*, and 3 (<1%) were *S boydii*. In 2017, 17 cases were reported, 10 (59%) of which were *S. flexneri*. Of the 17 cases, 4 (24%) were known to be MSM; none was associated with day care facilities and none reported travel outside the US or Canada.

**Figure 22**



**Figure 23**



### **Campylobacteriosis**

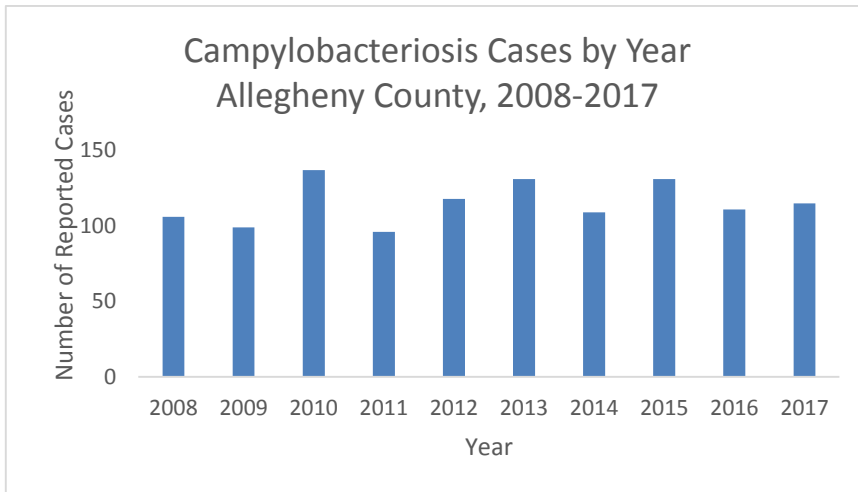
Campylobacteriosis was the second most commonly reported enteric disease after salmonellosis with an average of 115 cases reported per year (Figure 24). In 2017, 115 cases were reported. The reported incidence rate in 2017 for Allegheny County was 9.4 per 100,000, higher than the Healthy People 2020 target of 8.5 per 100,000.<sup>8</sup>

Campylobacter infection was more common among adults than among school-aged children (Figure 25) and slightly more common among males (53%). More cases were reported during the

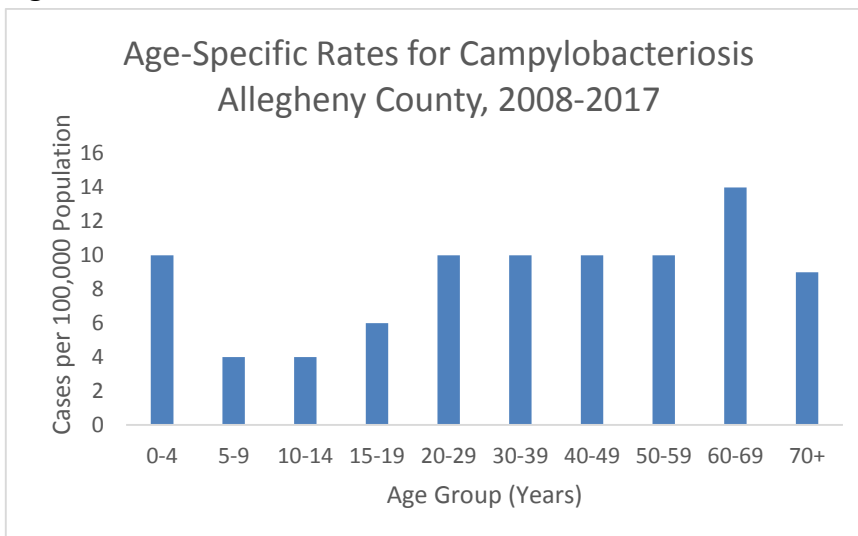
summer months (Figure 26). Of 1,046 cases with available data, 273 (26%) were hospitalized; one died.

Common risk factors for campylobacteriosis include eating undercooked poultry or cross contaminated foods or having contact with the stool of an ill dog or cat. Among cases reported in 2017 with known risk factors, 68% reported exposure to animals, 12% reported eating raw or undercooked meat, 7% reported eating raw or undercooked eggs, and 3% reported drinking unpasteurized milk or juice.

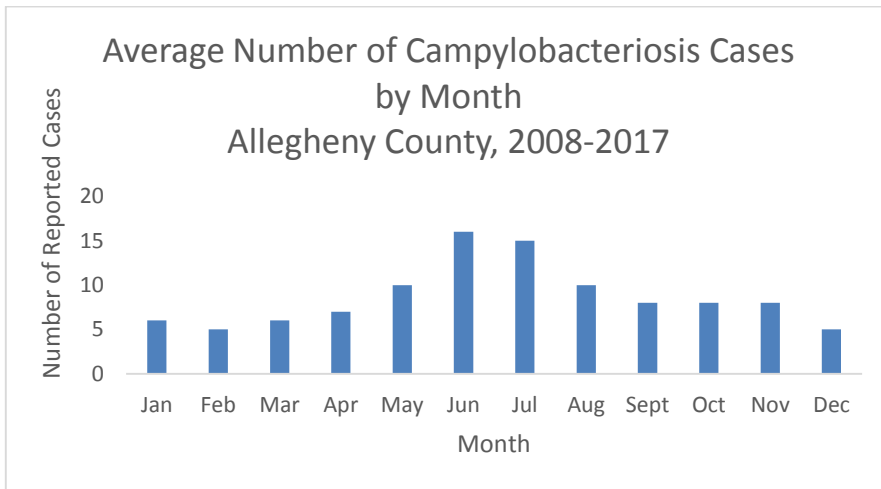
**Figure 24**



**Figure 25**



**Figure 26**

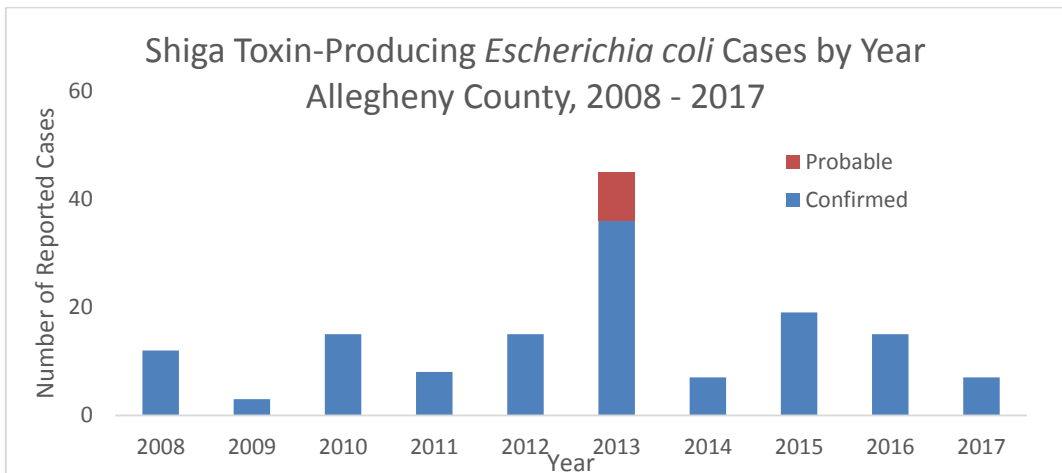


**Shiga-toxin producing *E.coli***

Some types of *Escherichia coli* bacteria cause disease by making a toxin called Shiga toxin. *E. coli* O157:H7 is the most commonly identified Shiga-toxin producing *E.coli* (STEC) in North America. In 2008-2017, 146 cases of STEC were reported to ACHD (Figure 27). Cases spiked in 2013 with 45 reported cases, 24 (56%) of which were associated with an outbreak at a particular restaurant. In 2017, seven cases were reported for a crude incidence rate of 0.6 per 100,000, which matches the Healthy People 2020 target of 0.6 per 100,000. <sup>8</sup>

The median age of cases in 2008-2017 was 23 years, with a range of 0 to 90 years; 53% were female. Of the 146 STEC cases, 36% were hospitalized, 3% developed hemolytic uremic syndrome, and one (1%) died. About one fifth (21%) of cases reported eating raw or undercooked meat, 20% reported swimming before illness onset, 10% reported international travel, and 4% consumed raw milk or juice.

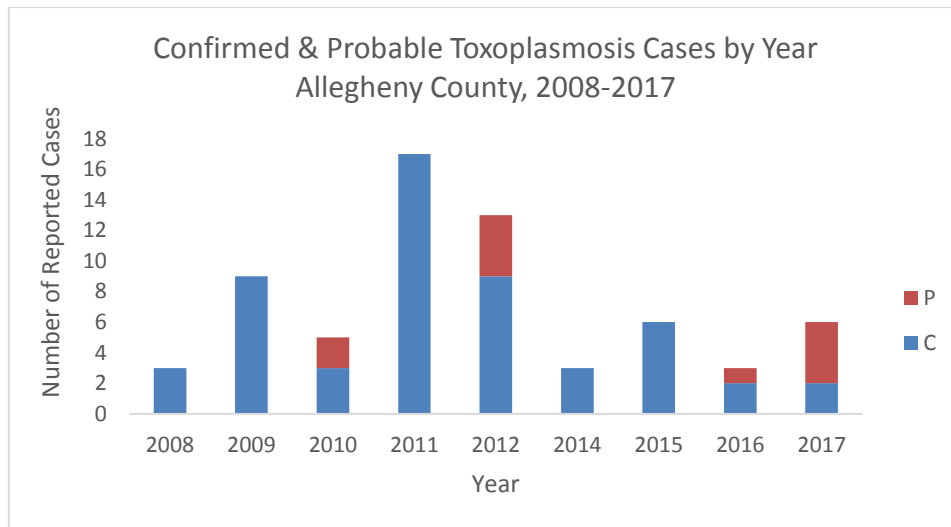
**Figure 27**



## Toxoplasmosis

Approximately 60 million Americans are infected with the Toxoplasma parasite, but most infected persons are asymptomatic. Newly infected pregnant women and immunocompromised persons are at risk for complications. In 2008-2017, 65 confirmed and probable cases were reported to ACHD (Figure 28). Of these, 12 were known to be pregnant and 4 were known to be immunocompromised. Reliable information on exposure to cats was not available.

**Figure 28**

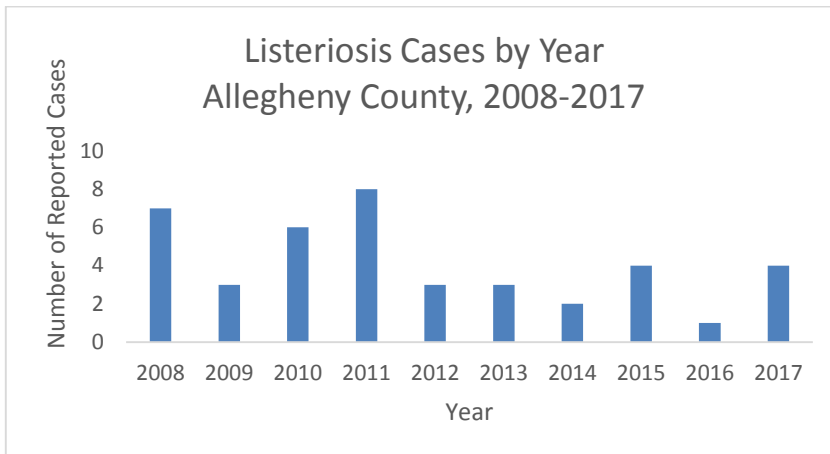


## Listeriosis

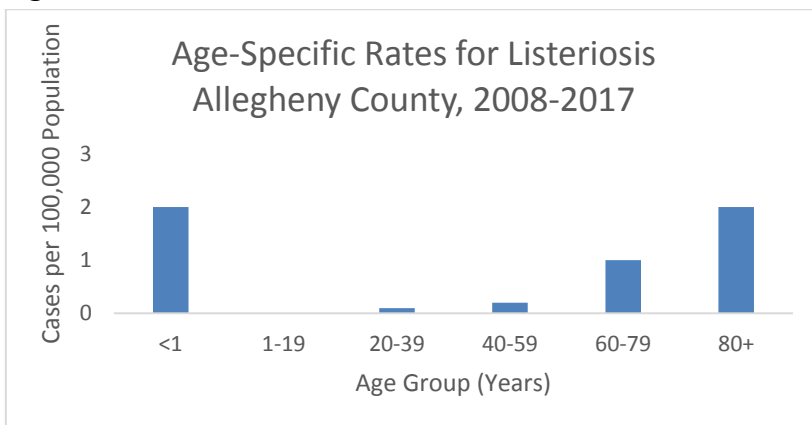
Listeriosis is a rare but serious foodborne illness which most often affects the elderly, those with compromised immune systems, and pregnant women and their newborns. Infections may be mild but those diagnosed are often more serious, involving blood infection or meningitis. In Allegheny County, an average of 4 cases per year was reported in 2008-2017 (Figure 29). In 2017, four cases were reported for a rate of 0.3 per 100,000, above the Healthy People 2020 goal of 0.2 per 100,000.<sup>8</sup> Infants and the elderly had the highest incidence rates (Figure 30). Twenty nine (71%) cases were  $\geq 60$  years, including 12 (29%)  $\geq 80$  years. Two (4%) cases were infants < 12 months. No cases were known to be pregnant.

Of 38 cases in 2008-2017 with available data, 36 (95%) were hospitalized; 6 deaths were reported with median age of 79 years (range 60 to 95 years).

**Figure 29**



**Figure 30**



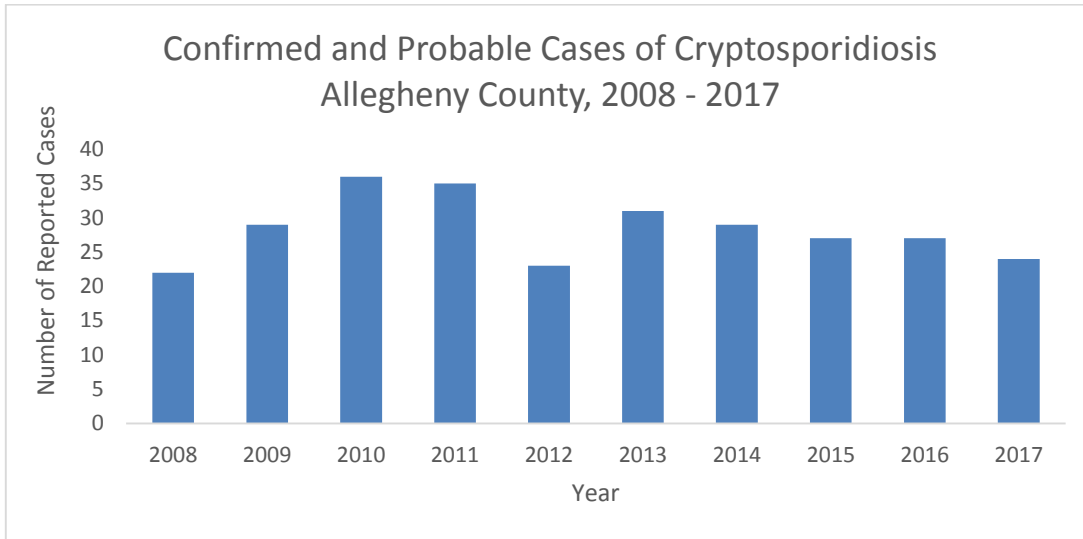
### **Cryptosporidiosis**

**Cryptosporidiosis** is a diarrheal disease caused by a parasite most commonly transmitted through drinking water or recreational water. Humans and domestic and wild animals may be infected with the parasite. An average of 28 cases per year were reported to ACHD in 2008-2017 (Figure 31). The majority (58%) of reported cases were female; all age groups were affected (Figure 32). Of those with available data, 35% were hospitalized and four died.

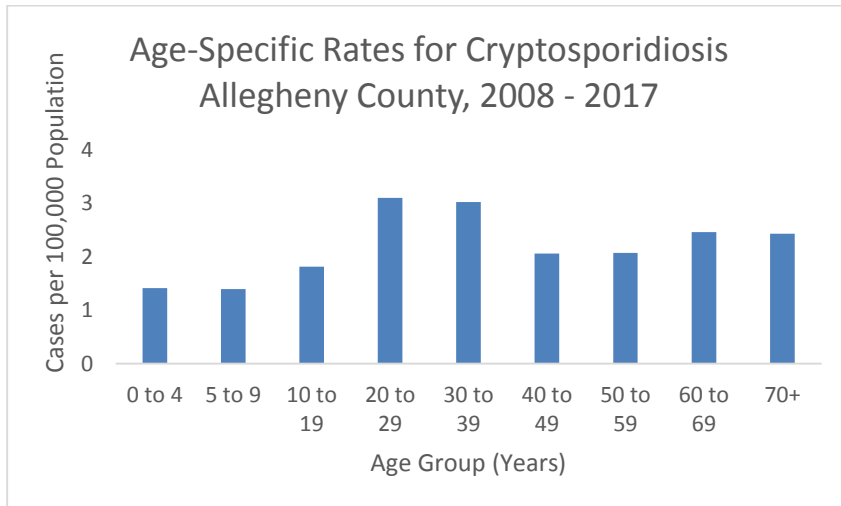
About half of the cases reported having been around an animal, and 10% had traveled outside of the US and Canada. Cryptosporidiosis causes more severe disease in immunocompromised persons, but no information on HIV status or other immunodeficiencies was available for reported cases in Allegheny County.



**Figure 31**



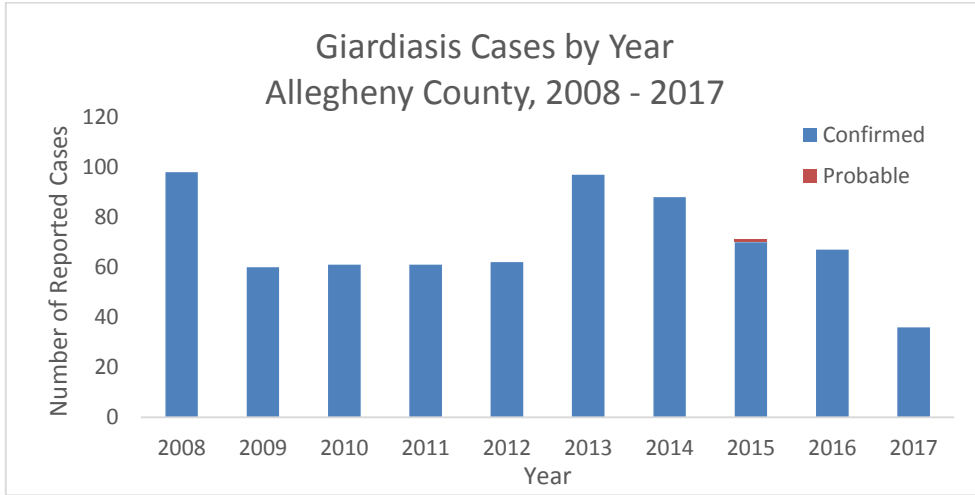
**Figure 32**



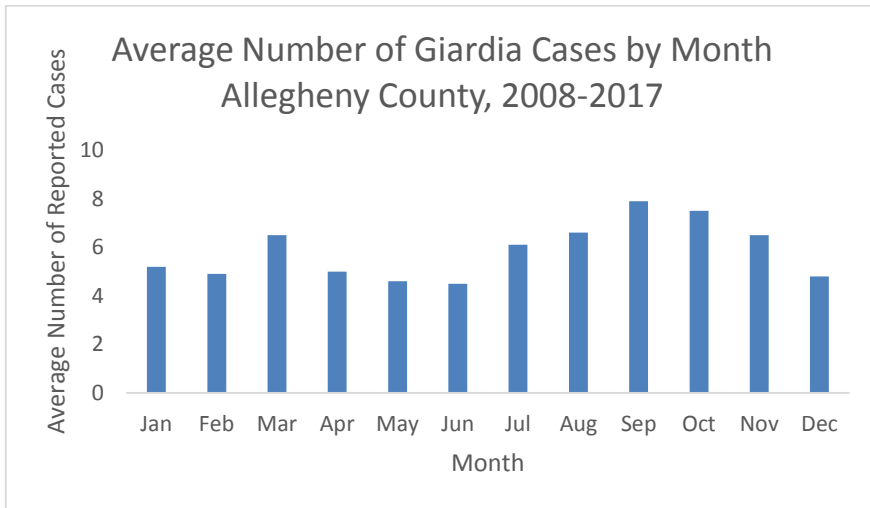
**Giardiasis**

Giardiasis is an intestinal disease caused by ingestion of Giardia cysts in fecally contaminated water or by person-to-person transmission. An average of 70 cases of giardiasis per year was reported to ACHD in 2008-2017 (Figure 33). More cases were reported during late summer and early fall than in other seasons (Figure 34). The median age of reported cases was 33 years with a range of 0 to 93 years. The incidence rate was highest among children 0-4 years of age (Figure 35). Of cases with available data, 15% (91/613) were hospitalized. Only 15% reported possible exposure outside of the US, and 17% reported having gone swimming in 14 days prior to illness.

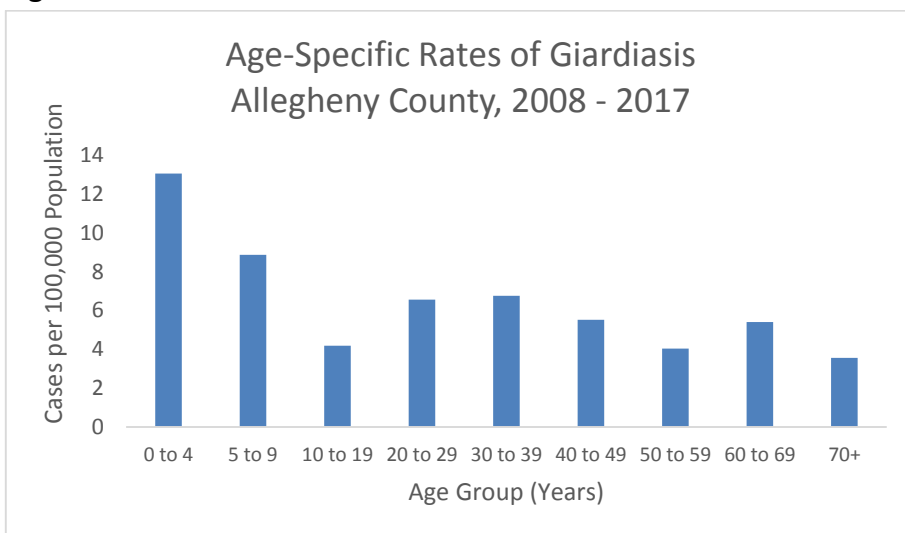
**Figure 33**



**Figure 34**



**Figure 35**



## Amebiasis

**Amebiasis** is caused by ingestion of the parasite *Entamoeba histolytica*. During 2008-2017, 27 cases of amebiasis were reported, with only one reported in 2017. Of those with risk factor data, 25% (6/24) were recently adopted, 20% (4/20) had been swimming, and 14% (3/21) had traveled outside the US or Canada. Three cases were known to be hospitalized. No deaths were reported.

## Infant botulism

Botulism is a muscle paralyzing disease caused by the ingestion of the toxin of the bacterium *Clostridium botulinum* or by colonization of the intestinal tract in infants. *C. botulinum* is an anaerobic bacteria sometimes found in the environment. In 2008-2017, 6 confirmed cases of **infant botulism** were reported to ACHD; none were reported in 2017. All 6 reported during the 10-year period were < 1 year of age. All were hospitalized, received antitoxin and survived. None reported having consumed honey. Three were reported to have had construction around their house.

## Respiratory diseases

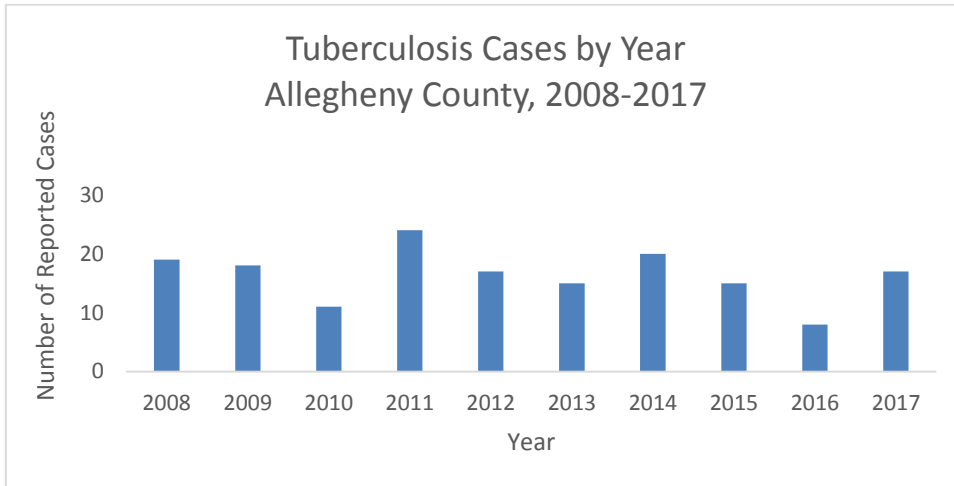
### Tuberculosis

**Tuberculosis** is a highly contagious respiratory disease that is endemic in many countries outside the US. A total of 164 cases of active tuberculosis (TB) were reported to ACHD in 2008-2017, an average of 16 cases per year (Figure 36). In 2017, 17 cases were reported for a crude incidence rate of 1.4 per 100,000, lower than the national rate of 3.0 per 100,000. Thirteen (76%) of the 17 cases were confirmed by culture, and the isolates were susceptible to all antibiotics tested.

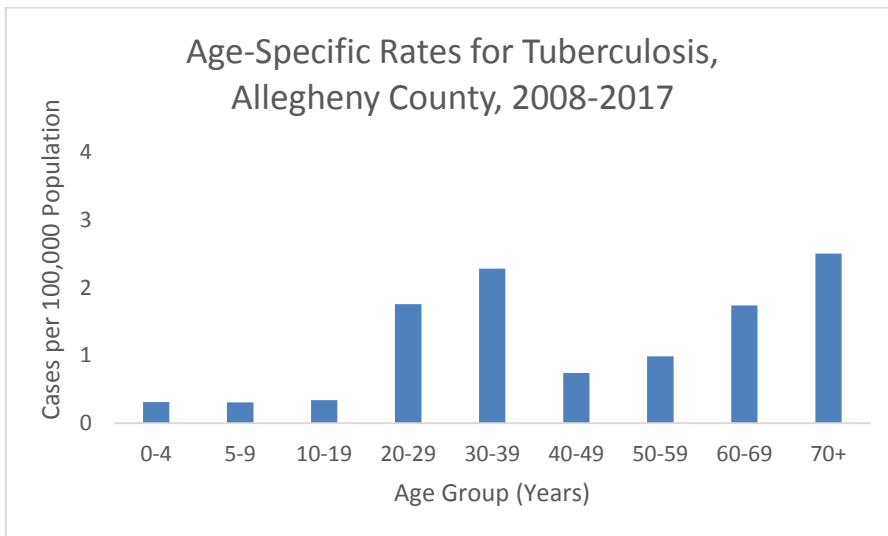
The median age of cases in 2008-2017 was 46 years with range of 0 to 98 years. Persons  $\geq 70$  years had the highest incidence rate (Figure 37). A slightly higher percentage (54%) of cases was male; 35% were white, 26% black, and 37% Asian. Of 163 cases with information on country of birth, 96 (59%) were foreign born.

Of 164 tuberculosis cases, HIV status was known for 118 (72%). Of these, 7 (6%) were HIV-infected and 111 were negative within a year prior to diagnosis of tuberculosis.

**Figure 36**



**Figure 37**



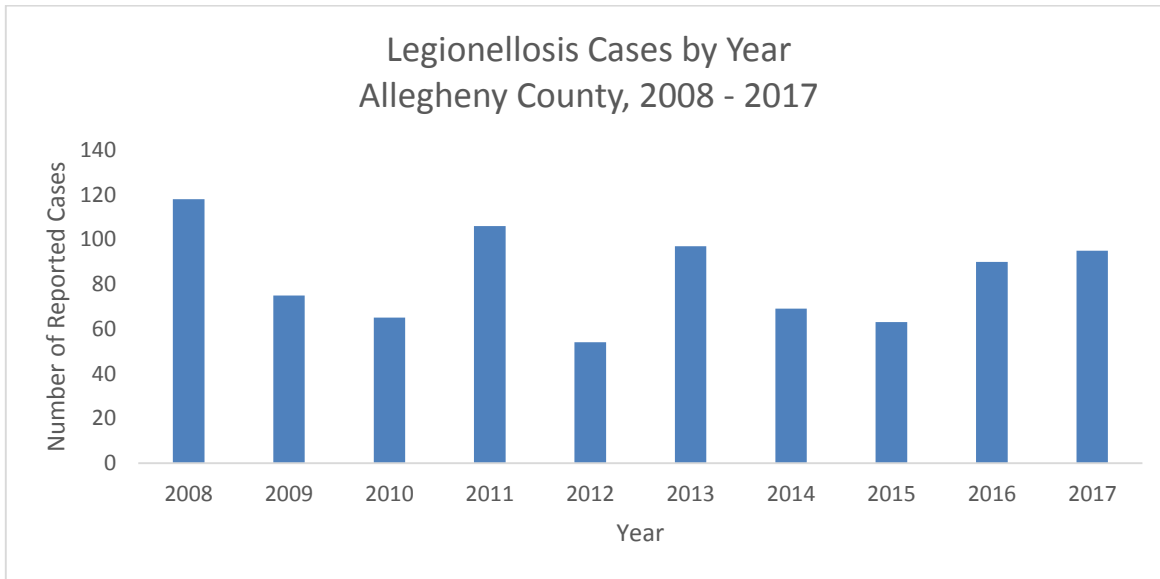
## Legionellosis

Legionnaires' disease is a severe pneumonia which may affect persons with weak immune systems who breathe in aerosolized water or aspirate water containing Legionella bacteria. An average of 83 cases of legionellosis per year was reported (range 54 to 118) to ACHD in 2008-2017 (Figure 38). The crude incidence rate varied from 4.4 to 9.7 during the 10-year period, much higher than the national rate which increased from 1.0 in 2008 to 2.3 per 100,000 in 2017.<sup>5,9</sup> The Mid-Atlantic region, which includes Pennsylvania, has the highest rates of legionellosis in the US.<sup>9</sup>

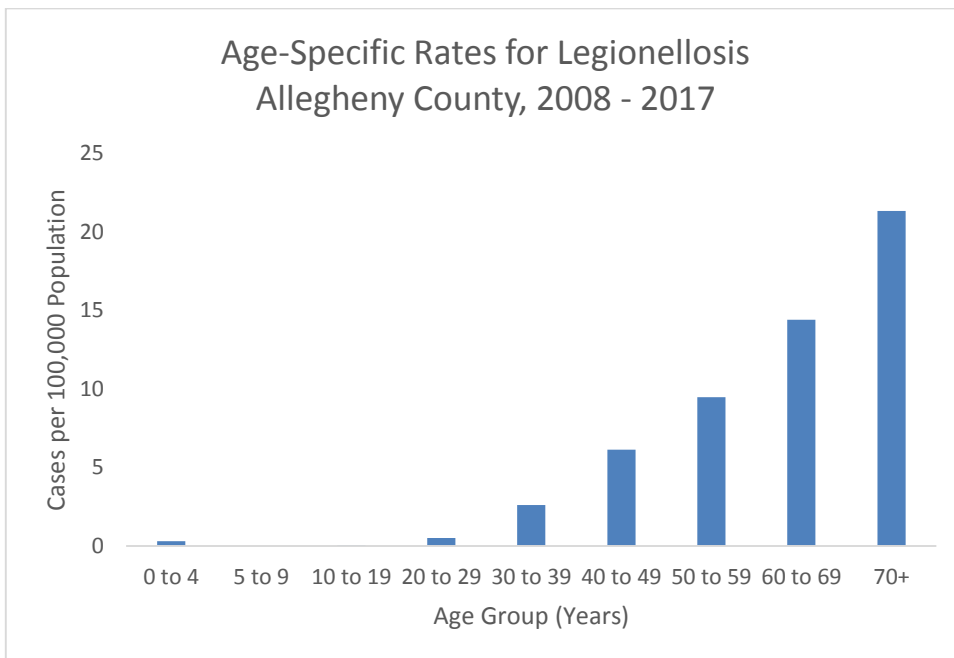
Of cases with available data, 98% (799/815) were hospitalized and 9% (70/778) died. The rate of reported infection was highest persons  $\geq 70$  years (Figure 39). More males (62%) than females were reported. The incidence was highest during the summer months (Figure 40).

In 2017, 95 cases of Legionnaires' disease were reported to ACHD. Of 88 cases with available data, 68 (77%) infections were community acquired, 6 (7%) were definitely acquired at a health care facility, and 14 (16%) reported having some health care facility exposure. Only 9% reported overnight travel during the incubation period of 2 to 10 days before illness onset.

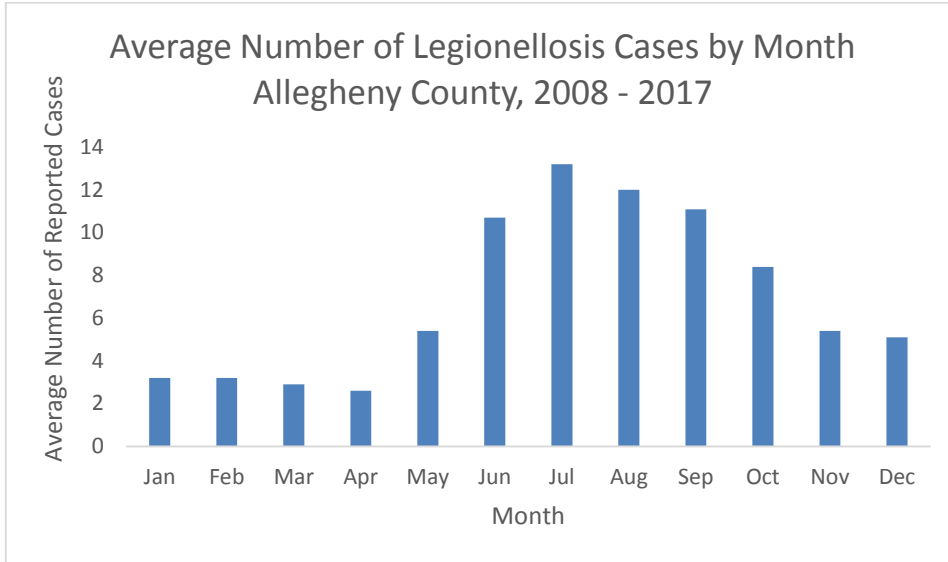
**Figure 38**



**Figure 39**



**Figure 40**



## Vectorborne

### Lyme disease

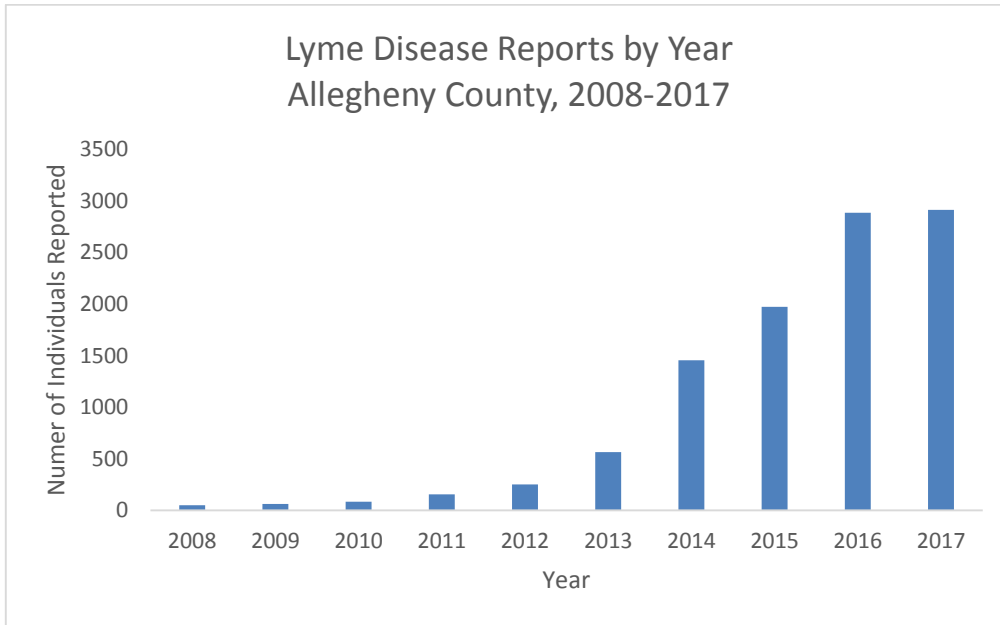
Lyme disease, caused by the spirochete *Borrelia burgdorferi*, is transmitted by the blacklegged tick *Ixodes scapularis* in the Eastern and Midwestern parts of the United States. Transmission of *B. burgdorferi* generally occurs once an infected tick has been attached for more than 36 hours.<sup>10</sup>

From 2008 to 2013, the number of positive laboratory tests reported to ACHD began to rise (Figure 41), but ACHD stopped investigating cases because of the increased workload and competing priorities. Fewer than 35 cases were confirmed per year during this time period. In 2014, ACHD received 1,455 reports of Lyme disease and attempted to investigate all reports. After investigation, 822 cases were classified as confirmed or probable (Figure 42).

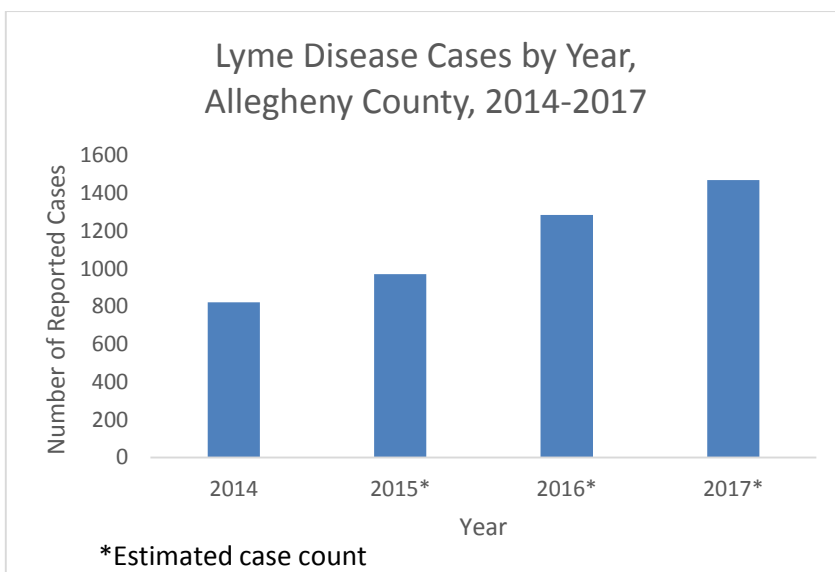
In 2015, ACHD adopted a case count estimation procedure based on sampling that was developed and utilized in New York, Massachusetts and Minnesota.<sup>11,12</sup> A 20% sample of laboratory reports were selected for investigation during each quarter of 2015. Based on results of these investigations and on the number of provider-reported cases, ACHD estimated that the reports received represented 971 cases (Figure 42). In 2016 and 2017, ACHD again used the 20% sampling methodology and estimated 1,285 and 1,469 reported cases per year, respectively (Figure 42). The number of estimated reported cases in 2017 by age group and sex is shown in Figure 43, indicating that more males have a higher incidence than females and children 5-14 years and adults 55-64 years have the highest incidence by age group.

The CDC does not currently accept estimated case counts for official use. Therefore, the official number of cases reported to CDC (278 in 2015, 403 in 2016, and 432 in 2017) vastly differ from the estimated case count (Figure 42).

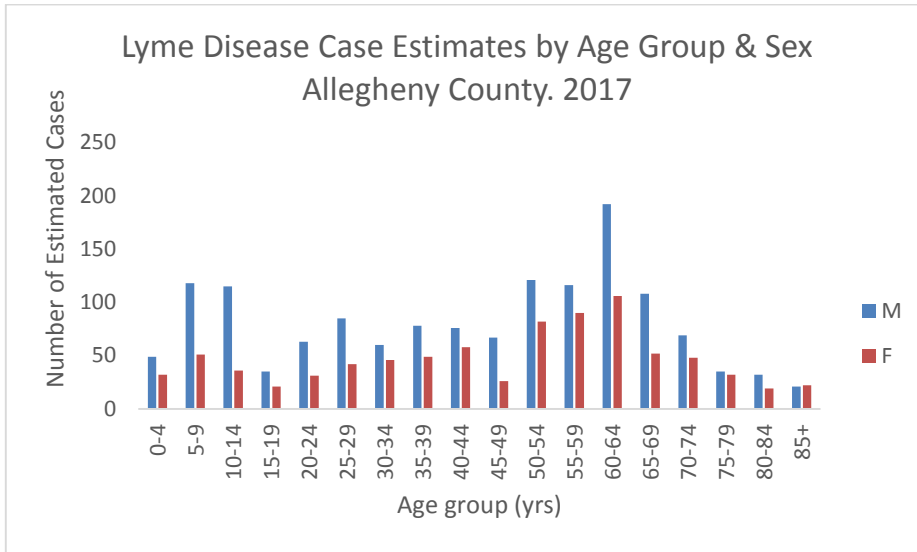
**Figure 41**



**Figure 42**



**Figure 43**



### Zika virus disease

[Zika virus](#) was first detected in the Western Hemisphere in Brazil in 2014 and quickly spread to most countries in the Americas. The virus is transmitted mainly by mosquitos but sexual transmission has also been documented. It is the first arbovirus known to cause birth defects in humans. Thirteen Allegheny County residents tested positive for the virus in 2015-2017, including 12 who were symptomatic after traveling to Zika-affected areas and one who developed symptoms after a laboratory exposure. Cases ranged in age from 17 to 70 years with median of 33 years. Three persons had traveled to Puerto Rico, and the other cases had traveled to Haiti, the Dominican Republic, Venezuela, the Virgin Islands, Bonaire, Costa Rica, Honduras and Nicaragua.

### West Nile virus disease

The [West Nile virus](#) is transmitted by mosquito and can cause a febrile illness and occasionally encephalitis. Seven confirmed cases of West Nile virus disease were reported in 2008-2017, including two in 2017, three in 2015, and 1 in 2014.

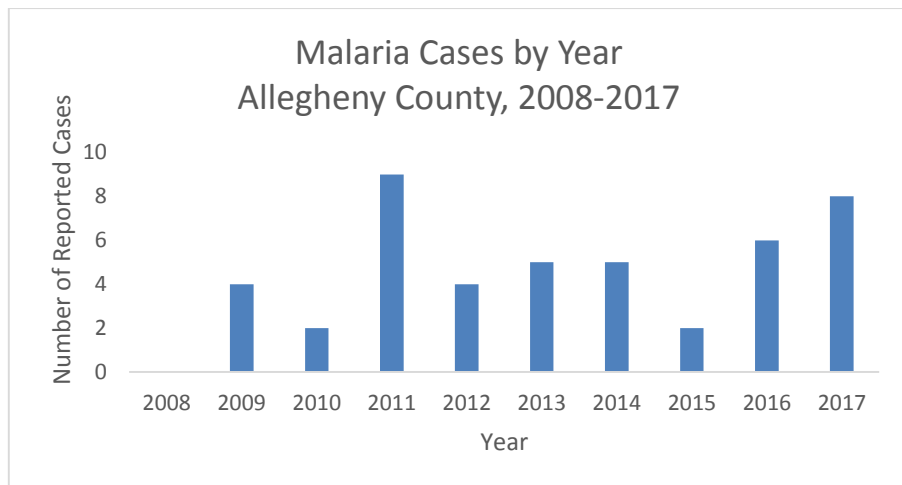
### Malaria

In 2008-2017, 45 cases of [malaria](#), a mosquito-borne infection caused by the *Plasmodium* parasite, were reported to ACHD (Figure 44). All reported cases had traveled outside the US and Canada.



Cases ranged in age from 2 to 38 years with a median age of 34 years. Twenty one (50%) cases had possible exposure in West Africa, 10 (22%) in India, 9 (20%) in East and Southern Africa, 4 (9%) in Central America/Caribbean, and one (2%) in Afghanistan. Only nine of the cases had documentation of taking prophylactic antimalarial medication while traveling. One Allegheny County resident with malaria died in 2013.

**Figure 44**



### Dengue

In 2008-2017, 17 cases of [dengue fever](#), a mosquito-borne viral disease common in warm climates, were reported to ACHD with an age range of 16 to 72 years and a median age of 52 years. All cases had traveled outside of the US and Canada. Infections were most likely acquired in India (41%), the Caribbean (24%), Central or South America (18%), Sri Lanka (6%), Thailand (6%) and China (6%).

### Chikungunya

[Chikungunya](#), a mosquito-borne disease introduced into the Americas in 2013, was first diagnosed in Allegheny County residents in 2014, when 9 travel-related cases were reported. Another case was reported in 2015, two in 2016, and one in 2017. The age range of the 13 total cases was 14 to 63 years, with a median of 44 years. Three cases had traveled to Haiti, three to India, and one each to the Dominican Republic, Jamaica, Puerto Rico, Trinidad, Nicaragua, Venezuela, Indonesia, respectively.

## Other diseases

### Hepatitis C

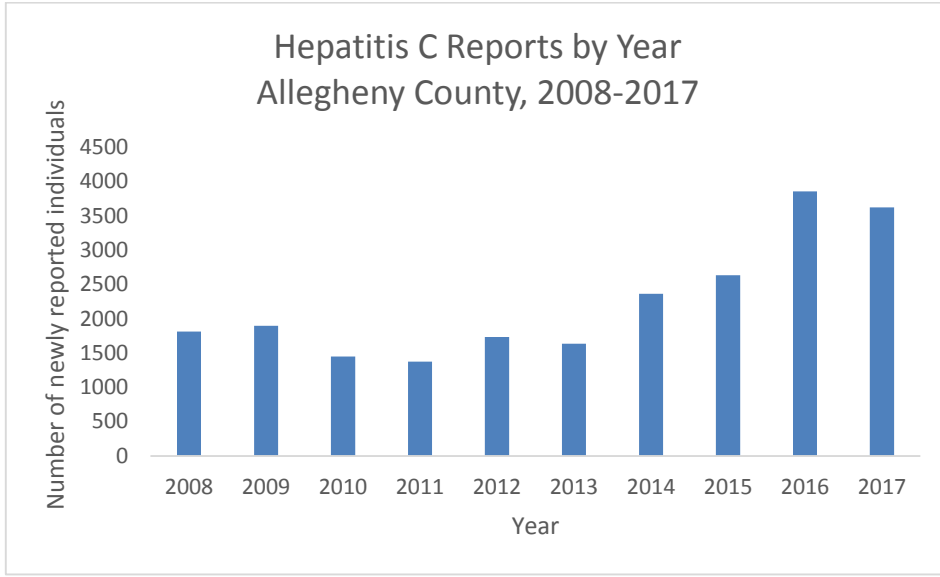
[Hepatitis C](#) is a liver disease that results from infection with the hepatitis C virus (HCV), which is spread primarily through contact with the blood of an infected person. In 2017, ACHD received positive hepatitis C reports for 3,622 Allegheny County residents, slightly less than the 3,856 reports received in 2016 but much higher than the average number of reports for 2008-2015 (Figure 45).

Prior to 2015, hepatitis C reports were not investigated due to the large volume of reports and lack of available staff; cases were classified according to reported laboratory tests only. In 2015, ACHD attempted to collect clinical and additional laboratory information on all patients reported. The enhanced surveillance efforts in 2015 led to the identification of 25 acute cases of hepatitis C, whereas only one acute case had been identified in the previous 7 years (2008-2014). In 2016, ACHD investigated reports for individuals who were  $\leq 34$  years old,  $\geq 75$  years old, tested by dialysis centers or reported to have acute infections; 11 acute infections were confirmed. In 2017, ACHD only investigated cases reported to have signs or symptoms of acute infection and identified 13 acute cases. The median age of the 13 acute cases was 46 years (range 16 to 66 years); 62% were male. Of 34 acute cases reached for interview in 2015-2017, 23 (68%) reported a history of intravenous drug use.

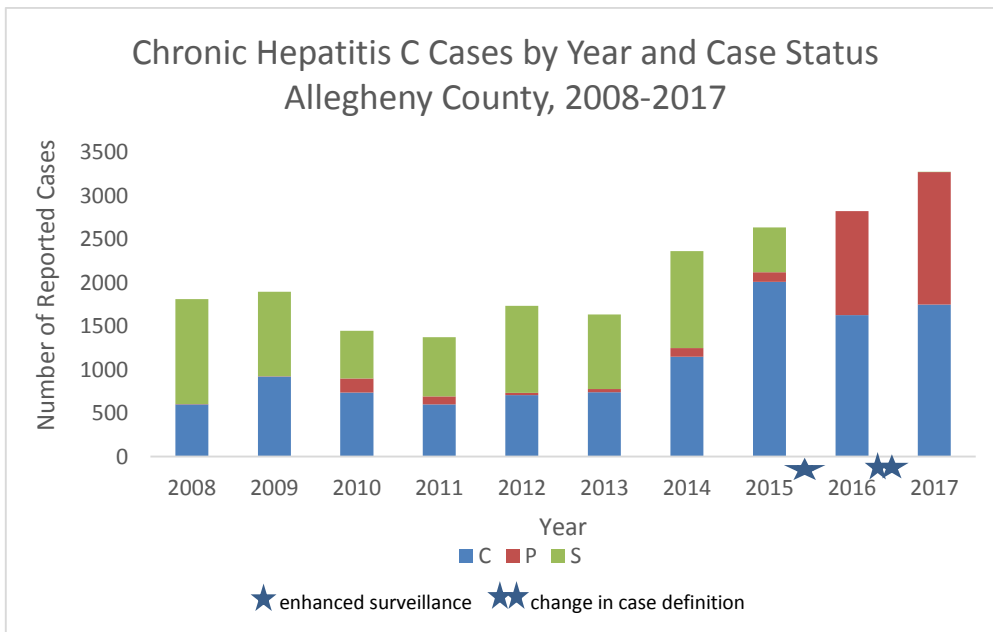
Chronic hepatitis C is associated with liver damage and sometimes liver failure or liver cancer. In 2017, of 3,622 new reports for Allegheny County residents, 1,748 were classified as confirmed chronic cases (positive HCV NAT, HCV antigen, or genotype results without clinical information consistent with acute infection) and 1,524 were classified as probable chronic cases (HCV antibody but no confirmatory test and no clinical information consistent with acute infection) (Figure 46). Before 2016, reports of positive hepatitis C antibody tests but no confirmatory test or liver function test results were classified as “suspect” in Allegheny County (Figure 46).

Of the 3,272 confirmed and probable cases of chronic hepatitis C cases reported in 2017, 56% were males. The age distribution was bimodal with peaks in the 25-39 year and 50-64 year old age groups (Figure 47).

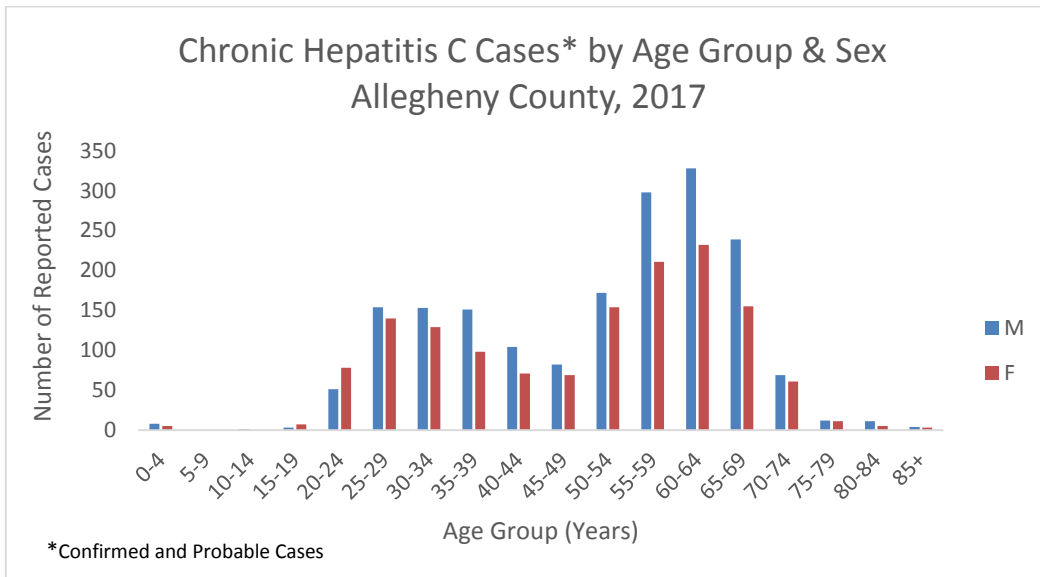
**Figure 45**



**Figure 46**



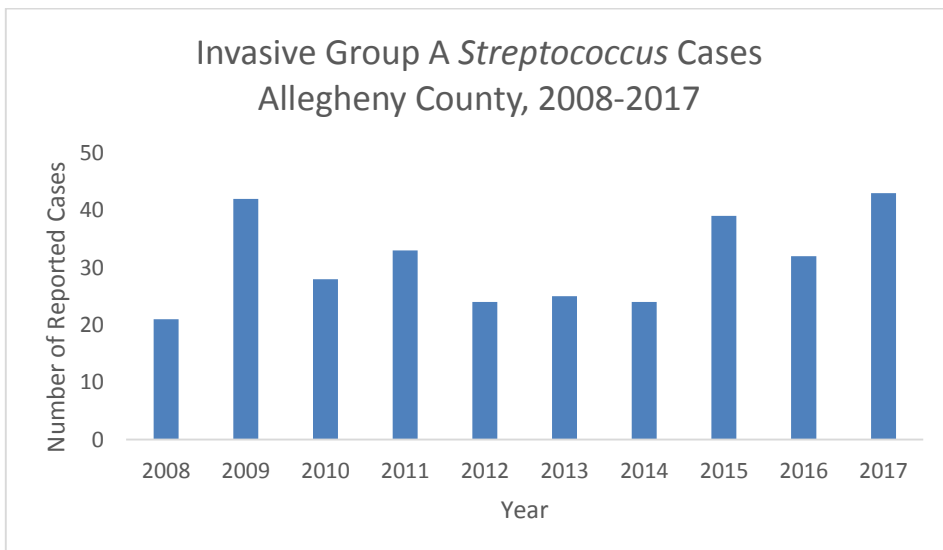
**Figure 47**



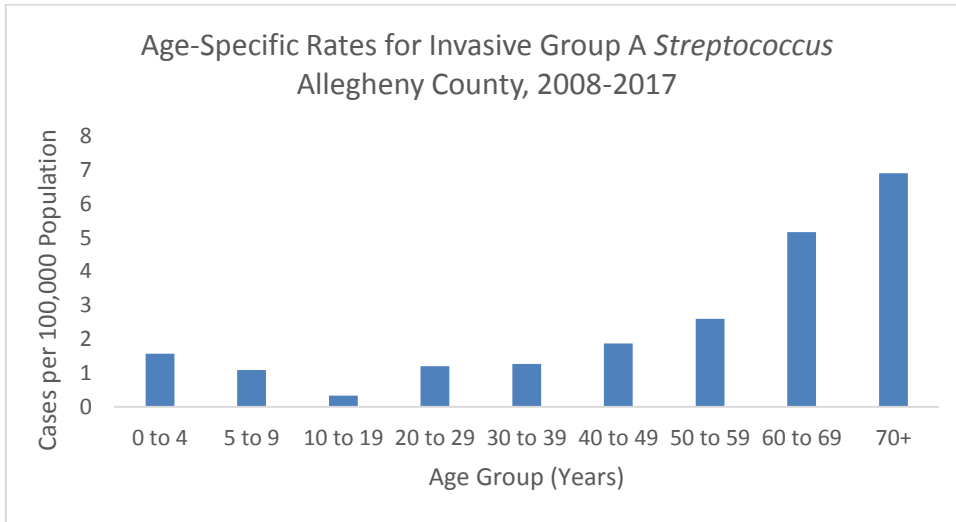
**Invasive Group A Streptococcus infection**

Group A streptococci cause infections of the throat and skin. If the bacteria invade the blood, fascia, or organs, they cause more severe infections including necrotizing fasciitis, toxic shock syndrome, pneumonia, and septicemia. An average of 31 cases per year of [invasive Group A streptococcus](#) cases was reported to ACHD in 2008-2017 (Figure 48). Persons  $\geq 60$  years were at greatest risk (Figure 49). Of cases with known status, 96% (215/223) were hospitalized and 16% (28/178) died.

**Figure 48**



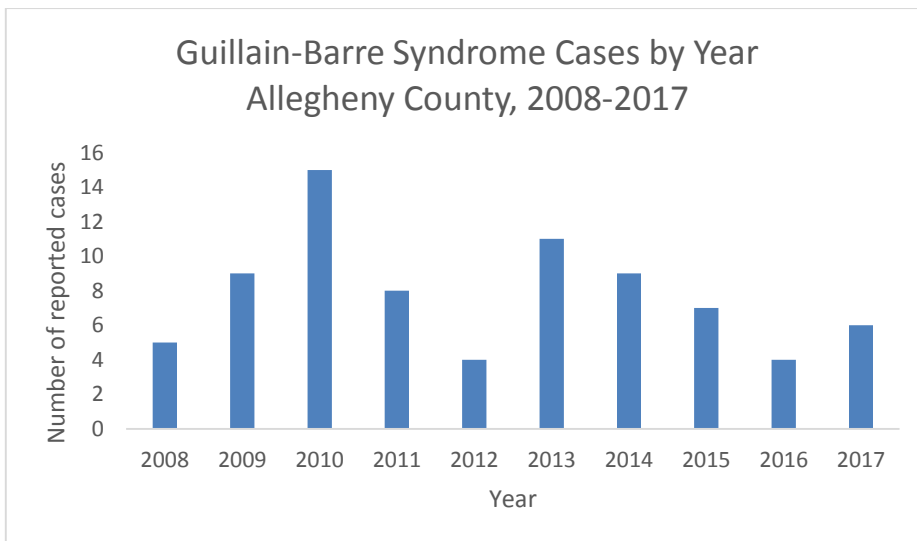
**Figure 49**



**Guillain-Barre Syndrome**

Guillain-Barre Syndrome (GBS) is an autoimmune disease characterized by muscle weakness and paralysis, often preceded by diarrheal or respiratory infections. In 2008-2017, 78 confirmed cases of GBS syndrome were reported to ACHD (Figure 50). The median age of cases was 55 years with a range of 18 to 82 years. Information on preceding diarrheal or respiratory illness was incomplete but noted for 24 cases. Four cases reported recent influenza vaccination.

**Figure 50**



## **Creutzfeldt-Jakob Disease (CJD)**

In 2008-2017, 24 cases of classic Creutzfeldt-Jakob disease, a neurodegenerative prion disease, were reported to ACHD, including 5 cases in 2017. The reported cases include 10 confirmed, 8 probable, and 6 suspect cases. No cases of variant CJD, which is related to “mad cow” disease, were reported. All reported cases of classic CJD were  $\geq 45$  years of age (median 61 years). CJD is always fatal.

## Outbreaks

In 2017, ACHD was the primary investigator for 51 disease outbreaks in Allegheny County, including 30 influenza outbreaks, 13 confirmed and 3 suspected norovirus outbreaks, and 2 legionellosis outbreaks (Table 1).

**Table 1: Outbreaks investigated by ACHD by disease and type of facility affected, 2017.**

Condition	Bacillus cereus	Norovirus Confirmed	Norovirus Suspected	Chicken-pox	Invasive Group A Strep	Influenza A	Influenza B	Legionellosis	Total
# outbreaks	1	13	3	1	1	26	4	2	51
# people ill	23	454	62	5	2	441	41	5	1,033
# outbreaks by setting									
Restaurant	0	0	0	0	0	0	0	0	0
Long-term care facility	0	11	2	0	1	26	4	1	45
Hospital	0	0	0	0	0	0	0	0	0
Outpatient	0	0	0	0	0	0	0	0	0
School	0	1	1	1	0	0	0	0	3
Other	1	1	0	0	0	0	0	1	3

## References

1. Centers for Disease Control and Prevention, National Notifiable Diseases Surveillance System. Surveillance Case Definitions. Accessed at <https://wwwn.cdc.gov/nndss/case-definitions.html>
2. Pennsylvania Department of Health, PA-NEDSS. Accessed at <https://www.health.pa.gov/topics/Reporting-Registries/Pages/PA-NEDSS.aspx>
3. Health Monitoring Systems. What is EpiCenter? Accessed at <https://www.health-monitoring.com/syndromic-surveillance-epicenter>
4. Pennsylvania Department of Health. Enterprise Data Dissemination Informatics Exchange (EDDIE). Accessed at <https://www.health.pa.gov/topics/HealthStatistics/EDDIE/Pages/EDDIE.aspx>
5. Centers for Disease Control and Prevention, National Notifiable Infectious Diseases and Conditions: United States. Annual Data for 2017. [https://wonder.cdc.gov/nndss/nndss\\_annual\\_tables\\_menu.asp](https://wonder.cdc.gov/nndss/nndss_annual_tables_menu.asp)
6. Allegheny County Health Department. Results from the 2015–2016 Allegheny County Health Survey (ACHS): Measuring the Health of Adult Residents. April 28, 2017.
7. Pennsylvania Department of Health, Bureau of Health Statistics and Registries. Immunization Rates in Child Care Group Settings, 2016 Reporting Period.
8. U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Healthy People 2020 Topics and Objectives: Food Safety. Accessed at <https://www.healthypeople.gov/2020/topics-objectives/topic/food-safety>
9. Centers for Disease Control and Prevention. Legionellosis --- United States, 2000--2009. MMWR 2011;60(32): 1083-1086.
10. Centers for Disease Control and Prevention. Lyme disease: Transmission. Accessed at <https://www.cdc.gov/lyme/transmission/index.html>
11. Lukacik G, White J, Noonan-Toly C, DiDonato C, Backenson PB. Lyme Disease Surveillance Using Sampling Estimation: Evaluation of an Alternative Methodology in New York State. Zoonoses and Public Health 2018;65(2):260-265. doi: 10.1111/zph.12261. Epub 2016 Feb 29.
12. Bjork J, Brown C, Friedlander H, Schiffman E, Neitzel D. Validation of Random Sampling as an Estimation Procedure for Lyme Disease Surveillance in Massachusetts and Minnesota. Zoonoses Public Health 2018;65(2):266-274. Doi: 10.1111/zph.12297. Epub 2016 Aug 3.



## Appendix A: Number of cases reported by disease, Allegheny County, 2008-2017

Disease	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Amebiasis	1	3	1	2	1	2	4	7	5	1	27
Infant Botulism	0	0	2	0	1	1	0	1	1	0	6
Campylobacteriosis	106	99	137	96	115	127	107	131	111	115	1144
Chikungunya	0	0	0	0	0	0	9	1	2	1	13
Creutzfeldt–Jakob disease	1	5	0	1	3	3	2	2	2	5	24
Cryptosporidiosis	22	29	38	35	23	31	29	27	27	24	285
Dengue	1	0	1	0	4	2	1	2	5	1	17
Giardiasis	98	60	61	61	62	97	88	71	67	36	701
Guillain-Barre	5	9	15	8	4	11	9	7	4	6	78
Haemophilus influenzae, invasive	9	7	15	26	23	16	14	12	17	33	172
Hepatitis A	9	4	7	7	8	4	3	2	8	5	57
Hepatitis B, Acute	26	11	15	12	2	10	16	10	3	11	116
Hepatitis B, Chronic	239	130	86	96	76	77	88	79	54	55	980
Hepatitis C, Acute	0	0	0	0	0	0	1	25	11	13	50
Hepatitis C, Chronic	606	925	899	693	734	780	1,248	2,123	2,824	3272	14104
Legionellosis	118	75	65	106	54	97	68	63	90	95	831
Listeriosis	7	3	6	8	3	3	2	4	1	4	41
Lyme	16	29	18	1	10	32	822	278	403	432	2041
Malaria	0	4	2	9	4	5	5	2	6	7	44
Measles	1	3	0	0	0	0	2	0	0	0	6
Meningococcal Disease	3	3	0	4	2	2	0	3	1	0	18
Mumps	0	1	0	0	0	2	9	3	2	2	19
Pertussis	42	59	50	60	226	47	155	105	76	60	880
Salmonellosis	118	136	156	146	124	107	111	171	158	154	1381
Shigellosis	6	44	178	7	9	9	36	108	40	17	454
Shiga toxin-producing E. coli	13	3	15	8	15	45	7	19	15	7	147
Invasive Group A Streptococcus	21	42	28	33	24	25	24	39	32	43	311
Invasive Streptococcus pneumoniae	46	25	52	73	76	60	40	46	47	51	516
Tuberculosis	19	18	11	24	17	15	20	15	8	17	164
Toxoplasmosis	3	9	5	17	13	0	3	6	3	6	65
Typhoid Fever	5	3	4	6	1	2	0	3	2	1	27
Varicella	139	83	59	73	75	50	62	32	27	55	655
West Nile	0	0	0	1	0	0	1	3	0	2	7
Zika	0	0	0	0	0	0	0	1	11	1	13

**Appendix B. Comparison of reported incidence rates per 100,000 of selected notifiable diseases - United States, Pennsylvania, and Allegheny County, 2017**

Disease	US rate*	PA rate^	Allegheny County rate
Campylobacteriosis	20.7	20.0	9.4
Cryptosporidiosis	3.5	3.2	2.0
Giardiasis	5.9	4.3	2.9
Invasive <i>Haemophilus influenza</i>	1.7	2.4	2.7
Hepatitis A	1.0	0.5	0.4
Hepatitis B acute	1.1	0.5	0.9
Pertussis	5.8	7.7	4.9
Salmonellosis	16.7	12.6	12.6
Shiga toxin-producing <i>E coli</i>	2.7	1.6	0.6
Shigellosis	4.6	2.1	1.4
Tuberculosis	2.8	1.5	1.4
Varicella	3.3	5.3	4.5

\*Source: CDC, National Notifiable Diseases Surveillance System, National Notifiable Diseases and Conditions, US. Annual Data Tables for 2017. Accessed at <https://wonder.cdc.gov/nndss/static/2017/annual/2017-table1.html>

^Source: Pennsylvania Department of Health, Enterprise Data Dissemination Informatics Exchange (EDDIE). Accessed at <https://www.phaim1.health.pa.gov/EDD/>

## Appendix C: List of reportable diseases, Allegheny County

### REPORTABLE DISEASES/CONDITIONS IN ALLEGHENY COUNTY

Report the Following Diseases/Conditions via PA-NEDSS\* at <https://www.nedss.state.pa.us>  
Report HIV to (412) 578-8358 and Sexually Transmitted Infections to (412) 578-8081

**Any unusual diseases/infections/conditions including SARS or MERS-CoV are to be reported IMMEDIATELY as soon as clinically suspected. Reporting is not to await laboratory confirmation.**

Outbreaks of any kind are to be reported IMMEDIATELY

ON NIGHTS, WEEKENDS, AND HOLIDAYS REPORT ALL TO (412) 687-ACHD (2243)

Healthcare practitioners and healthcare facilities MUST report the following WITHIN 24 HOURS\*\*

- |  |  |
|--|--|
| 1) Animal bites ( <a href="#">separate form on ACHD website</a> )  | 10) <i>Haemophilus Influenzae</i> invasive disease           |
| 2) Anthrax   | 11) Hantavirus pulmonary syndrome                            |
| 3) Arboviruses (includes <i>chikungunya</i> , <i>dengue</i> , <i>Eastern encephalitis</i> , <i>Japanese encephalitis</i> , <i>Powassan</i> , <i>St. Louis encephalitis</i> <i>West Nile virus infection</i> , <i>Yellow fever</i> , <i>et. al.</i> ) | 12) Hemorrhagic fever (includes <i>Ebola</i> ) <i>equine</i> |
| 4) Botulism (all forms)  | 13) Lead Poisoning   |
| 5) Carbon Monoxide Poisoning   | 14) Legionellosis  |
| 6) Cholera   | 15) Measles  |
| 7) Diphtheria  | 16) Meningococcal invasive disease                           |
| 8) Enterohemorrhagic <i>E. coli</i> (shiga toxin-producing <i>E. coli</i> or STEC)   | 17) Plague   |
| 9) Food poisoning  | 18) Poliomyelitis  |
|  | 19) Rabies   |
|  | 20) Smallpox   |
|  | 21) Typhoid fever  |

Healthcare practitioners and healthcare facilities MUST report the following within FIVE WORKING DAYS\*\*

- |   |  |
|---|--|
| 22) Acquired Immunodeficiency Syndrome (AIDS)   | 52) Meningitis (all types—not limited to invasive <i>Haemophilus influenzae</i> or <i>Neisseria meningitidis</i> ) |
| 23) Anaplasmosis  | 53) Mumps  |
| 24) Amebiasis   | 54) Perinatal exposure of a newborn to Hepatitis B   |
| 25) Babesiosis  | 55) Perinatal exposure of a newborn to HIV   |
| 26) Brucellosis   | 56) Pertussis  |
| 27) Campylobacteriosis  | 57) Psittacosis (Ornithosis)   |
| 28) Cancer ( <a href="#">report to the Pennsylvania Cancer Registry</a> )   | 58) Respiratory Syncytial Virus  |
| 29) CD4 T-Lymphocyte test result <200 or a percentage <14% of total   | 59) Rickettsial Diseases   |
| 30) Chancroid   | 60) Rubella and Congenital Rubella Syndrome  |
| 31) Chickenpox (Varicella)  | 61) Salmonellosis  |
| 32) Chlamydia trachomatis (Chlamydia) Infections  | 62) Shigellosis  |
| 33) Creutzfeldt-Jakob Disease   | 63) <i>Staphylococcus aureus</i> , Vancomycin-resistant (VRSA) or Intermediate (VISA) invasive disease             |
| 34) Cryptosporidiosis   | 64) Streptococcal invasive disease (group A)   |
| 35) Ehrlichiosis  | 65) <i>Streptococcus pneumoniae</i> , invasive disease   |
| 36) Encephalitis (all types)  | 66) Syphilis - all stages  |
| 37) Giardiasis  | 67) Tetanus  |
| 38) <i>Neisseria gonorrhoeae</i> (Gonorrhea) Infections   | 68) Toxic Shock Syndrome   |
| 39) Granuloma Inguinale   | 69) Toxoplasmosis  |
| 40) Guillain-Barre Syndrome   | 70) Trichinosis  |
| 41) Hepatitis, Viral — Acute and Chronic (A, B, C, D, E)  | 71) Tuberculosis   |
| 42) Histoplasmosis  | 72) Tularemia  |
| 43) Human Immunodeficiency Virus (HIV)  |  |
| 44) Influenza (Lab-confirmed only)  |  |
| 45) Leprosy   |  |
| 46) Leptospirosis   |  |
| 47) Listeriosis   |  |
| 48) Lyme Disease  |  |
| 49) Lymphogranuloma Venereum  |  |
| 50) Malaria   |  |
| 51) Methicillin-Resistant <i>Staphylococcus Aureus</i> (MRSA), invasive disease ( <a href="#">separate form on ACHD website</a> ) |  |
- Reportable only in children <5 years of age to the Pennsylvania Department of Health at (877) 724-3258**
- |  |
|--|
| 73) Congenital Adrenal Hyperplasia (CAH) |
| 74) Congenital Hypothyroidism            |
| 75) Galactosemia                         |
| 76) Maple Syrup Urine Disease            |
| 77) Phenylketonuria                      |
| 78) Sickle Cell Disease                  |

\* PA-NEDSS is Pennsylvania's version of the National Electronic Disease Surveillance System.  
New Users: To register for PA-NEDSS access please send an e-mail to [NEDSS@pa.gov](mailto:NEDSS@pa.gov).

\*\* Clinical laboratories — all diseases are reportable by next workday

Updated 09.12.2017