2012-2016

For Healthcare Providers

Communicable Diseases Report

SPOKANE REGIONAL HEALTH DISTRICT

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References

Centers for Disease Control and Prevention Acute Flaccid Myelitis Investigation in the United States
Centers for Disease Control and Prevention FluView Interactive Surveillance Data
Centers for Disease Control and Prevention HIV/AIDS Statistics Center
Centers for Disease Control and Prevention Sexually Transmitted Diseases (STDs) Data and Statistics
Centers for Disease Control and Prevention Tuberculosis Data and Statistics
Centers for Disease Control and Prevention Viral Hepatitis Statistics and Surveillance
State of Washington Office of Financial Management April 1 Official Population Estimates
Washington State Department of Health Communicable Disease Surveillance Data
Washington State Department of Health HIV Statistics and Research
Washington State Department of Health Influenza Surveillance Data
Washington State Department of Health Rabies Activity in Washington
Washington State Department of Health Sexually Transmitted Disease Surveillance Data
Washington State Department of Health Tuberculosis Data and Reports

Technical Notes

Cases of communicable notifiable conditions were included in this annual report if they met the following criteria:

- resident of Washington
- onset dates during the 2016 CDC year (January 3, 2016 to December 31, 2016)
- case report entered into the Washington Public Health Issue Management System (PHIMS) by March 1, 2017, if the condition was common (>10 cases per year)
- reported to DOH through PHIMS prior to May 15, 2017, if the condition was rare (≤10 cases per year)
- given a valid case classification by DOH (as described in the guidelines for each condition: *https://www.doh.wa.gov/ForPublicHealthandHealthcareProviders/NotifiableConditions/ListofNotifiableConditions*

Population estimates used in rate calculations for Washington and Spokane came from the Washington State Office of Financial Management: *http://www.ofm.wa.gov/pop/asr/default.asp*. Previously reported disease rates for 2000 through 2010 were updated using new population estimates based on the 2010 decennial census.

To obtain copies

Call 509.324.1442 or visit *srhd.org/data-and-reports*

Cover photo

E. coli bacteria; copyright: istock/nopparit

This report presents summary data about notifiable conditions reported to Spokane Regional Health District in 2016, with local, state, and national data for the last five-year period (2012-2016), as available and pertinent.

Public health officials use notifiable condition reporting to help protect the public's health by tracking communicable diseases and other conditions. Based on these reports, they take protective steps, such as:

- verifying treatment of persons already ill
- securing preventive therapies for individuals who came into contact with infectious agents
- investigating and halting outbreaks
- removing harmful health exposures

Public health also uses investigation data to assess broader patterns, such as historical trends and geographic clustering. By analyzing the broader picture, appropriate actions are taken, including outbreak investigations, redirection of program activities, emergency preparedness planning, and policy development.

Data in this report are collected by Spokane Regional Health District (SRHD), other local health departments, the Washington State Department of Health (DOH), and the Centers for Disease Control & Prevention (CDC) from mandatory communicable disease reporting by healthcare providers, laboratories, healthcare facilities, and veterinarians, per Washington Administrative Code, chapters 246-100 and 246-101.

SRHD epidemiologists develop this report annually after DOH officials compile and release their communicable disease data. Depending on the condition, case patients may not be aware of being infected, are symptomatic but do not contact a healthcare provider, are not confirmed with appropriate tests, or are not reported after the diagnosis. Incidence rates for many conditions may therefore be higher than what is included in this report. Cases are counted by the county of residence of patient, not necessarily representing the county of diagnosis or exposure.

Questions or comments about this report can be directed to SRHD's Communicable Disease Epidemiology program at 509.324.1442. Reports from previous years are available at *srhd.org*.

Enteric Disease

Enteric (gastrointestinal) disease is most frequently caused by food- or water-borne pathogens and outbreaks are not uncommon. These infections are largely preventable through good hand hygiene, proper food handling, thorough cooking, and appropriate animal handling. Reportable enteric pathogens include Shiga toxin-producing *E. coli* (STEC), campylobacter, shigella, salmonella, listeria, vibrio, Yersinia, cryptosporidium, and giardia.

Campylobacter infection remained the most frequently reported enteric condition during the 2012-16 period in Spokane County, Washington State, and the United States, though campylobacter only became nationally notifiable in 2015. Most cases in Spokane County and Washington were sporadic, as outbreaks involving multiple persons and person-to-person spread were uncommon. Giardiasis was the second most frequently reported condition, often associated with contact to untreated water. The incidence rate for giardia in Spokane County is frequently higher than that of the state, possibly due to an abundance of outdoor recreational opportunities involving natural water.

With the exception of giardiasis, most enteric infections are reported less often in Spokane County residents, as compared to other Washington residents. The reasons for this are unclear. While it did not increase the rate of STEC infections, Spokane County was at the epicenter of a STEC outbreak associated with an area sprout grower in 2014. Another smaller STEC outbreak occurred in 2015 involving an unlicensed childcare facility.

Although single cases of gastroenteritis are not reportable, health district officials monitor and provide guidance on control of outbreaks of gastroenteritis, particularly those associated with long-term care facilities due to the fragile health of many residents. In 2016, 25 such outbreaks were reported in Spokane County, affecting at least 945 individuals. Several of these were confirmed to be caused by norovirus, a condition that while not reportable in Washington, is frequently implicated in outbreaks at long-term care centers, particularly during the winter months.

Spotlight on Norovirus Outbreak at House of Charity

On November 11, 2016, an outbreak of gastrointestinal disease was reported in 35 residents and staff at the House of Charity (HOC), an emergency services provider that provides shelter and meals for homeless and transient persons in downtown Spokane, sleeping more than 300 people daily. Health district and Spokane City Fire staff established unified command to jointly respond to the outbreak. Norovirus was identified by polymerase chain reaction (PCR) testing within 24 hours.

Response activities included:

- keeping the shelter open during the outbreak;
- isolating ill patrons in one area of the shelter;
- encouraging exposed patrons to stay in heated tents erected on the premises;
- providing on-site medical triage; and
- suspending hot meal service and utilizing packaged meals prepared offsite.

Medically fragile respite patients within the facility were transported to and cared for at a separate facility.

Many challenges existed during this outbreak, including its magnitude and near-freezing conditions. Temporary, heated tent shelters and portable toilets were quickly set up. During the initial days of the outbreak, there was risk of exposed patrons moving to other shelters, but every effort was made to keep HOC open and to retain ill residents on site. To manage the growing number of isolated individuals, SRHD provided wristbands that identified onset date of symptoms. After 72-hours of active symptoms, residents were released from the medical shelter and moved back into the temporary general shelter.

The response ended on November 21, 2016, when the number of ill residents returned to baseline level. At that time, approximately 80 residents and 13 staff met the case definition for norovirus during the previous 10 days.

ENTERIC DISEASE		2012		2013		2014		2015		2016	
		Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000
Campylobacteriosis **	Spokane County	70	14.7	42	8.8	57	11.8	84	17.2	86	17.5
	Washington	1,551 (3 deaths)	22.7	1,631 (4 deaths)	23.7	1,591	22.8	1,847 (2 deaths)	26.2	1,911	26.6
	United States	**	**	**	**	**	**	54,556	17.7	60,120	18.6
Cryptosporidiosis	Spokane County	3	*	4	*	2	*	5	1.0	0	0.0
	Washington	101	1.5	84	1.2	75	1.1	113	1.6	131	1.8
	United States	7,956	2.6	9,056	2.9	8,682	2.7	9,735	3.0	13,453	4.2
Giardiasis	Spokane County	39	8.2	24	5.0	47	9.7	60	12.3	72	14.6
	Washington	512	7.5	548	8.0	515	7.4	604	8.6	672	9.4
	United States	15,178	5.9	15,106	5.8	14,554	5.8	14,485	5.7	16,310	6.4
Listeriosis	Spokane County	1	*	1	*	2	*	0	0.0	0	0.0
	Washington	26 (5 deaths)	0.4	21 (1 death)	0.3	24 (8 deaths)	0.3	21 (3 deaths)	0.3	14 (2 deaths)	0.2
	United States	727	0.2	735	0.2	769	0.2	768	0.2	786	0.2
Salmonellosis	Spokane County	63	13.2	33	6.9	30	6.2	45	9.2	40	8.1
	Washington	842	12.4	670 (1 death)	9.7	739 (1 death)	10.6	1,034 (1 death)	14.6	754 (2 deaths)	10.5
	United States	53,800	17.3	50,634	16.1	51,455	16.1	55,108	17.2	53,850	16.7
Shiga-toxin producing *E. coli* (STEC)	Spokane County	13	2.7	19	4.0	16	3.3	17	3.5	17	3.5
	Washington	239	3.0	330 (3 deaths)	4.8	299	4.3	519 (1 death)	5.9	340	4.7
	United States	6,463	2.1	6,663	2.1	6,179	1.9	7,059	2.2	8,169	2.5
Shigellosis	Spokane County	1	*	3	*	11	2.3	2	*	10	2.0
	Washington	133	2.0	122	1.8	157	2.3	152	2.2	191	2.7
	United States	15,283	4.9	12,729	4.1	20,745	6.5	23,590	7.3	21,097	6.5
Vibriosis	Spokane County	4	*	2	*	1	*	1	*	1	*
	Washington	67	1.0	90	1.3	92	1.3	68	1.0	63 (1 death)	0.9
	United States	1,111	0.4	1,299	0.4	1,261	0.4	1,323	0.4	1,273	0.4
Yersiniosis (non-plague *Yersinia*)	Spokane County	1	*	0	0.0	1	*	2	*	0	0.0
	Washington	36	0.5	34	0.5	36	0.5	40	0.6	56	0.8
	United States	***	***	***	***	***	***	***	***	***	***

* Rates not calculated for <5 cases.

** Campylobacter did not become nationally notifiable until 2015.

*** Yersiniosis is not nationally notifiable.

Vaccine-Preventable Disease

During 2012-2016, significant changes continued in rates for some diseases prevented by standard childhood immunizations, specifically mumps, pertussis (whooping cough), and measles. There were no reported cases of tetanus, rubella, or diphtheria in Spokane County or Washington.

Pertussis regularly circulates within communities, with cyclical increases in cases typically every three to five years. Infants under the age of 1 are always disproportionately affected and are more likely to suffer complications, including death, than any other age group. During the summer of 2012, a large statewide outbreak occurred with an incidence rate nearly five times the national average (72.1 cases per 100,000 Washington residents vs. 15.5 per 100,000 United States residents). Although no infants died, dozens of individuals, particularly infants, were hospitalized. The pertussis outbreak strained resources of health departments, schools, medical offices, and healthcare facilities throughout the state. Eventually, the rate of pertussis returned to pre-outbreak levels until 2015 when a smaller outbreak again placed both Spokane County and Washington's incidence rates above the national average; rates remained above the epidemic threshold for more than half of the year.

Measles, once declared eliminated in the United States due to high population immunity, has made a comeback nationally in recent years with the introduction (typically from international travel) and spread of measles in unimmunized sub-populations. Notably, a large, multi-state measles outbreak related to a California amusement park started in late 2014 and spread to Washington. Unrelated to this outbreak, in the spring of 2015, measles was confirmed in two unvaccinated adults in Spokane County, the first cases in the county in 19 years. This outbreak, requiring the management of more than 300 contacts, strained SRHD resources and local medical facilities. The initial exposure source for the first case was not identified, but epidemiologists hypothesize its cause was the case's casual contact with an international traveler.

Invasive infections due to *N. meningitidis* occur infrequently, are typically sporadic and outbreaks are rare. They have the possibility to occur more frequently when groups of people live in close contact with one another and/or behaviors are present that contribute to the spread of disease (i.e., sharing of saliva through beverages, food or cigarettes) and have a high case fatality rate. Between 2012-16, four Spokane County residents, two in 2012 and two in 2014, were diagnosed with meningococcal disease and were hospitalized; one died. Also, during 2012-16, 10 to 24 cases of meningococcal disease were identified in Washington residents. The overall trend statewide was a decreasing incidence of disease with the rate plummeting from 1.2/100,000 in 2000 to 0.1/100,000 in both 2015 and 2016.

In the United States, almost all cases of meningococcal disease are caused by serogroups B, C and Y. Until fall 2014, the vaccine licensed in the United States only protected against serogroups A, C, Y and W-135. Two new meningococcal serogroup B vaccines were licensed by the Food and Drug Administration in 2014 and 2015.

Invasive infection from *H. influenzae* is only reportable in children under the age of five. Like meningococcal disease, invasive infection with *H. influenzae* is rare and typically sporadic. Prior to the introduction of effective conjugate vaccines in 1988 and the recommendation for routine vaccination, *H. influenzae* serotype B (Hib) was the most common cause of bacterial meningitis and a major cause of invasive bacterial disease in young American children. Between 1989 and 2000, there was a 99% reduction in Hib disease among children younger than five. Two cases were reported in Spokane County residents during this report's period, both in 2016 and unrelated to each other—one was immunized while the other was not, both were hospitalized.

VACCINE-PREVENTABLE DISEASE		2012		2013		2014		2015		2016	
		Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000
***H. influenzae* invasive disease** (in persons <5 years of age)	Spokane County	0	0.0	0	0.0	0	0.0	0	0.0	2	*
	Washington	4	0.9**	11	2.4**	9	2.0**	5	1.1**	9	2.0**
	United States	445	2.2	438	2.2	472	2.4	506	2.8	572	2.9
Measles	Spokane County	0	0.0	0	0.0	0	0.0	2	*	0	0.0
	Washington	0	0.0	4	*	33	0.5	10 (1 death)	0.1	0	0.0
	United States	55	0.0	187	0.1	667	0.2	188	0.1	86	0.0
Meningococcal disease	Spokane County	2	*	0	0.0	2	*	0	0.0	0	0.0
	Washington	24 (1 death)	0.4	20 (3 deaths)	0.3	17 (2 deaths)	0.2	10 (1 death)	0.1	13 (1 death)	0.2
	United States	551	0.2	556	0.2	433	0.1	372	0.1	375	0.1
Mumps	Spokane County	0	0.0	0	0.0	0	0.0	0	0.0	17	3.5
	Washington	2	*	2	*	9	0.1	7	0.1	152	2.1
	United States	229	0.1	584	0.2	1,223	0.4	1,329	0.4	6,369	2.0
Pertussis	Spokane County	198	41.6	48	10.0	26	5.4	48	9.8	69	14.0
	Washington	4,916	72.1	748	10.9	601	8.6	1,383	19.6	618	8.6
	United States	48,277	15.5	28,639	9.1	32,971	10.3	20,762	6.5	17,972	5.6

* Rates not calculated for <5 cases.

** Rates are calculated per 100,000 population aged 0-4 years.

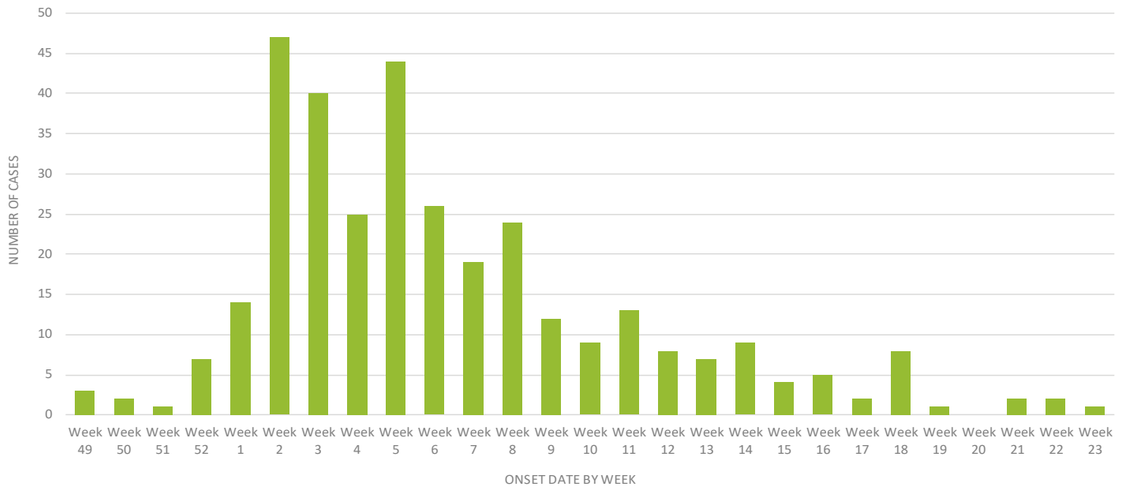
*** Rates are calculated per 100,000 population aged 0-17 years.

Spotlight on Mumps

Mumps outbreaks plagued many communities across the country in 2016 and into 2017, and Spokane was no exception. After an absence for nearly a decade two separate mumps outbreaks affected Spokane County in 2016. The first outbreak occurred at Whitworth University, where the index case had an international exposure prior to the end of summer vacation. The infection spread to three other close contacts; all cases had documentation indicating they were fully immunized. While the outbreak was contained to just four cases, the close living and social environment of the ill students resulted in the monitoring of nearly 100 close contacts.

The second mumps outbreak began in December 2016 when several Spokane residents contracted mumps just prior to and during the holidays—epidemiologists theorize holiday festivities contributed to the disease's spread. The outbreak began in a tight-knit ethnic community and was likely linked to a Seattle outbreak, which itself likely originated in travelers to/from Arkansas, a state also experiencing a large community-wide outbreak that year. School-aged children were predominantly affected by this outbreak. Ultimately, the outbreak included cases in children and adults outside of the ethnic community where it began.

By June 2017, over 330 confirmed or probable cases were identified and an additional 300 cases of parotitis were investigated by epidemiology staff. The outbreak strained resources across the community and the state, including SRHD, DOH, local medical offices, laboratories, and schools. School exclusions for unvaccinated students occurred. Almost 900 cases were identified in the state related to this outbreak, with most cases occurring in Spokane, King, Snohomish, Pierce and Grant counties.



SPOKANE COUNTY EPI CURVE, PROBABLE AND CONFIRMED MUMPS CASES BY ONSET DATE (N=333)

First case onset: December 4, 2016
Last case onset: June 5, 2017

Influenza

Influenza is another important vaccine-preventable infection that occurs regularly in Spokane County and throughout the state and nation. Influenza is a serious annual threat to population health, yet influenza vaccination rates of both the general population and those in the healthcare industry remain low, estimated to be in the 40% range in most years. In September 2016, SRHD's Board of Health passed a resolution specific to healthcare workers, vaccination and masking recommendations. The resolution advises that, when influenza positivity rates in local emergency departments surpass a 10% threshold for two consecutive weeks, healthcare workers not vaccinated for influenza wear a mask while working in a healthcare facility.

In Spokane County, only hospitalized cases of influenza are reportable. Notably, the 2014-15 season was a particularly bad influenza season due in part to the vaccine not being well matched to the most commonly circulating influenza A strain (H3N2). The 2015-16 season was unusually high for influenza B compared to previous years. Most recently, during the 2016-17 season, 315 Spokane residents were hospitalized, with almost 67% of those hospitalized age 65 or older, the group most likely to suffer complications from influenza infection. Deaths attributable to influenza are also reported annually—the 2016-17 season had 14 Spokane residents succumb to influenza, one of whom was a child.

INFLUENZA		2012-13		2013-14		2014-15		2015-16		2016-17	
		Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000
Hospitalizations	Spokane County	152	32.0	183	38.1	407	84.0	225	**46.1**	315	64.0
	Washington	**	**	**	**	**	**	**	**	**	**
	United States	**	**	**	**	**	**	**	**	**	**
Influenza-associated deaths (all ages)	Spokane County	2	0.4	8	1.7	18	3.7	5	1.0	14	2.8
	Washington	54	0.8	80	1.2	156	2.2	67	0.9	276	3.8
	United States	**	**	**	**	**	**	**	**	**	**
Influenza-associated pediatric deaths ***	Spokane County	0	0.0	0	0.0	0	0.0	0	0.0	1	*
	Washington	1	*	1	*	0	0.0	1	*	6	0.4
	United States	171	0.2	111	0.2	148	0.2	93	0.1	110	0.1
		No. of outbreaks		No. of outbreaks		No. of outbreaks		No. of outbreaks		No. of outbreaks	
	Washington	5		11		22		6		34	
	United States	not available		not available		not available		not available		234	

* Rates not calculated for < 5 cases.

** Deaths, hospitalizations, and long-term care outbreaks are not nationally notifiable in the United States. Hospitalizations are not notifiable in all of Washington.

*** Rates are calculated per 100,000 population aged 0-17 years.

CDC and SRHD influenza "season" is counted from week 40 through 39 the following year. Influenza season for DOH is counted for week 30 through 29 of the following year.

Viral Hepatitis

Hepatitis A

Statewide, cases of hepatitis A were at epidemic levels in the late 1980s, peaking in 1989 with 3,273 cases (69.2/100,000). Subsequent and ongoing vaccination efforts caused cases to drop to 45 or fewer per year in the state. The number of cases was consistently five or fewer, per year, over the past decade in Spokane County.

Outbreaks are not uncommon, although the last large outbreak in Spokane County was in the early 1990s. Notable national outbreaks involving food occurred in recent years. In 2013, a large multistate hepatitis A outbreak occurred that was linked to frozen pomegranate arils imported from Turkey. This resulted in 165 infections across ten states. Additionally, two separate outbreaks occurred in 2016—one related to frozen scallops imported from the Philippines that was localized to Hawaii (292 cases), and a multistate outbreak related to frozen strawberries imported from Egypt (143 cases, nine states).

VIRAL HEPATITIS		2012		2013		2014		2015		2016	
		Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000
Hepatitis A	Spokane County	0	0.0	1	*	3	*	1	*	1	*
	Washington	29 (1 death)	0.4	45 (1 death)	0.7	26	0.4	26	0.4	31 (1 death)	0.4
	United States	1,562	0.5	1,781	0.6	1,239	0.4	1,390	0.4	2,007	0.6
Hepatitis B, acute	Spokane County	4	*	13	2.7	13	2.7	8	1.6	10	2.0
	Washington	34 (1 death)	0.5	34 (1 death)	0.5	44	0.6	34	0.5	45	0.6
	United States	2,895	0.9	3,050	1.0	2,953	0.9	3,370	1.1	3,218	1.0
Hepatitis B, chronic	Spokane County	57	12.0	56	11.7	56	11.6	65	13.3	59	12.0
	Washington	1,139 (47 deaths)	16.7	901 (60 deaths)	13.1	1,119 (58 deaths)	16.1	1,310 (48 deaths)	17.8	1,521 (49 deaths)	21.2
	United States	**	**	**	**	**	**	**	**	**	**
Hepatitis C, acute	Spokane County	13	2.7	14	2.9	16	3.3	13	2.7	24	4.9
	Washington	54	0.8	63	0.9	83	1.2	63	0.9	95	1.3
	United States	1,778	0.6	2,138	0.7	2,194	0.7	2,436	0.8	2,942	1.0
Hepatitis C, chronic	Spokane County	587	123.4	631	131.5	702	144.9	725	148.5	739	150.0
	Washington	4,865 (604 deaths)	71.4	4,438 (584 deaths)	64.5	5,995 (645 deaths)	86.0	7,085 (651 deaths)	100.3	8,118 (534 deaths)	113.00
	United States	**	**	**	**	**	**	**	**	**	**

* Rates in Spokane County not calculated for <5 cases.

** Chronic hepatitis B and C cases are not uniformly reported in all states.

Changes were made to the way chronic hepatitis B and C data were compiled in 2016, and these changes affected case counts in many counties for the previous five years.

Hepatitis B

The incidence of acute hepatitis B has declined since the vaccine first became commercially available in the 1980s. Outbreaks are rare. Typical risk factors include injection drug use and sexual contact. For the past several years, Spokane County's overall incidence rate annually—13 or fewer cases—was typically higher than state and national averages for reasons not well understood. Nationally, reported numbers of acute hepatitis B cases hovered around 3,000 cases from 2012-16; however, the Centers for Disease Control & Prevention (CDC) estimated the actual number of acute cases to be 6.48 times greater than the number of reported cases in any year. Recent rates were highest in adults aged 30-39, reflecting the need for vaccination of high-risk adults.

Seventy-five percent of chronic hepatitis B infections occur in persons born outside of the United States. The incidence rate for reported cases of chronic hepatitis B infection was higher in Washington State than Spokane County from 2012-16. The higher state rate was driven by higher rates in west-side communities, notably King County, where larger populations of individuals born in endemic areas reside.

Chronic hepatitis B cases are not uniformly reported in all states. The CDC estimates approximately 850,000 persons are living with this infection in the United States, although other studies have estimated this number to be as high as 2.2 million.

Nationally, hepatitis B mortality from 2011 through 2014 remained relatively stable at 0.50-0.52 deaths/100,000 population. In 2015, the most recent year for which data were available, the rate declined slightly to 0.45 deaths/100,000 population with Asians/Pacific Islanders having the highest hepatitis B-related mortality rate (2.24 deaths/100,000 population) compared with other racial/ethnic populations.

Hepatitis C

Due to the often-unrecognized symptoms of hepatitis C infection, acute disease is infrequently diagnosed and thus true incidence is likely much higher. Before 2011, fewer than 30 acute hepatitis C cases were reported per year in Washington; however, the number of reported cases increased in recent years—an average of 67 acute cases were reported annually from 2012-16—providing evidence of ongoing transmission. Spokane County's rate of acute hepatitis C is always higher than the state and national average (in 2016, the rate of acute cases in Spokane was 4.9/100,000 compared to 1.3/100,000 in Washington and 1.0/100,000 in the United States). The reason for this is multi-factorial, including increased local surveillance, greater testing frequency, more frequent reporting, and possible higher prevalence of persons with risk factors, i.e., persons using injection drugs—75% of acute hepatitis C cases in Washington report injection drug use. Incidence rates also increased nationally over the same period.

Chronic infection follows acute infection in 75-85% of cases and is more likely for males, those infected after 25 years of age, or the immunosuppressed, including persons co-infected with HIV. In Spokane County, an average of 677 cases of chronic hepatitis C were reported each year during 2012-16. Like acute infection, the incidence rate for reported chronic infections was substantially higher in Spokane County residents than the overall state incidence rate, likely due to the reasons listed above. As of 2016, it was estimated that over 1% of the United States population was infected with chronic hepatitis C.

Hepatitis C is the leading cause of cirrhosis and liver cancer in the United States. Chronic infection is not a nationally notifiable condition; thus, data are not available at the national level. National death certificate surveillance, however, indicated of the three types of viral hepatitis, hepatitis C was associated with the greatest number of deaths and the highest mortality rate, at 4.9 deaths/100,000 population in 2015. Nationally in 2015, American Indians/Alaska Natives had the highest hepatitis C-related mortality rate compared with other racial/ethnic populations at 12.95 deaths/100,000 population.

Vector-borne Disease

Compared to other parts of the country, vector-borne diseases, traditionally characterized as diseases transmitted by fleas, ticks and mosquitos, occur infrequently in the Inland Northwest and across the state. Disease surveillance allows officials to examine changes in prevalence and geographic distribution. For example, since the *Ixodes* tick, the primary vector for Lyme disease, has not been detected in Spokane County environs, Lyme disease diagnosed in the county is presumably acquired out of the area, primarily in the northeastern or mid-western United States, or rarely, in western Washington. Statewide during 2012-16, 15 to 33 cases of Lyme disease were reported and most of these cases were acquired out of state.

Malaria and most types of reported arboviral diseases, such as yellow fever and dengue, are mainly transmitted by mosquitoes not native to the Pacific Northwest; thus, figures reported were all travel-related. Notably, a large outbreak of chikungunya began in late 2013 in the Caribbean and quickly spread to many countries in Central and South America, leading to a peak in reported travel-associated chikungunya cases in 2015 in many states including Washington. To date, other than West Nile Virus (WNV), the last reported human arboviral infection acquired in the state was western equine encephalitis in 1988.

WNV disease, transmitted via mosquito from infected birds, was first detected in the United States in 1999. The first human WNV infections acquired in Washington were reported in 2006. Most infected people are asymptomatic, so it is believed the actual disease incidence is substantially underrepresented. In 2009, Washington had its highest number of cases reported to date with 38 cases and two viremic blood donors. Of these, 36 were known to be endemically acquired in Washington. In 2016, nine cases and three asymptomatic viremic blood donors were reported in Washington, all with in-state exposure. That year, Spokane County saw its first in-county acquired human cases, two of whom were hospitalized with encephalitis.

A *2018 CDC Vital Signs report* on national trends in vector-borne diseases found reports tripled from 2004 through 2016, with more than 640,000 reports (the true number is likely much higher due to under-reporting and under-diagnosis). During this period, tick-borne diseases more than doubled and accounted for more than 60% of vector-borne infections. While the report does not provide explanations for the increases, the reasons were likely multi-factorial, including climate change, increased air travel to endemic areas, suburban reforestation and blurring of the urban forest interface, lack of vaccines, and better awareness and testing in the medical community.

While not transmitted by the vectors listed previously, Hantavirus Pulmonary Syndrome (HPS) is another condition of public health significance. A rare and serious disease caused by a virus that can be inhaled from rodent droppings, HPS had never been diagnosed in a Spokane resident through 2016, though the risk for the disease is present. Sporadic cases (zero to five per year) are diagnosed in Washington residents, though most disease occurs in the southwest United States.

Spotlight on Zika Virus

In early 2015, an outbreak of Zika virus disease was detected in Brazil. Spread by an aggressive species of *Aedes* mosquito not native to the Pacific Northwest, the outbreak soon spread to areas of the world where this mosquito inhabits, including South America and Central America, the Caribbean, and the South Pacific. In summer 2016, evidence of transmission was found in south Florida and south Texas, resulting in 224 cases acquired through presumed mosquito-borne transmission in those areas.

In early 2016, DOH and SRHD began offering facilitation of Zika testing for symptomatic patients, as well as asymptomatic pregnant women with a history of travel to affected countries or possible sexual exposure. In 2016, 39 people in Spokane were approved for testing by DOH. One person tested positive but was not included in the presented data due to an out-of-country permanent address.

VECTOR-BORNE DISEASE		2012		2013		2014		2015		2016	
		Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000
Arboviral disease **	Spokane County	1	*	0	0.0	1	*	1	*	0	*
	Washington	16	0.1	14	0.2	24	0.3	60	0.8	36	0.5
Hantavirus Pulmonary Syndrome	Spokane County	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Washington	2 (2 deaths)	*	0	0.0	1	*	1	*	1	*
	United States	29	0.0	21	0.0	35	0.0	18	0.0	31	0.0
Lyme disease	Spokane County	1	*	0	0.0	0	0.0	1	0.0	5	*
	Washington	15	0.2	19	0.3	15	0.2	24	0.3	33	0.4
	United States	30,831	7.0	36,307	8.6	33,461	7.9	38,069	8.9	36,429	8.1
Malaria	Spokane County	2	*	3	*	2	*	0	0.0	4	*
	Washington	26	0.4	30	0.4	41	0.6	23	0.3	46	0.6
	United States	1,503	0.5	1,594	0.5	1,653	0.5	1,390	0.4	1,955	0.6
Tick-borne relapsing fever	Spokane County	1	*	2	*	2	*	1	*	0	0.0
	Washington	6	0.1	4	0.1	7	0.1	3	*	1	*
West Nile Virus disease	Spokane County	0	0.0	0	0.0	0	0.0	0	0.0	3	*
	Washington	4	*	1	*	12	0.2	24	0.3	9	0.1
	United States	5,674	1.8	2,469	0.8	2,205	0.7	2,175	0.7	2,149	0.6
Zika virus disease, congenital †	Spokane County	***	***	***	***	***	***	0	0.0	0	0.0
	Washington	***	***	***	***	***	***	0	0.0	0	0.0
	United States	***	***	***	***	***	***	***	***	30	0.8
Zika virus disease, non-congenital	Spokane County	***	***	***	***	***	***	***	***	0	0.0
	Washington	***	***	***	***	***	***	0	0.0	68	0.9
	United States	***	***	***	***	***	***	62	0.0	5,132	1.6
Zika virus infection, congenital †	Spokane County	***	***	***	***	***	***	0	0.0	0	0.0
	Washington	***	***	***	***	***	***	0	0.0	0	0.0
	United States	***	***	***	***	***	***	***	***	45	1.1
Zika virus infection, non-congenital	Spokane County	***	***	***	***	***	***	0	0.0	0	0.0
	Washington	***	***	***	***	***	***	0	0.0	5	0.1
	United States	***	***	***	***	***	***	***	***	911	0.3

* Rates not calculated for <5 cases.

** Includes yellow fever, dengue, chikungunya, Colorado Tick Fever, St. Louis encephalitis, Japanese encephalitis, and other/unknown flavivirus.

*** Zika virus disease became reportable in 2015. Additionally, CDC initially did not release infection numbers or cases by congenital/non-congenital status due to some states' small numbers guidelines. *https://www.cdc.gov/pregnancy/zika/data/pregwomen-uscases.html*

†Data reported to ArboNET using the national surveillance case definition for congenital Zika virus disease or infection (CSTE Position Statement 16-ID-01). Additional data reported to the US Zika Pregnancy Registry for outcomes of pregnancies with laboratory evidence of possible Zika virus infection are available at *https://www.cdc.gov/zika/reporting/pregnancy-outcomes.html*. Cases reported to the U.S. Zika Pregnancy Registry might not meet the national surveillance case definition for congenital Zika virus disease or infection.

Tick-borne relapsing fever and some arboviral conditions are not nationally notifiable, thus US data are not included here.

Spotlight on Rabies

In Washington, bats are the only rabies reservoir—rabies rarely occurs in terrestrial animals as it does in other parts of the United States or in other countries. Rabid bats are identified in Washington every year and when people or other animals were infected with rabies in Washington it was with the bat variant. While it is estimated that in Washington less than 1% of the bats in the wild carry rabies, 5-10% of those tested are rabid, as those tested are more likely to be sick or injured. Rabies in mammals other than bats remains rare in Washington. In the last 25 years, only four rabid domestic animals were identified in the state, three with bat-variant virus and one with the variant not typed.

Every year SRHD's Zoonotic Disease program sends an average of 15 bats to the Washington State Public Health Laboratory for rabies testing. Until recently, the last rabid bat identified in Spokane County was in 2007. However, in July 2015, program staff facilitated testing on a bat that bit a child at Liberty Lake Regional Park in Spokane County and was determined to be rabid. Staff partnered with media to rule out potential exposures, yet this increased awareness of the issue in the county. Subsequently, the number of bat-related calls received by SRHD increased. As a result, the 2015 year-end total for rabies testing of bats was 31, double annual average. The original rabid bat remained the only one to test positive.

Human rabies is extremely rare in the United States, with one to three cases reported annually nationwide during 2012-16. Almost all human cases of rabies acquired in the United States reported since 1980 were due to bat rabies virus. When exposure occurs outside of the United States, it is usually due to contact with a rabid dog. The last reported state cases in humans in Washington were in 1995 and 1997, also from bat exposures.

RABIES TESTING (BY VICTIM'S RESIDENCE)		2013	2014	2015	2016
		Tests Administered	Tests Administered	Tests Administered	Tests Administered
Bat	Spokane County	15	12	31 (1)	43 (1)
	Washington	284 (12)	276 (15)	305 (9)	298 (20)
Cat	Spokane County	8	10	16	23
	Washington	80	75	95 (1)	108
Dog	Spokane County	4	5	6	7
	Washington	65	53	49	44
Ferret	Spokane County	--	--	--	--
	Washington	--	--	--	--
Raccoon	Spokane County	1	--	--	--
	Washington	13	12	8	5
Skunk	Spokane County	--	--	--	--
	Washington	--	--	2	--
Rodent	Spokane County	--	--	--	--
	Washington	3	1	8	4
Lagomorph	Spokane County	--	1	--	--
	Washington	--	1	--	1
Other wild	Spokane County	--	1	2	1
	Washington	5	6	11	3
Other domestic	Spokane County	--	2	--	--
	Washington	9	11	7	3
Test totals	Spokane County	28	31	55	74
	Washington	459	435	485	466

Lagomorphs include: rabbit and pika.

Rodents include: beaver, chinchilla, chipmunk, degu, gerbil, gopher, hamster, marmot, mouse, muskrat, nutria, porcupine, prairie dog, rat, squirrel, vole, woodchuck

Other domestic include: alpaca, burro, cattle, goat, horse, llama, mule, pig, sheep, zebra .

Other wild include: badger, bear, bison, bobcat, cougar, coyote, deer, fox, kinkajou, lynx, marten, mink, mole, monkey/non-human primate, ocelot, opossum, otter, seal, shrew, sugar glider, weasel, wolf, wolf-hybrid, zorilla (striped polecat) .

Rabid animals in red.

Sexually Transmitted Diseases

Sexually transmitted diseases (STDs) continued to be the most commonly reported of all communicable diseases in Washington and accounted for more than three-quarters of all notifiable conditions reported to DOH in 2016. Rates of chlamydia and primary/secondary syphilis increased in Spokane County, Washington, and the nation; rates of gonorrhea remained relatively stable with minor increases in Washington and the United States from 2015 to 2016. The worsening epidemic is a clear indication of the need for better diagnosis, treatment, and prevention of STDs. Additionally, surveillance data showed higher rates of reported STDs among some racial or ethnic minority groups when compared with rates among whites, particularly blacks, Hispanics, American Indians/Alaska Natives, and Native Hawaiians/Other Pacific Islanders. Inequities around economic opportunity, access to health care (including quality STD prevention and treatment services), and educational attainment all contribute to these and other health-related disparities.

Chlamydia

Reports of *Chlamydia trachomatis* infection comprised the majority of all notifiable condition reports received in Spokane County. The 2016 rate was more than double the rate of cases reported in 1996, when the fewest cases in the last two decades were reported. In 2016, the incidence rate of chlamydia infection in Spokane County was higher than the Washington rate but on par with the United States rate. In 2016, cases were most frequently reported in 20- to 24-year-old females.

In Washington, chlamydial infection also continued to be the most commonly reported STD. The incidence rate was relatively stable for several years until 2008; since then, an increase in incidence was seen in each succeeding year. The overall incidence rate in Washington was 434.2/100,000 population, a 35% increase from 2008. By race and ethnicity, rates of chlamydia were lowest among White persons and highest among Black persons and all other races in 2016. Women 15 to 24 years of age had the highest rates of chlamydia, partially due to better detection and screening of chlamydia among women of childbearing age.

Nationwide in 2016, nearly 1.6 million cases of chlamydia were reported, corresponding to a rate of 497.3/100,000 population, surpassing the previously highest record of 478.8/100,000 in 2015. Reported cases of chlamydia constituted the largest number of cases for one condition ever reported to the CDC.

Gonorrhea

In late 2013, DOH declared a gonorrhea outbreak in Spokane County, as compared to 2012 disease incidence. The rate continued to rise until 2014, when it stabilized into 2016, indicating sustained levels of transmission and disease detection. Locally, the rate of reported gonorrhea cases in 2016 was more than triple the rate reported for 2012 (105.6/100,000 vs. 38.1/100,000), before the increase in local gonorrhea cases was observed. Although some of the increase was probably due to increased screening and testing, more disease was likely circulating. In 2016, more cases were detected in 30- to 34-year-olds than other age groups.

Statewide, the incidence rate increased steadily since 2011, from 40.3/100,000 to 113.7/100,000 in 2016. The 2016 incidence rate, which was elevated over the last two decades' rates, fell below the United States average. Statewide, males had a higher rate of gonorrhea than females in most age groups, partly due to high rates among men who have sex with men (MSM). About 4% of men in Washington were MSM, yet MSM represented 47% of male gonorrhea cases in 2016, driven largely by cases in King County.

In 2009, the national rate of reported gonorrhea cases reached an historic low of 98.1/100,000. However, during 2009-2012, the rate increased slightly each year to 106.7/100,000. After declining slightly in 2013, primarily in women, over 468,000 cases of gonorrhea were reported in 2016, corresponding to a rate of 145.8/100,000.

Syphilis

Primary and secondary (P&S) syphilis are the infectious states of the disease and indicate likely acquisition of the disease in the preceding year. Locally, rates of P&S syphilis were stable until sharp increases were observed in 2015.

Since 2007, typically less than 15 cases of P&S syphilis were reported in Spokane County residents annually, with cases largely occurring in the MSM population. However, starting in 2015, an increase in P&S cases was observed, increasing to 28 cases that year and 60 cases in 2016. The incidence rate in 2016 (12.2/100,000) was higher than both the state (7.9/100,000) and national (8.7/100,000) rates. While statewide 74% of P&S syphilis cases occurred in MSM, this was not true for Spokane residents as only about a third of cases of P&S syphilis were in MSM.

Increases in P&S syphilis were also observed statewide, with 566 cases reported in 2016, resulting in an incidence rate increase of 23% over 2015. Men had higher rates of P&S syphilis than women, and MSM represented 81% of male P&S syphilis cases. By race and ethnicity, rates of syphilis were highest among Black and Hispanic persons and lowest among Whites and all other races. In 2016, 70% of P&S syphilis cases lived in Snohomish, Pierce, and King counties. Co-infection with HIV was also present in 26% of P&S syphilis cases in the state.

Because syphilis can be spread from pregnant women to their unborn child and cases increased in women of childbearing age, congenital syphilis cases were seen. From 2015 through 2016, there were eight cases of congenital syphilis reported in Washington, which was more cases than in the previous 12 years combined. One of those cases was in a Spokane resident, the county's first congenital syphilis case since 2010.

Nationally, P&S syphilis cases also increased after the lowest rates were reported in 2000 and 2001 (2.1/100,000). The rise was primarily attributable to increased cases among MSM; however, during 2013-16 the rate increased among both men and women. During 2015-16, the rate increased 14.7% among men and 35.7% among women. These increases among women are of concern because congenital syphilis cases tend to increase as the rate of P&S syphilis among women increases. In 2016, there were 628 reported cases of congenital syphilis, including 41 syphilitic stillbirths, and the national rate was 15.7 cases per 100,000 live births. This rate represents a 27.6% increase relative to 2015 and an 86.9% increase relative to 2012. Nationally, the highest rates of P&S syphilis in 2016 were observed among men aged 20-34 years, among men in western states, and among black men.

SEXUALLY TRANSMITTED DISEASES		2012		2013		2014		2015		2016	
		Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000
Chlamydia	Spokane County	1,923	404.3	2,037	424.4	2,142	442.1	2,194	450.5	2,452	497.8
	Washington	24,600	360.8	25,013	363.4	26,246	376.7	28,721	410.0	31,193	434.2
	United States	1,422,976	453.3	1,401,906	443.5	1,441,789	452.2	1,526,658	478.8	1,598,354	497.3
Gonorrhea	Spokane County	181	38.1	329	68.5	530	109.4	527	108.2	520	105.6
	Washington	3,282	48.1	4,390	63.8	6,136	88.1	7,203	102.8	8,165	113.7
	United States	334,826	106.7	333,004	105.3	350,062	109.8	395,216	123.9	468,514	145.8
Genital Herpes (initial infection)	Spokane County	134	28.2	132	27.5	201	41.5	186	39.0	206	41.8
	Washington	2,197	32.2	2,207	32.1	2,082	29.9	2,524	36.0	2,548	35.5
	United States	**	**	**	**	**	**	**	**	**	**
Syphilis (primary & secondary)	Spokane County	5	1.1	2	*	11	2.3	28	5.7	60	12.2
	Washington	300	4.4	285	4.1	337	4.8	452	6.5	566	7.9
	United States	15,667	5.0	17,375	5.5	19,999	6.3	23,872	7.5	27,814	8.7
Congenital Syphilis ***	Spokane County	0	0.0	0	0.0	0	0.0	0	0.0	1	*
	Washington	0	0.0	0	0.0	2	2.3	5	5.8	5	5.5
	United States	334	8.4	361	9.2	461	11.6	492	12.3	628	15.7

* Rates in Spokane County not calculated for < 5 cases

** Genital herpes is not a nationally notifiable condition

*** Rate calculated as rate per 100,000 live births

HIV/AIDS

Acquired immunodeficiency syndrome (AIDS) has been a reportable disease in Washington since 1982, and for many years the number of cases reported was used to estimate the incidence of human immunodeficiency virus (HIV). Over time, as treatment and longevity after diagnosis of HIV infection improved, HIV disease has been regarded as a chronic infection.

The number of new HIV cases in Spokane County is usually between 20 to 25 cases annually; however, only a small number of new cases (six) were detected in 2014 for reasons that were unclear, since testing numbers were stable. In 2016, 23 new cases were detected in the county with eight (35%) cases classified as late HIV diagnoses, i.e., these cases received an AIDS diagnosis within 12 months of HIV diagnosis.

The number of new HIV cases in Washington decreased in recent years, averaging 461 cases annually during 2012-2016. The number of new HIV cases in the state in 2016 was 440. Approximately 25% of new HIV cases were classified as late HIV diagnoses. MSM sexual contact remains the predominant risk factor for new diagnoses (51%), followed by heterosexual sex (10%), injection drug use (IDU) (7%), MSM/IDU (6%), blood/pediatric (1%), and unknown (25%). Eighty-two percent of cases diagnosed during 2012-2016 were male, and the majority (32%) were diagnosed at 25-34 years of age.

The number of people living with HIV/AIDS increased slightly in Spokane County, with the largest increase occurring from 2014 to 2015. DOH attributes this increase partially to delays in reporting and data entry vs. an actual increase in people living with HIV during this short time period. As of December 31, 2016, 560 individuals in Spokane County were living with HIV, and 86% of people living with HIV (defined as at least one reported CD4 or viral load result within the calendar year) were engaged in care. Seventy-two percent of people living with HIV had a suppressed viral load (≤ 200 copies/mL).

In the state, 12,395 people were living with HIV as of December 31, 2016, with 90% engaged in care and 79% with a suppressed viral load. Significant strides were made statewide to not only diagnose people who are HIV-infected and ensure new cases were linked to care within 30 days of diagnosis, but also to assist people living with HIV to stay engaged in HIV-related care and obtain virologic suppression. From 2007 to 2016, a nearly 80% increase in the number of diagnosed HIV cases with virologic suppression was achieved, rising from 44.2% to 79.1%. In 2015, the most recent year for which complete data were available, 139 Washingtonians died from HIV/AIDS-related causes.

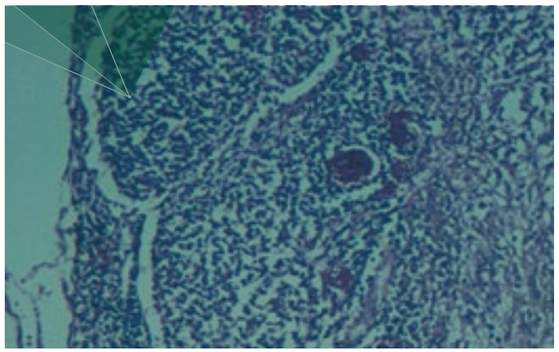
Each year in the United States, roughly 40,000 people are diagnosed with HIV. In 2016, there were 39,782 new HIV diagnoses. MSM bore the greatest burden of any risk group, representing an estimated two-thirds of new diagnoses. By race and ethnicity, blacks were most affected by HIV, representing 44% of new diagnoses in 2016, but only comprised 12% of the total United States population. Hispanic/Latinos were also strongly affected, making up only 18% of the total United States population but 25% of all new HIV diagnoses in 2016. By age, young people aged 13-24 were disproportionately affected, making up only 16% of the United States population, but accounting for 22% of all new HIV diagnoses.

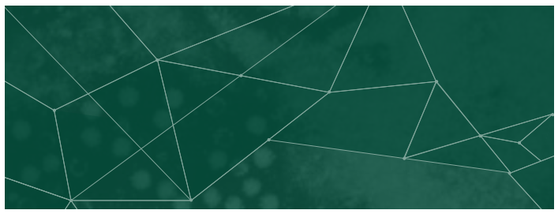
An estimated 1.1 million people in the United States were living with HIV at the end of 2015, the most recent year for which this information was available. Of those people, about 15% or one in seven, did not know they were infected; down from around 20% in previous decades.

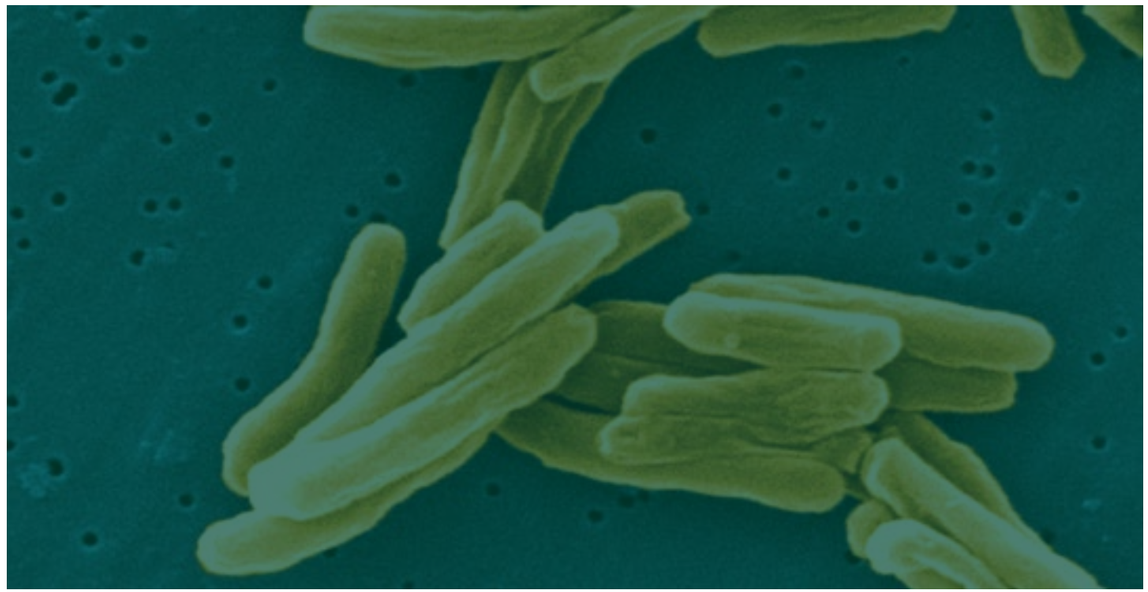
HIV/AIDS		2012		2013		2014		2015		2016	
		Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000
HIV disease	Spokane County	25	5.3	21	4.4	6	*	24	4.9	23	4.7
	Washington	509	7.5	467	6.8	447	6.4	446	6.4	436	6.1
	United States	41,168	13.1	39,652	12.5	40,276	12.6	39,876	12.4	39,782	12.3
People living with HIV disease and related deaths	Spokane County	469 (8 deaths)	98.6	469 (10 deaths)	97.7	478 (5 deaths)	98.7	551 (3 deaths)	112.8	560 (deaths not available)	113.7
	Washington	11,242 (154 deaths)	164.9	11,558 (168 deaths)	167.9	11,691 (155 deaths)	167.8	12,063 (139 deaths)	170.8	12,404 (deaths not available)	172.7
	United States	899,692	286.5	923,777	292.1	948,494	297.7	973,846	303.5	not available	not available

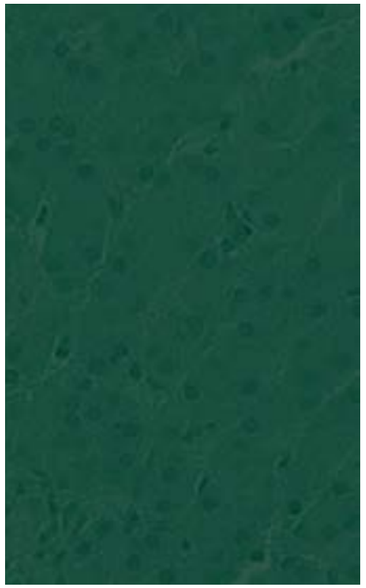
* Incidence rates for HIV are not calculated for <11 cases.

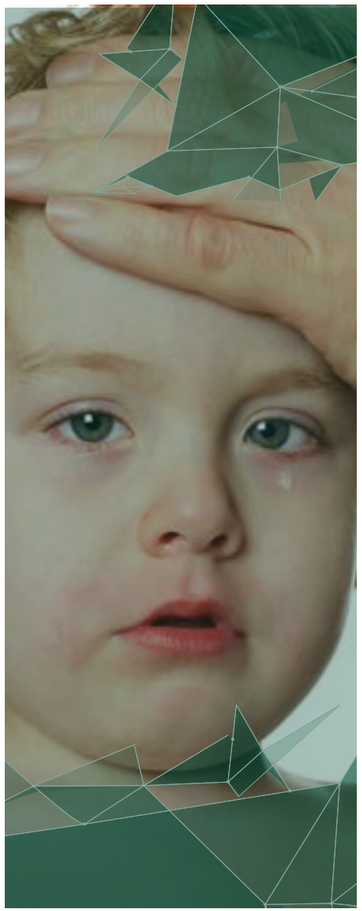
Cases are presented by year of initial HIV diagnosis, regardless of diagnostic status (HIV or AIDS), and by county of residence at time of diagnosis. Data reflects cases reported through 7.31.17.

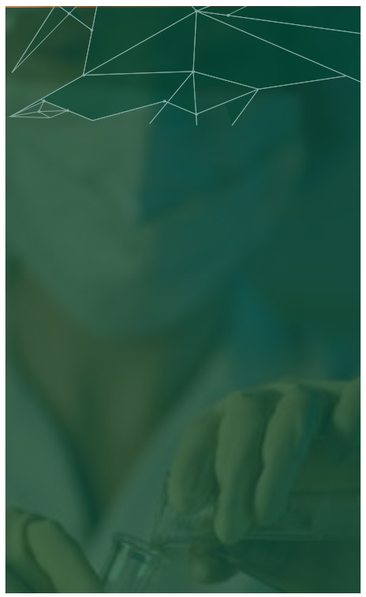


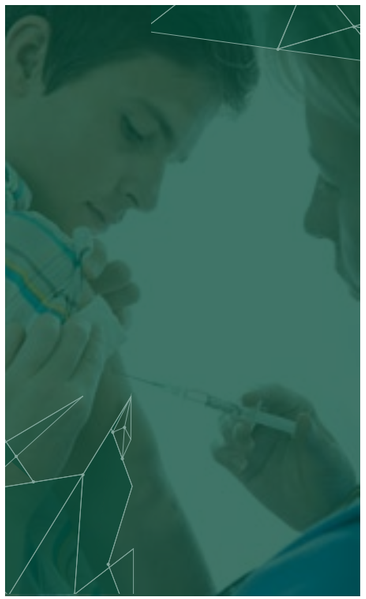












Tuberculosis

The crude incidence rate for tuberculosis (TB) is consistently lower in Spokane County than in Washington. During 2012-2016, 23 active TB cases were identified and treated in Spokane County.

Over the last decade, the annual crude incidence rate of TB in Washington trended downward. In 2016, 205 active TB cases were identified, which represented a 1% decrease from the 207 cases counted in 2015. For this same period, King, Snohomish, and Pierce counties each reported 10 or more TB cases accounting for 78% of the 205 cases counted in Washington. Of the specimens tested for drug susceptibility in 2016, 15 (9.8%) were resistant to one or more of the first-line treatment drugs. Two (1.3%) of the specimens were multi-drug resistant.

As in past years, foreign-born persons, as well as racial and ethnic minorities, were at greatest risk for TB. The DOH TB program reported that from 2014 through 2016, Asians accounted for 49% of all TB cases and men 65 years of age and older experienced a rate of TB higher than any other age-gender group. In 2016, Washington residents born somewhere other than the United States or its territories accounted for 76% of the total TB cases.

According to the *CDC's Reported Tuberculosis in the United States, 2016* report, 9,272 TB cases were reported in 2016, representing the lowest number of annual cases on record and a 2.9% decrease from 2015. While the reversal of the increase in cases observed in 2015 was a positive sign, the pace of TB's decline in the United States remained too slow to achieve TB elimination. Nationally, CDC attributed about 14% of genotyped cases reported during 2015 and 2016 to recent transmission; the remainder were attributed to re-activated latent TB infection. Nationally, the percentage of TB cases that were drug resistant remained stable for the last 20 years.

As reported in previous years, the majority of TB cases were identified in California, Texas, New York, and Florida and accounted for just over half of the national case total. Among non-United States-born persons reported with TB in 2016, the top five countries of birth were Mexico, Philippines, India, Vietnam, and China. Approximately 18% of non-United States-born persons with TB were diagnosed less than one year after first arriving in the United States, which was consistent with previous observations that the risk of developing TB disease among non-United States-born persons was greatest in the first one to two years after arrival in the United States.

TUBERCULOSIS		2012		2013		2014		2015		2016	
		Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000
Tuberculosis	Spokane County	7	1.5	7	1.5	5	1.0	2	*	2	*
	Washington	185 (4 deaths)	2.7	210 (4 deaths)	3.1	193 (4 deaths)	2.8	207 (4 deaths)	2.9	205 (7 deaths)	2.9
	United States	9,940	3.2	9,561	3.0	9,398	3.0	9,546	3.0	9,287	2.9

* Incidence rates for not calculated for <5 cases.

Other Conditions

This category is reserved for conditions of public health significance that did not fall within the other notifiable conditions categories.

Acute Flaccid Myelitis (AFM)

Acute Flaccid Myelitis (AFM) is a rare disease that affects a person's nervous system, specifically the spinal cord. While AFM can result from a variety of causes, the full scope of causes remains unknown and likewise its prevention remains unidentified. In Washington, 10 residents were reported as confirmed AFM cases in 2016, one of whom resided in Spokane County. No cases were reported in the year prior, and only two were reported in the state in 2014. Since 2014, when an increased number of cases of AFM were identified, the CDC intensified efforts to understand the causes and risk factors.

Most patients are children. The symptoms are most similar to complications of infection with certain viruses, including poliovirus, non-polio enteroviruses, adenoviruses, and WNV. CDC tested many different specimens from the patients for a wide range of pathogens that can cause AFM; however, at the time of this report, CDC has not consistently detected a pathogen in spinal fluid or other potential sources. The increase in AFM cases in 2014 coincided with a national outbreak of severe respiratory disease among people caused by enterovirus D68 (EV-D68); however, among the people with AFM, CDC did not consistently detect EV-D68 in the specimens collected from them.

It is difficult to interpret trends of the AFM data since collection of information on cases only began in 2014 and is voluntary in most states (national rates are not provided for this reason). Also, since the collection of information on AFM cases is relatively new, there may initially be more variability in the data from year to year, making it difficult to interpret or compare counts between years. Most cases of AFM were reported in 2014 and 2016, possibly attributable to increased awareness by clinicians and better reporting over actual increase in disease.

Botulism

Forms of botulism include food-borne botulism (ingested toxin); wound botulism (toxin production in an infected wound); infant botulism (toxin produced in the intestine of a child under one year of age); adult colonization botulism (toxin produced in the intestine of an adult); and inhalational botulism (inhaling toxin, which does not happen naturally). *C. botulinum* spores are common in soil. No consistent exposure is known for infants. Most food-borne cases are due to inadequately processed home-canned foods. Wound botulism is usually associated with injecting black-tar heroin into the skin or muscle, or sometimes with deep, contaminated injuries.

In Spokane County, the most recent botulism case occurred in 2015 with a non-fatal case of wound botulism. Prior to that, a case of infant botulism was reported in 2013 with likely exposure of nearby soil eruption.

Each year in Washington, there are zero to four reports of food-borne botulism, zero to nine reports of infant botulism, and zero to seven reports of wound botulism. Most recently in 2016, there were two fatal cases of food-borne botulism associated with home-canned food, one case of infant botulism, and one probable case of wound botulism.

Of note nationally, a large outbreak of food-borne botulism occurred in Ohio in 2015 related to a church potluck. Of 77 persons who consumed potluck food, 29 confirmed and probable cases were identified with one death. Early recognition of the outbreak by an astute clinician and a rapid, coordinated response likely reduced the disease severity. Consumption of homemade potato salad with home-canned potatoes was the implicated food. Another large outbreak occurred in a federal prison in Mississippi in 2016 related to illicitly made alcohol. Thirty-one inmates became sick, making this the largest botulism outbreak in the United States in nearly 40 years. There were no deaths.

OTHER		2012		2013		2014		2015		2016	
		Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000
Acute Flaccid Myelitis (AFM) **	Spokane County	--	--	--	--	0	0.0	0	0.0	1	*
	Washington	--	--	--	--	2	*	0	0.0	10	0.1
	United States	--	--	--	--	120	**	21	**	149	**
Botulism (food, infant and wound)	Spokane County	0	0.0	1	*	0	0.0	1	*	0	0.0
	Washington	7 (1 death)	0.1	10	0.1	3	*	8	0.1	4 (2 deaths)	*
	United States	168	0.1	152	0.1	161	0.1	195	0.1	201	0.1
Coccidiomycosis	Spokane County	0	0.0	2	*	3	*	2	*	7	1.4
	Washington	5	0.1	10	0.1	21	0.3	25	0.4	40 (2 deaths)	0.6
	United States ***	17,802	13.0	9,438	7.8	8,232	6.6	11,072	8.8	11,829	9.0
Legionellosis	Spokane County	6	1.3	3	*	7	1.4	6	1.2	5	*
	Washington	30 (5 deaths)	0.4	52 (5 deaths)	0.8	63 (8 deaths)	0.9	58 (2 deaths)	0.8	72 (10 deaths)	1.0
	United States	3,688	1.2	4,954	1.5	5,166	1.6	6,079	1.8	6,141	1.9

* Rates not calculated for < 5 cases.

** Collection of AFM data began in 2014. Reporting of AFM is voluntary in most states; therefore, cases included here are unlikely to be representative of actual national disease incidence.

*** Coccodiomycosis is not reportable in all states.

Coccidiomycosis

Coccidiomycosis, or Valley Fever, is a fungal infection caused by the soil-dwelling fungi *Coccidioides immitis* and *C. posadasii* and typically results from exposure to airborne spores. The fungi are found in soil and semi-arid climates in the southwestern United States and parts of Central and South America. Coccidiomycosis is not reportable in all states. It is endemic (and reportable) in Arizona, California, Nevada, New Mexico, and Utah and most of the reported cases come from these states. In highly endemic areas, such as the Phoenix and Tucson metropolitan areas of Arizona, it is estimated coccidiomycosis causes an estimated 15% to nearly 30% of community-acquired pneumonias; low testing rates suggest the disease may be under-recognized.

There are wide variations in the number of reported cases nationally each year and the reasons for this are not well understood. Some of the variation could be due to changes in the number of susceptible people exposed to the fungus, because of travel or relocation to endemic areas; environmental factors, such as temperature and rainfall, which can affect the growth of the fungus and how it's circulating; and the different ways cases are being detected and reported.

New evidence discovered in 2014 documented the presence of *C. immitis* in south-central Washington, resulting in coccidiomycosis being made reportable as a rare disease of public health significance in Washington that same year. Prior to 2014, up to six travel-associated cases were reported each year in Washington. During 2010-2016, 11 cases with exposure in south-central Washington were reported. Most recently in 2016, 40 cases were reported in the state, of which 38 were travel-related and two were exposed in south-central Washington. Spokane reported seven of the 40 cases; all were travel-related.

Legionellosis

Legionellosis is caused by a ubiquitous organism and was named for those individuals (Legionnaires) affected by an outbreak in Philadelphia in 1976. Disease is more common among those over 50 years of age and individuals who smoke, have diabetes or chronic lung disease, or are immunosuppressed, particularly due to corticosteroids or organ transplant. There are two clinically and epidemiologically distinct diseases—Legionnaires' disease presenting with pneumonia, or Pontiac fever, a milder disease without pneumonia. Hot water systems (showers), air conditioning cooling towers, evaporative condensers, humidifiers, whirlpool spas, respiratory therapy devices, decorative fountains, and potting soil have been implicated epidemiologically in outbreaks. It is not communicable person to person.

Over the past several years, the number of reported cases in Spokane County fluctuated from three to seven. In 2011, Spokane County had a small outbreak of legionellosis related to the water system in a healthcare facility but no such outbreaks since that time.

In Washington, the number of cases was on an upward trend with more than 50 cases reported each year since 2013. In 2016, 72 cases were reported with 10 deaths.

Nationwide, legionellosis incidence was on an upward trend, though the reasons for the increase were unclear; increased awareness and testing may be a factor.

SPOKANE REGIONAL HEALTH DISTRICT

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