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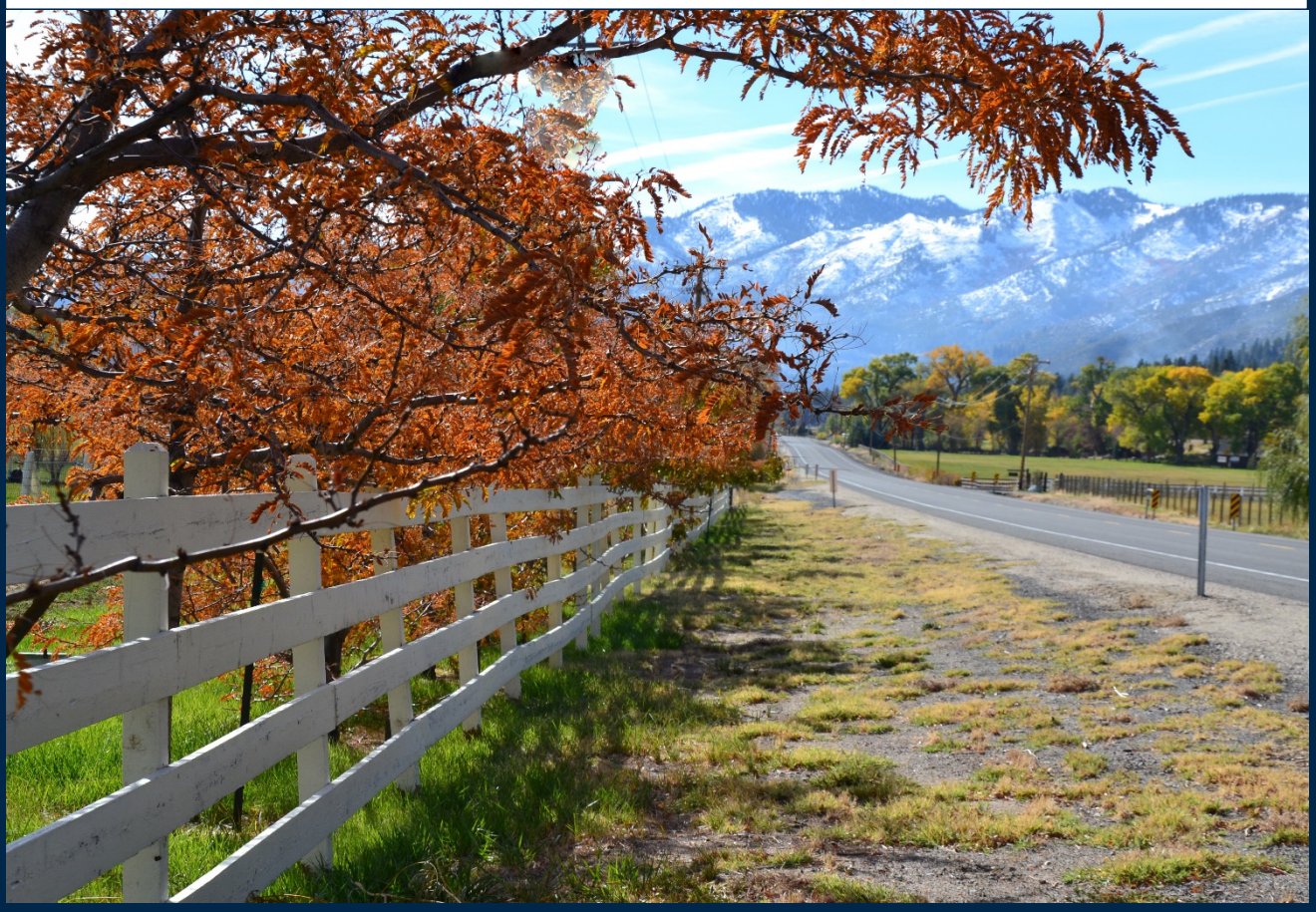

Compiled and Prepared By:

Washoe County Health District
1001 E. 9th Street, Building B, Reno
NV 89512-2845
Phone: (775) 328-2447Fax: (775) 328-3764
Email: epicenter@washoecounty.gov
Web: http://www.washoecounty.us/health

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Cover picture by Cindy Hawks

2019 and 2020

Annual Communicable Disease Summary

Communicable diseases are a continuing threat to all people, regardless of age, gender, lifestyle, ethnic background or socioeconomic status. They cause illness, suffering and death, and place an enormous financial burden on society. Indeed, Joshua Lederberg, Nobel laureate once commented "We live in evolutionary competition with microbes – bacteria and viruses. There is no guarantee that we will be the survivors." Although some communicable diseases have been controlled by modern advances, new ones are constantly emerging. The Washoe County Health District (WCHD) relies on healthcare providers, laboratories, and others to report the occurrence of notifiable diseases. Without comprehensive data, trends cannot be accurately monitored, unusual occurrences of diseases (such as Ebola Virus, Zika Virus, Covid-19) and outbreaks might not be detected or appropriately investigated, and the effectiveness of control and preventive measures cannot be easily evaluated.

Under the direction of the District Health Officer, Mr. Kevin Dick and the Director of Epidemiology and Public Health Preparedness, Dr. Nancy Diao, staff of the WCHD Communicable Disease Control Program coordinate the countywide disease surveillance and reporting system. They work in conjunction with the following prevention and control programs: tuberculosis (TB), sexually transmitted disease (STD), and HIV/AIDS.

Nevada Administrative Code Chapter 441A[1] identifies diseases of public health significance that must be reported to the WCHD. Persons required to report include health care providers and directors of hospitals, diagnostic laboratories, schools, childcare facilities, correctional facilities, permitted food establishments and others. In general, each report is investigated to characterize the illness, collect demographic information about the case, identify possible sources of the infection and take steps necessary to minimize the risk of further disease transmission. Data are collected, maintained and analyzed at the program level. The 2021 Annual Communicable Disease Summary is a compilation of communicable disease surveillance data in Washoe County for 2019 and 2020. These data have the following limitations:

1) For most diseases, reported cases represent a fraction of the true number. This is because many patients with mild disease do not seek medical care. Even if they do, the health care provider may not order a test to identify the causative agent.
2) Health care providers may fail to report a case although it is required by law. For example, CDC estimates that there are as many as 1.2 million persons in the US who may be sick due to salmonellosis; however, only approximately 50,000 cases of salmonellosis are reported each year in the United States, which represents only 5% of the estimated level of illness.[2]
3) Reported cases represent a skewed sample of the total. Severe illnesses are more likely to be reported than milder ones. Health care providers may be more likely to report contagious diseases such as TB than vector-borne diseases such as Lyme disease.
4) Epidemics of disease or media coverage of a particular disease can greatly increase testing and reporting rates.

With these limitations in mind, surveillance data are valuable in a variety of ways. Analysis of disease incidence by various demographic variables is useful for identifying

[1] NAC 441 A http://www.leg.state.nv.us/nac/NAC-441A.html
[2] http://www.cdc.gov/foodborneburden/2011-foodborne-estimates.html

segments of the population that may be at higher risk of illness allowing public health officials to target prevention and control measures in ways that will have maximum impact. Further, analysis of surveillance data allows for identification of disease trends and may help to detect disease outbreaks or epidemics. However, for diseases that only occur sporadically, presentation of demographic information has limited value and may serve to compromise the privacy of individual case patients. Therefore, in this report, the amount of detail related to the population affected by any particular disease will vary depending on the number of reported cases.

The intent of this report is to provide local health care providers, infection control practitioners and other interested persons with useful data. Please contact the WCHD Epidemiology Program at (775) 328-2447 for additional information or comments.

SUMMARY

Table A. Total Reported Cases of Selected Communicable Diseases by Year, Washoe County, 2016–2020

	2016	2017	2018	2019	2020
AIDS	14	13	14	12	11
Campylobacteriosis	47	37	46	48	28
Chlamydia trachomatis, genital	2200	2504	2729	2682	2526
E. coli O157:H7	3	9	2	0	4
Giardiasis	20	10	20	10	20
Gonorrhea	598	743	918	864	1131
Hemophilus influenzae type b	0	0	6	0	6
Hepatitis A	0	2	1	0	1
Hepatitis B (Acute)	2	5	2	5	1
Hepatitis B (Chronic)	73	65	62	65	60
Hepatitis C (Acute)	4	13	5	5	5
Hepatitis C (past or present)*	527	648	648	680	476
HIV infection	35	22	27	37	31
Listeriosis	0	0	0	1	0
Malaria	0	1	3	1	3
Measles	0	0	1	0	0
Meningococcal invasive disease	0	0	1	0	0
Mumps	3	2	0	2	1
Pertussis	2	11	13	27	13
Rotavirus	16	10	13	11	7
RSV	410	635	480	720	622
Rubella	0	0	0	0	0
Salmonellosis	30	28	36	30	25
Shigellosis	12	3	5	5	13
Syphilis (primary and secondary)	33	56	111	160	133
Tuberculosis	6	17	9	8	4
Typhoid Fever	0	1	0	2	2

Table B. Cases per 100,000 Population of Selected Communicable Diseases by Year Compared to Healthy People 2020 Target, Washoe County, 2016-2020

Disease	2016	2017	2018	2019	2020	Healthy People 2020 Target
Met Healthy People 2020 Target in 2020						
Salmonellosis	6.9	6.2	9.6	6.5	5.3	11.4
Listeriosis	0.0	0.0	0.0	0.2	0.0	0.2
Campylobacteriosis	10.5	8.2	10	10.3	6	8.5
Hepatitis A	0	0.4	0.2	0.0	0.2	0.3
Did Not Meet Healthy People 2020 Target in 2020						
Hepatitis C	1.1	1.1	1.1	1.1	1.1	0.2
Gonorrhea (Female, 15-44)	239.9	305.8	373.4	329.5	443.8	157.0
Gonorrhea (Male, 15-44)	361.3	390.6	479.6	485.0	593.5	198.0
Primary or Secondary Syphilis (Male)	12.6	18	38.6	47.5	43.6	6.8
Primary or Secondary Syphilis (Female)	2.2	7.1	9.5	21.2	12.8	1.4
Tuberculosis	1.3	3.8	2.0	3.8	2.0	1.0

1. ENTERIC DISEASES

I. Bacterial Enteric Diseases

A. Campylobacteriosis

Campylobacter is the most common bacterial cause of diarrheal illness in the United States. Campylobacteriosis usually occurs in single, sporadic cases, but it can also cause outbreaks. Campylobacteriosis is most associated with handling and/or eating raw or undercooked poultry.

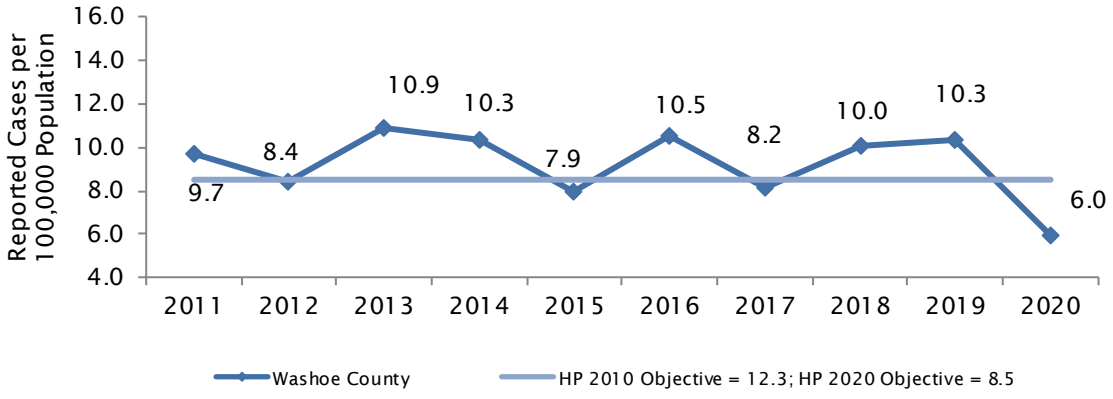
1. Reported Incidence

Preliminary Incidence and Trends of Infection with Pathogens Transmitted Commonly Through Food - Foodborne Diseases Active Surveillance Network, 10 U.S. Sites, 2016-2019 (most recent available data) describes surveillance data for 2019 and compares them with 2016-2018 data. In 2019, the estimated national incidence of campylobacteriosis was 19.5 cases per 100,000 population. In 2019 the incidence rate was significantly higher for campylobacteriosis (13% increased) compared to the previous year. The Healthy People 2020 national health objective is 8.5 cases per 100,000 population.

In 2019, forty-eight (48) cases of campylobacteriosis were reported in Washoe County for a reported incidence of 10.3 cases per 100,000 population. Of the 48 cases, 43 (89.6%) were laboratory confirmed and five (10.4%) were probable cases epidemiologically linked to a confirmed case.

In 2020, twenty-eight (28) cases of campylobacteriosis were reported in Washoe County for a reported incidence of 6.0 cases per 100,000 population. Of the 28 cases, 22 (78.6%) were laboratory confirmed and six (21.4%) were probable cases epidemiologically linked to a confirmed case or were tested with only antigen testing instead of culture diagnostic testing.

Figure 1.1 Rates of Reported Cases of Campylobacteriosis, Washoe County, 2011 – 2020



2. Population Affected

The median age of cases in 2019 in Washoe County was 31.5 years (range: 6 months - 88 years); 23 (48%) of 48 reported cases were male. Eleven (11) cases (23%) were hospitalized, with a median length of hospitalization of 3 days (range: 1 - 8 days). One (1) was a case worker at a day care. No deaths were reported in 2019.

The median age of cases in 2019Washoe County was 42.5 years (range: 1 - 97 years); 18 (62%) of 28 reported cases were male. Eight (8) cases (29%) were hospitalized, with a median length of hospitalization of 3.5 days (range: 2 - 6 days). One multifamily outbreak was reported. No deaths were reported in 2020.

Table 1.1 Reported Campylobacteriosis Cases by Race/Ethnicity, Washoe County, 2020

Race/Ethnicity	Number of Cases	Percent of Cases	# Cases per 100,000
White, non-Hispanic	15	53.6	5.1
Hispanic	6	21.4	4.9
Others* (A/PI, AI/AN, Black)	2	7.1	3.8
Unknown	5	17.9	N/A
Total Cases	28	100.0	

** A/PI = Asian/Pacific Islander AI/AN = American Indian/Alaskan Native*

Figure 1.2 Campylobacteriosis Cases by Age and Gender, Washoe County, 2020

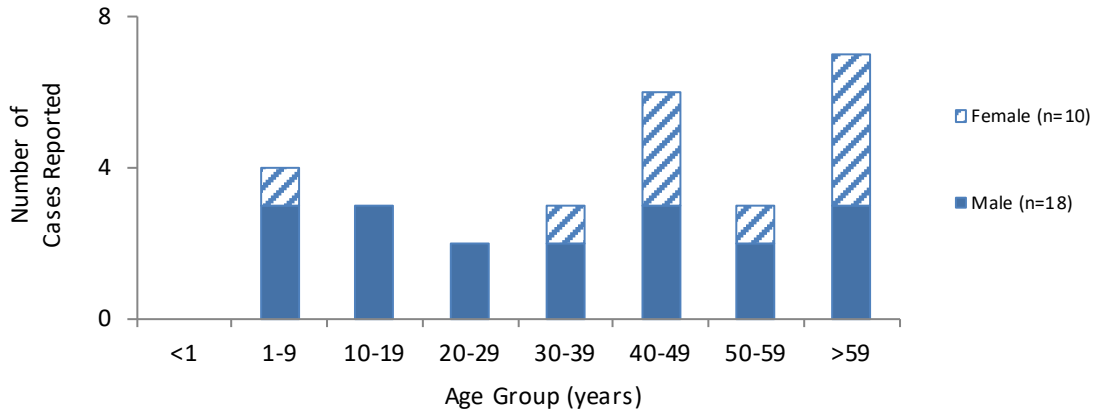


Table 1.2 Reported Risk Factors among Campylobacteriosis Cases, Washoe County, 2020

Risk Factor (not mutually exclusive)	Number of Cases	%
Contaminated foods	7	25
Travel (2 international, 8 domestic)	10	36
Contact to a similarly ill person	4	14
Contact to animals*	4	14
Recreational water exposure	4	14
Day care associated**	0	0
Drank untreated water	1	4
Unknown risk factors (unable to interview or review medical record, exclusive)	0	0
No known risk factors*** (exclusive)	4	14

*Puppies, sick animal, birds, chicken, reptile
**Includes day care attendees, staff, or persons who live with a day care attendee.
*** No risk factors identified.

In 2019, one campylobacteriosis outbreak was reported or detected. A family of four traveled to Mexico. Two persons had contact with a sick dog and two people got sick through person-to-person transmission. None of these cases were hospitalized.

In 2020, one campylobacteriosis outbreak was reported or detected from surveillance systems in 2020. Another family of four traveled to Mexico, three of them became ill upon return to the U.S. and one case was hospitalized for 5 days.

B. *Escherichia coli* 0157:H7 (Shiga toxin-producing *E.coli* O157 = STEC O157)

The terminology for *Escherichia coli* species that cause human disease, includes “Shiga toxin-producing Escherichia coli O157” (STEC O157) and “Shiga toxin-producing Escherichia coli non-O157” (STEC non-O157). Infection often leads to bloody diarrhea. Hemolytic uremic syndrome (HUS) is a serious, sometimes fatal complication often associated with STEC infection. Most illness has been associated with eating undercooked, contaminated ground meat. Other vehicles implicated in outbreaks are sprouts, lettuce, salami, unpasteurized milk and juice, and swimming in or drinking sewage-contaminated water. Person-to-person contact in families and childcare centers is also a common mode of transmission.

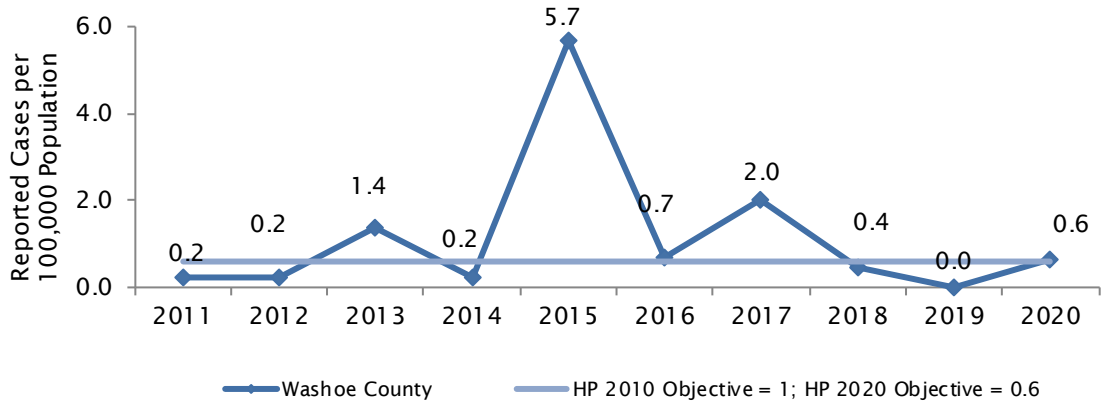
1. Reported Incidence

Preliminary Incidence and Trends of Infection with Pathogens Transmitted Commonly Through Food - Foodborne Diseases Active Surveillance Network, 10 U.S. Sites, 2016-2019 describes surveillance data for 2019 and compares them with 2016-2018 data. In 2019, the estimated national incidence of culture-based STEC infection was 6.3 cases per 100,000 population. The Healthy People 2020 national health objective is 0.6 cases per 100,000 population. The national incidence of culture-based STEC non-O157 in 2019 was 2.7 cases per 100,000 population and 0.8 for STEC O157 (latest available data). In 2019 the incidence of STEC non-O157 increased by 35% and O157 STEC decrease by 20% compared 2016-2018.

No laboratory-confirmed cases of STEC O157 were reported in Washoe County in 2019. Four (4) cases of STEC non-O157 infection were reported for a reported incidence of 0.9 cases per 100,000 population. The total 2019 STEC incidence rate for Washoe County was 0.9 cases per 100,000 population. No cases of HUS were reported in Washoe County in 2019. No deaths were reported. No cases were associated with a multi-state outbreak in 2019.

Three (3) laboratory-confirmed cases of STEC O157 were reported in Washoe County in 2020 for a reported incidence of 0.6 cases per 100,000 population. The total 2020 STEC incidence rate for Washoe County was 1.1 cases per 100,000 population. No cases of HUS were reported in Washoe County in 2020. No deaths were reported. No cases were associated with a multi-state outbreak in 2020.

Figure 1.3 Rates of Reported Cases* of STEC O157 Infection, Washoe County, 2011–2020



Note: In 2015 Washoe County had the highest incidence rate in recent history due to a foodborne outbreak.

2. Population Affected

In 2019, the median age of cases in Washoe County was 10.5 years (range: 3 - 25 years); 3 (75%) of 4 reported cases were female. All cases (100%) with known race/ethnicity were white, non-Hispanic. One (1) case (25%) was hospitalized for 3 days. One of the cases was a food handler. No deaths were reported.

In 2020, the median age of cases in Washoe County was 53 years (range: 31 year - 84 years); 3 (60%) of 5 reported cases were female. Three cases (60%) with known race/ethnicity were white, non-Hispanic. Two (2) cases (40%) were hospitalized with a median length of hospitalization of 2 days. Zero (0) cases were food handlers. No deaths were reported.

Table 1.3 Reported Risk Factors Among STEC Cases, Washoe County, 2020

Risk Factor (not mutually exclusive)	Number of Cases	%
Contaminated foods	3	60
Travel (1/0 domestic/internationa travel)	1	20
Contact to a similarly ill person	1	20
Contact to animals*	1	20
Recreational water exposure	0	0
Day care associated**	0	0
Drank untreated water	0	0
Unknown risk factors (unable to interview or review medical record, exclusive)	0	0
No known risk factors*** (exclusive)	1	20

*Puppies, sick animal, birds, chicken, reptile
**Includes day care attendees, staff, or persons who live with a day care attendee.
*** No risk factors identified.

C. Listeriosis

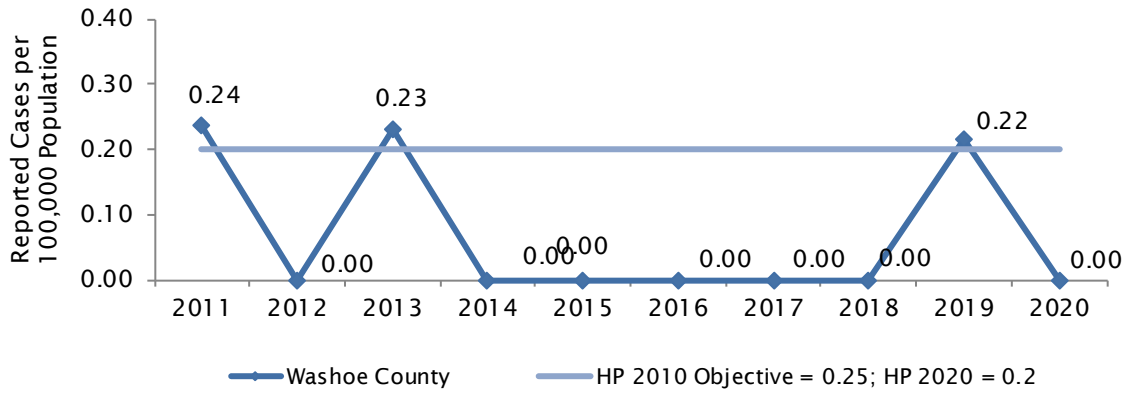
Listeriosis is a serious infection caused by eating food contaminated with the bacterium *Listeria monocytogenes.* In the United States, an estimated 1,600 persons become seriously ill with listeriosis each year. Approximately 16% of these infections are fatal.

1. Reported Incidence

Preliminary Incidence and Trends of Infection with Pathogens Transmitted Commonly Through Food - Foodborne Diseases Active Surveillance Network, 10 U.S. Sites, 2016-2019 describes surveillance data for 2019 and compares them with 2016-2018 data. In 2019, the estimated national incidence of listeriosis was 0.3 cases per 100,000 population. The Healthy People 2020 national health objective is 0.2 cases per 100,000 population.

One (1) case of listeriosis was reported in Washoe County in 2019. No cases were reported in 2020.

Figure 1.4 Rates of Reported Cases of Listeriosis, Washoe County, 2011 – 2020



2. Population Affected

One (1) case of listeriosis was reported in Washoe County in 2019. The case was an infant. The case died from Listeria sepsis.

D. Salmonellosis

Salmonellosis is a bacterial infection that is transmitted among people and/or animals via the fecal-oral route. Although foods of animal origin are one source of *Salmonella,* transmission through fresh produce and direct contact have been increasingly recognized. Salmonellosis is one of the most frequently reported foodborne illnesses in the United States. About 1.35 million cases of Salmonellosis are reported with 26,500 hospitalizations, and 420 deaths in the United State every year.

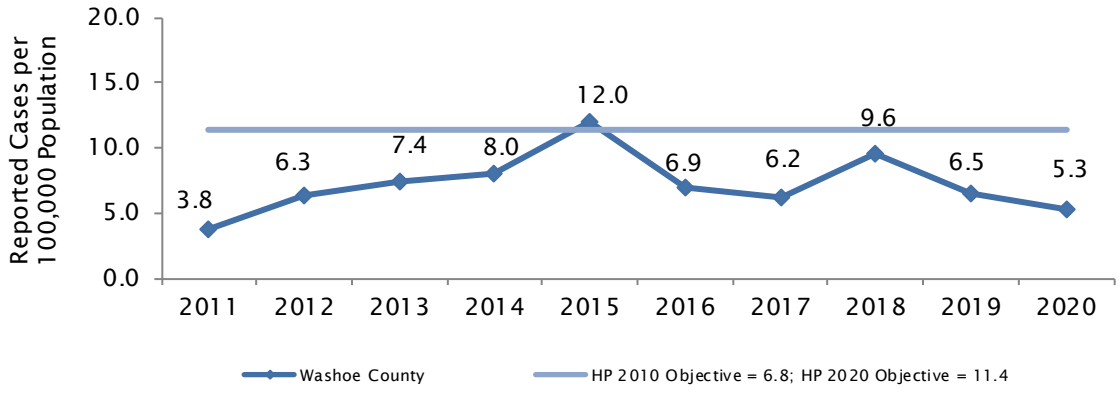
1. Reported Incidence

Preliminary Incidence and Trends of Infection with Pathogens Transmitted Commonly Through Food - Foodborne Diseases Active Surveillance Network, 10 U.S. Sites, 2016-2019 describes surveillance data for 2019 and compares them with 2016-2018 data. In 2019, the national incidence of salmonellosis was 17.1cases per 100,000 population. The overall rate shows a 5% increase from the 2016-2018 data. The Healthy People 2020 national health objective is 11.4 cases per 100,000 population.

In 2019, thirty (30) laboratory-confirmed cases and one (1) probable case of salmonellosis were reported in Washoe County for a reported incidence of 6.5 cases per 100,000 population.

In 2020, twenty-four (24) laboratory-confirmed cases and one (1) probable case of salmonellosis were reported in Washoe County for a reported incidence of 5.3 cases per 100,000 population.

Figure 1.5 Rates of Reported Cases of Salmonellosis, Washoe County, 2011– 2020



Preliminary Incidence and Trends of Infection with Pathogens Transmitted Commonly Through Food - Foodborne Diseases Active Surveillance Network, 10 U.S. Sites, 2016-2019 states that of the 90% of *Salmonella* isolates serotyped in 2019 (latest available data), the top six (6) serotypes are Enteritidis (2.6 cases per 100,000 population), Newport (1.4 cases per 100,00 population), Typhimurium (1.3 cases per 100,000 population), Javiana (1.1 cases per 100,000 population),

I4,[5],12:i:- (0.7 cases per 100,000 population), and Infantis (0.5 cases per 100,000 population).The incidence rate in 2019 compared to 2016-2018 was significantly lower for Typhimurium (13% decrease) and I4,[5],12:i:- (28% decrease). Infantis was significant higher (69% increase).

In 2019, twenty-eight (28) *Salmonella* isolates reported in Washoe County were serotyped either by the Nevada State Public Health Laboratory (NSPHL) or by the Centers for Disease Control and Prevention (CDC). Local data indicated the two serotypes, Enteritidis and Typhimurium accounted for 36.7% of salmonellosis.

In 2020, seventeen (17) *Salmonella* isolates reported in Washoe County were serotyped. Local data indicated the two serotypes, Hadar and Newport accounted for 24.0% of salmonellosis.

Table 1.4 *Salmonella* Isolates by Serotype, Washoe County, 2020

Salmonella Isolate Serotype	Number of Cases	Percent of Cases
Bareilly	2	8.0
Hadar	3	12.0
Havana	1	4.0
Heidelberg	1	4.0
I 4:i:-	1	4.0
I:17:I,v:1,5	1	4.0
IV 50:g,z51:-	1	4.0
Montevideo	1	4.0
Muenster	1	4.0
Newport	3	12.0
Olso	1	4.0
Typhimurium	1	4.0
Unknown Serotype	8	32.0
Total	25	100.0

2. Population Affected

The elderly, infants, and those with impaired immune systems are more likely to experience severe symptoms of salmonellosis.

In 2019, the median age of cases in Washoe County was 42.5 years (range: 9 months - 80 years). Eighteen (18) cases (41%) were hospitalized with a median length of hospitalization of 5 days (range: 2 - 14 days) and no deaths were reported. Five (5) cases were food handlers and no cases were associated with childcare facilities.

In 2020, the median age of cases in Washoe County was 42 years (range: 6 months - 91 years). Ten (10) cases (40%) were hospitalized with a median length of hospitalization of 3.5 days (range: 2 - 14 days) and no deaths were reported. One (1) case was a food handler and two (2) cases were associated with childcare facilities.

Table 1.5 Reported Salmonellosis Cases by Race and Ethnicity, Washoe County, 2020

Race/Ethnicity	Number of Cases	Percent of Cases	Cases per 100,000 Population
White/non-Hispanic	11	44	3.7
Hispanic	5	20	4.1
Black	1	4	8.3
Asian/Pacific Islander	2	8	6.0
Native	0	0	0.0
Unknown	6	24	N/A
Total	25	100	5.3

Figure 1.6 Salmonellosis Cases by Age and Sex, Washoe County, 2020

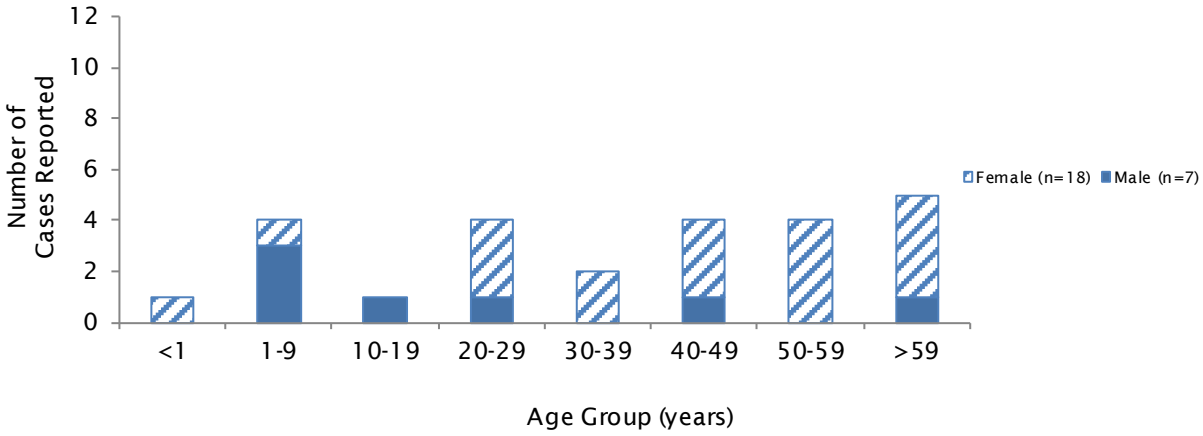


Table 1.6 Reported Risk Factors Among Salmonellosis Cases, Washoe County, 2020

Risk Factors (not mutually exclusive)	Number of Cases	%
Contaminated foods	8	32
Contact with symptomatic person	0	0
Travel (2/2 domestic/international travel)	4	16
Contact with high risk animal (reptile/bird/puppy)	2	8
Recreational water exposure	2	8
Day care associated (attendee)	2	8
Drank untreated water	1	4
Unknown or missing data (Exclusive)	4	16
No known risk factors identified (exclusive)	8	32

No clusters of Salmonellosis were reported in 2019 and 2020. One of the cases was associated with a multi-state outbreak related to live poultry outbreak 2004MLTDK-1.

E. Shigellosis

Shigellosis is a bacterial infection cause by *Shigella* that is transmitted from person-to-person through the fecal/oral route. Approximately 18,000 cases of shigellosis are reported in the United States every year. Children, especially toddlers ages 2 to 4 years, are the most likely to be infected with shigella. Many cases spread in childcare settings or in families with small children.

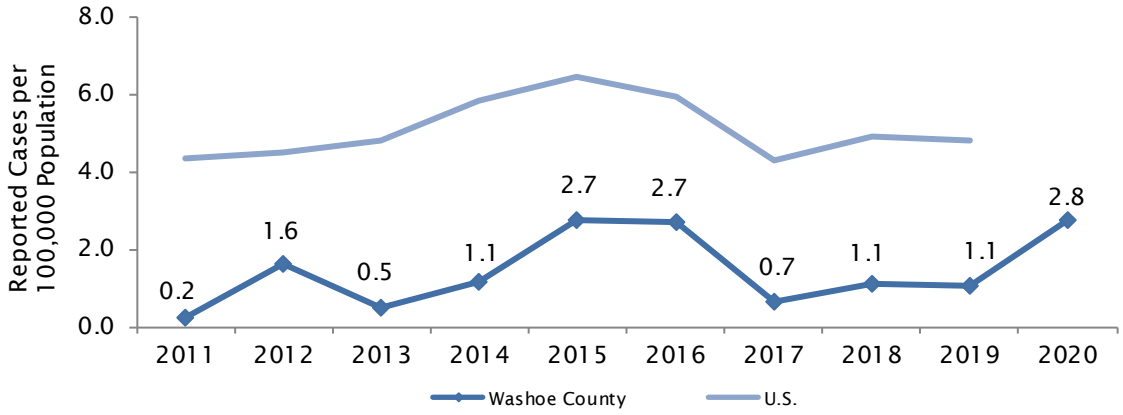
1. Reported Incidence

Preliminary Incidence and Trends of Infection with Pathogens Transmitted Commonly Through Food - Foodborne Diseases Active Surveillance Network, 10 U.S. Sites, 2016-2019 describes surveillance data for 2019 and compares them with 2016-2018 data. In 2019, the national incidence of confirmed or culture independent diagnostic tests (CIDT) positive only shigellosis was 4.8 cases per 100,000 population. A Healthy People 2020 national health objective has not been established for shigellosis.

In 2019, five (5) laboratory-confirmed and no probable cases of shigellosis were reported in Washoe County for an incidence of 1.1 cases per 100,000 population.

In 2020, ten (10) laboratory-confirmed and three (3) probable cases of shigellosis were reported in Washoe County in 2020 for an incidence of 2.8 cases per 100,000 population.

Figure 1.7 Rates of Reported Cases of Shigellosis, 2011 – 2020



2. Population Affected

In 2029, five (5) cases of shigellosis were reported. The median age of cases was 55 years (range: 44 – 77 years). Three (3) cases were White non-Hispanic, five (5) were male. Three were hospitalized with a median length of hospitalization of 2 days (range: 2 - 9 days) and no deaths associated with Shigellosis were reported. Three people had underlying conditions and had contact to ill person. No cases were associated with a multi-state outbreak.

In 2020, thirteen (13) cases of shigellosis were reported. The median age of cases was 10 years (range: 1 month – 72 years). Six (46%) cases were Hispanic, nine (9) were male. Four hospitalized with a median length of hospitalization of 3 days (range: 2 - 5 days) and no deaths associated with Shigellosis were reported. One

person had underlying conditions and six had contact to ill person. One family cluster was reported. One case had co-infection with Campylobacteriosis. No cases were associated with a multi-state outbreak.

Figure 1.8 Shigellosis Cases by Age and Sex, Washoe County, 2020

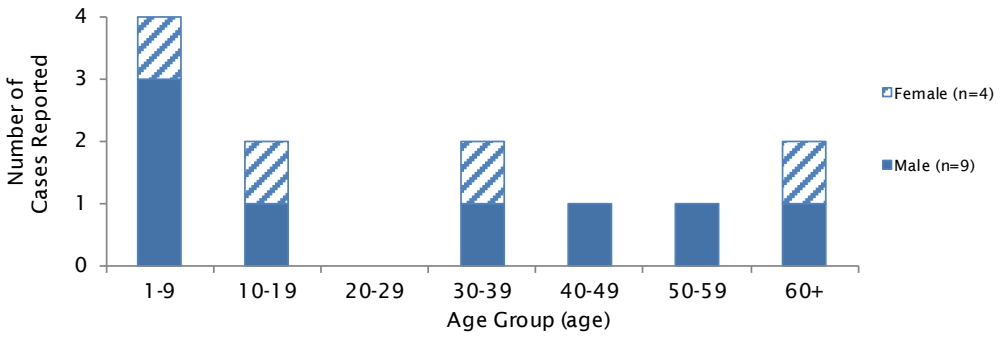
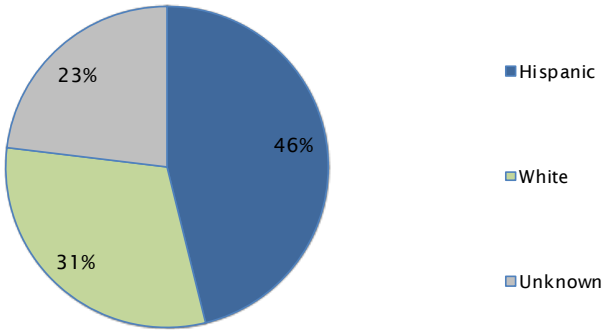


Figure 1.9 Shigellosis Cases by Race/Ethnicity, Washoe County, 2020



F. Typhoid Fever

Typhoid fever is caused by *Salmonella typhi* and is transmitted from person-to-person through the fecal-oral route. Two typhoid vaccines are currently available and are recommended for travelers to endemic countries.

1. Reported Incidence

The national incidence of reported typhoid fever cases in 2017 was 0.13 cases per 100,000 population. A Healthy People 2020 national health objective for typhoid fever has not been established.

Two (2) cases of typhoid fever were reported in Washoe County in 2019 and 2020 for a reported incidence of 0.43 cases and 0.42 cases per 100,000 population, respectively.

2. Population Affected

In 2019, two (2) cases of typhoid fever were reported. The median age of the two cases was 15.5 years (range: 4 –27 years). One (1) case was Hispanic and one (1) Asian, both were female. One was hospitalized for 4 days. No deaths associated with Typhoid fever were reported.

In 2020, two (2) cases of typhoid fever from one household were reported. The median age of cases was 6.5 years (range: 2 – 11 years). One (1) case was female, both were White (non-Hispanic). Both cases were hospitalized with a median length of hospitalization of 5.5 days. Cases traveled to India. No deaths associated with Typhoid fever were reported.

G. *Vibrio* Species

Vibrio cholerae consists of more than 200 serogroups. Of these, only serogroups O1 and O139 are associated with the clinical syndrome of cholera and can cause large epidemics. Serogroups O1 and O139 result in an acute bacterial enteric disease characterized in its severe form by sudden onset, profuse painless watery stools, nausea, and profuse vomiting early in the course of illness. In most cases infection is asymptomatic or causes mild diarrhea. Asymptomatic carriers can transmit the infection. Cholera is acquired through ingestion of contaminated food or water and through fecal-oral transmission.

Vibrio vulnificus and *Vibrio parahaemolyticus* are in the same family of bacteria as those that cause cholera. Both bacteria can cause disease in persons who eat contaminated seafood or have an open wound exposed to seawater. There is no evidence of person-to-person transmission. Both *V. vulnificus* and *V. parahaemolyticus* can cause serious illness and death in persons with pre-existing liver disease or compromised immune systems. *V. vulnificus* and *V. parahaemolyticus* infections are rare, but also underreported. Vibriosis became a reportable condition in the State of Nevada effective in 2011.

1. Reported Incidence

Preliminary Incidence and Trends of Infection with Pathogens Transmitted Commonly Through Food - Foodborne Diseases Active Surveillance Network, 10 U.S. Sites, 2016-2019 describes surveillance data for 2019 and compares them with 2016-2018 data. In 2019, the estimated national combined incidence of *Vibrio* species infection was 0.9 cases per 100,000 persons, which was significantly higher compared to the previous year. The overall rate shows a 79% increase from the 2016-2018 data. The new Healthy People 2020 national health objective for infection with *Vibrio* species is 0.2 cases per 100,000 population.

2. Population Affected

In 2019, no cases of Vibriosis were reported in Washoe County.

In 2020, one case was reported. The person was exposed through seafood during travel to another state.

H. Yersiniosis

Yersiniosis is a relatively infrequent gastrointestinal disease. Symptoms of diarrhea and abdominal pain can be caused by infection with Y*ersinia enterocolitica.*

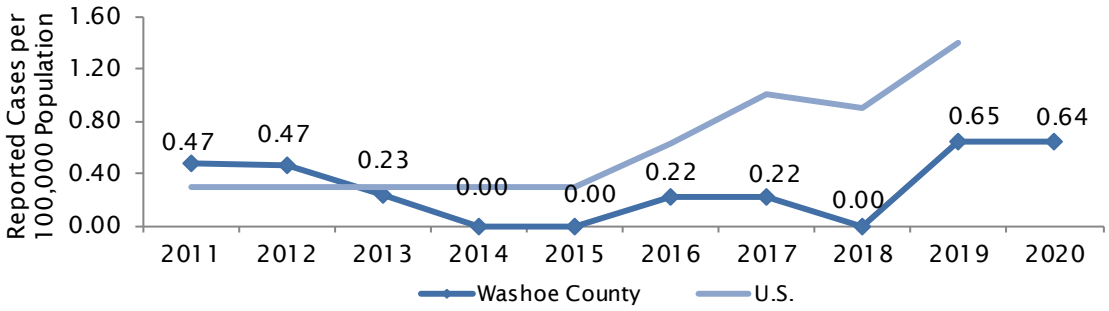
1. Reported Incidence

Preliminary Incidence and Trends of Infection with Pathogens Transmitted Commonly Through Food - Foodborne Diseases Active Surveillance Network, 10 U.S. Sites, 2016-2019 describes surveillance data for 2019 and compares them with 2016-2018 data. In 2019, the estimated national incidence of confirmed or CIDT positive yersiniosis was 1.4 cases per 100,000 population. To compare to incidence during 2016-2018, the 2019 incidence rate for yersiniosis increased by 57%. The Healthy People 2020 national health objective for yersiniosis is 0.3 cases per 100,000 population.

In 2019, three (3) laboratory-confirmed cases were reported in Washoe County for reported incidence of 0.65cases per 100,000 population.

In 2020, three (3) laboratory-confirmed cases were reported in Washoe Count with incidence rate of 0.64 cases per 100,000 population.

Figure 1.9 Rates of Reported Cases of Yersiniosis, 2011 – 2020



2. Population Affected

In 2019, three (3) cases of yersiniosis were reported in Washoe County. The median age of cases was 5 years (range: 2 – 45 years). One (1) case was Hispanic and two (2) White, two cases were female. One hospitalized for 4 days and no deaths associated with Yersiniosis were reported.

In 2020, three (3) cases of yersiniosis were reported in Washoe County in 2020. The median age of cases was 77 years (range: 20 – 82 years). One (1) case was white non-Hispanic and two (2) were Hispanic, two cases were male. No cases were hospitalized, and no deaths associated with Yersiniosis were reported.

II. Parasitic Enteric Diseases

A. Amebiasis (*Entamoeba histolytica*)

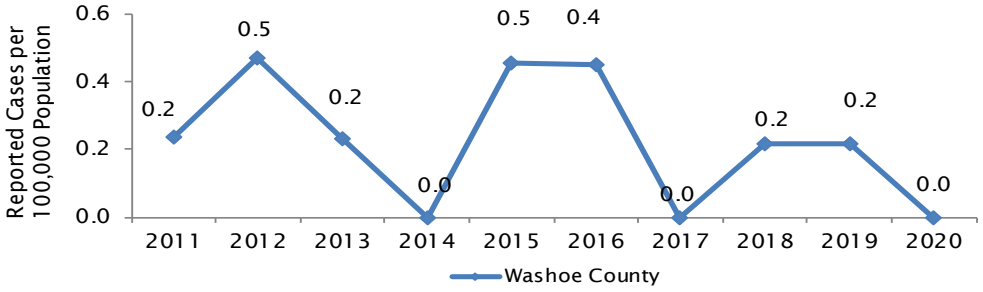
Amebiasis is a diarrheal illness caused by a one-celled parasite, *Entamoeba histolytica.* Amebiasis is most common in people who live in developing countries with poor sanitary conditions. In the United States, amebiasis is most often identified among immigrants from developing countries. It is also found in people who have traveled to developing countries and among people who live in institutions that have poor sanitary conditions. Men who have sex with men (MSM) have an increased risk of amebiasis. Amebiasis is not a notifiable disease in the U.S.; therefore, national data are not available.

1. Reported Incidence

In 2019, one (1) case of Amebiasis was reported in Washoe County for incidence of an 0.2 cases per 100,000 population.

No cases were reported in 2020.

Figure 1.10 Rates of Reported Cases of Amebiasis, Washoe County, 2011– 2020



2. Population Affected

In 2019, one (1) case of Amebiasis was reported in Washoe County. The case was a Hispanic female in the 50-59-year age group, who was hospitalized for 10 days. The case most likely acquired the infections while traveling outside of U.S. No deaths were reported.

B. Cryptosporidiosis

Cryptosporidiosis is a diarrheal disease transmitted via the fecal/oral route and is caused by the parasite, *Cryptosporidium parvum*. It is found in the intestines of humans and animals and is passed in the stool into the environment. The parasite is protected by an outer shell, survives outside the body for long periods of time, and is very resistant to chlorine disinfection. During the past two decades, *Cryptosporidium* has become recognized as one of the most common causes of waterborne disease (drinking and recreational) among humans in the United States. *Cryptosporidium* is found in every region of the United States and throughout the world. Men who have sex with men (MSM) have an increased risk of cryptosporidiosis.

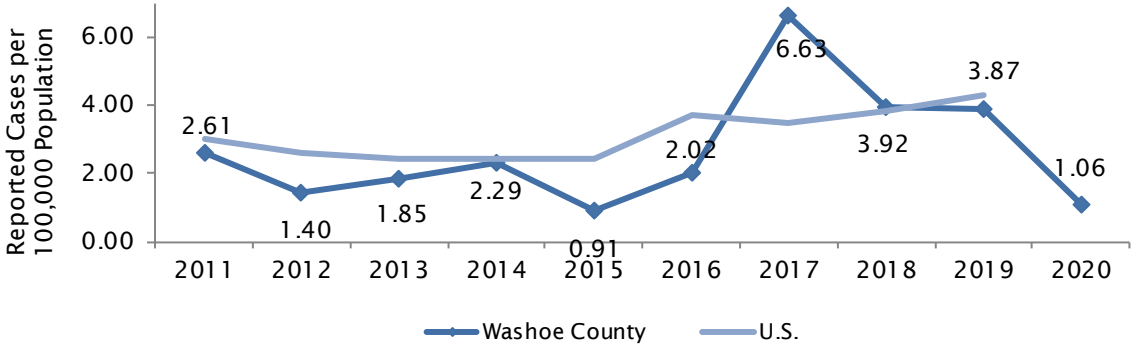
1. Reported Incidence

In 2019, (the most recent data), the national incidence of confirmed cryptosporidiosis was 4.3[1] cases per 100,000 population. A Healthy People 2020 national health objective has not been established for cryptosporidiosis.

In 2019, two (2) laboratory-confirmed and sixteen (16) probable cases of cryptosporidiosis were reported in Washoe County for an incidence of 3.87 cases per 100,000 population.

In 2020, two (2) laboratory-confirmed and three (3) probable cases of cryptosporidiosis were reported in Washoe County for an incidence of 1.06 cases per 100,000 population.

Figure 1.11 Rates of Reported Cases of Cryptosporidiosis, 2011 – 2020



2. Population Affected

In 2019, the median age of cases was 41.5 years (range: 1 years – 81 years). There were 13 (72%) males. Eleven (11) cases were White, non-Hispanic, four (4) Hispanic, two (2) Asian and one (1) was of unknown race. One case was a food handler. Two (2) of the cases were hospitalized for an average of 5.5 days (range between 5 to 6 days) and no deaths were reported.

In 2020, the median age of cases was 50.0 years (range: 28 years – 67 years). There were 4 (80%) females. One (1) case was White, non-Hispanic, three (3) were Hispanic, and one (1) was of unknown race. One case was a food handler. No cases were hospitalized, and no deaths were reported.

[1] https://www.cdc.gov/healthywater/surveillance/cryptosporidium/cryptosporidium-2019.html

Figure 1.13 Cryptosporidiosis Cases by Age and Gender, Washoe County, 2020

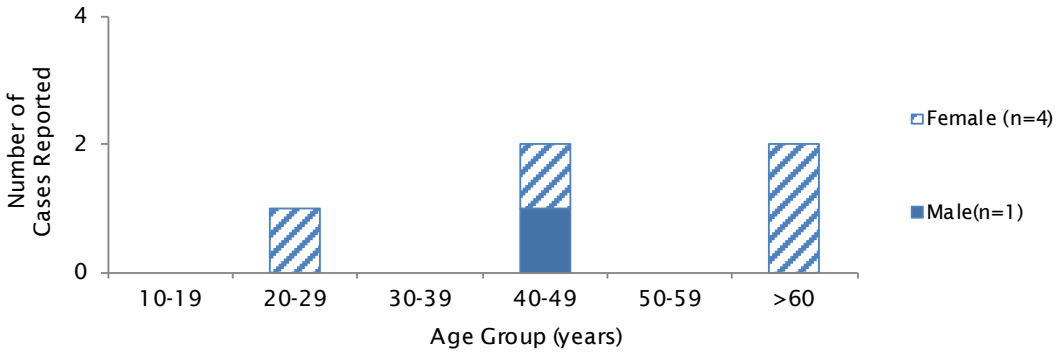


Table 1.7 Reported Risk Factors Among Cryptosporidiosis Cases, Washoe County, 2020

Risk Factor (not mutually exclusive)	Number of Cases	%
Travel (1 international and 1 domestic)	2	40
Recreational water exposure	1	20
Daycare associated	0	0
Contact with ill animals	0	0
Underlying chronic conditions	2	40
Unable to interview (exlusive)	0	0
No known risk factors identified (exclusive)	1	20

No cryptosporidiosis outbreaks were reported in 2019 and 2020.

C. Giardiasis

Giardiasis is a diarrheal illness transmitted via the fecal/oral route and caused by a one-celled parasite, *Giardia lamblia. Giardia* lives in the intestines of people and animals. The parasite is passed in the stool of an infected person or animal. It is protected by an outer shell that allows it to survive outside the body and in the environment for long periods of time. *Giardia* is found in every region of the United States and throughout the world. During the past two decades, *Giardia* has become recognized as one of the most common causes of waterborne disease (drinking and recreational) in humans in the United States. It is also easily transmitted from person-to-person and is a common cause of diarrhea in childcare settings.

1. Reported Incidence

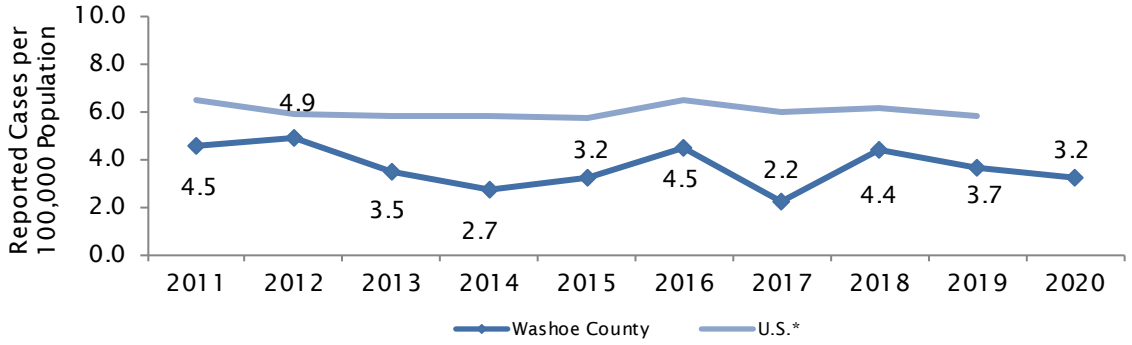
In 2019, the national reported incidence of giardiasis was 5.8[2] cases per 100,000 population, which was the most current national data.

In 2019, 17 cases of giardiasis were reported in Washoe County for an incidence rate of 3.7 cases per 100,000 population. All 17 cases were laboratory confirmed.

[2] https://www.cdc.gov/healthywater/surveillance/giardiasis/giardiasis-2019.html

In 2020, 15 cases of giardiasis were reported in Washoe County for an incidence rate of 3.2 cases per 100,000 population. Fourteen (14) cases were laboratory confirmed and one (1) probable case.

Figure 1.14 Rates of Reported Cases of Giardiasis, 2011 – 2020



2. Population Affected

In 2019, the median age of cases in Washoe County was 40 years (range: 2 – 61 years). Twelve (12) cases (71%) were male. Nine (9) cases were White non-Hispanic, one (1) Black, one (1) Native American, and three (3) Hispanic. One case was hospitalized for eight days. No deaths were reported.

In 2020, the median age of cases in Washoe County was 56 years (range: 23 years – 88 years). Nine (9) cases (60%) were female. Eleven (11) cases were White non-Hispanic, one (1) Black, and three (3) unknowns. Two cases were hospitalized for average 2.5 days (range 1 to 4 days). No deaths were reported.

Figure 1.15 Giardiasis Cases by Age and Gender, Washoe County, 2020

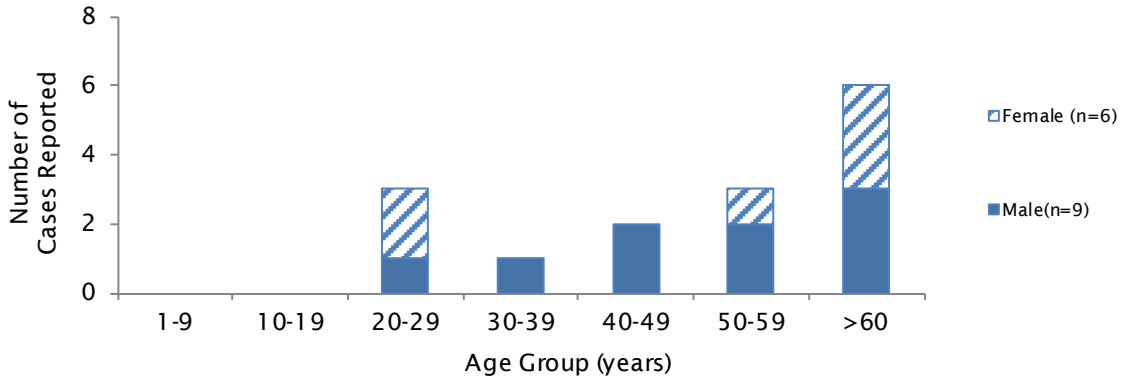


Table 1.8 Giardiasis Cases by Race and Ethnicity, Washoe County, 2020

Race/Ethnicity	Number of Cases	Percent of Cases	Cases per 100,000 Population
White/non-Hispanic	13	93	4.4
Hispanic	0	0	0.0
American Indian/Alaska Native	0	0	0.0
Black	1	7	8.3
Asian	0	0	0.0
Total cases	14	100	3.0

Table 1.9 Reported Risk Factors Among Giardiasis Cases, Washoe County, 2020

Risk Factor (not mutually exclusive)	Number of Cases	%
Domestic / International Travel (3/1)	4	27
Recreational water exposure	3	20
Drank untreated water	2	13
Animal contact*	0	0
Contact with symptomatic confirmed case	2	13
Day care associated**	0	0
No acknowledged risk (exclusive)	1	7
Unknown risks (unable to interview, exclusive)	2	13
* High risk animal contact such as sick animal, sick puppies, etc.		
** Includes day care attendees, staff, or persons who live with a day care attendee.		

No outbreaks of giardiasis were reported in 2019 or 2020.

III. Viral Enteric Diseases

A. Norovirus

Norovirus is the official genus name for the group of viruses previously called "Norwalk-like viruses" (NoV), a member of the viral family *Caliciviridae*. Norovirus infection causes gastrointestinal illness characterized by nausea, abdominal cramps, profuse diarrhea, and projectile vomiting.

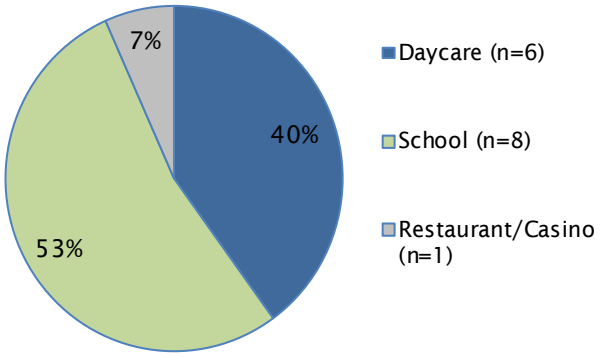
Noroviruses are human pathogens transmitted primarily through the fecal/oral route, by consumption of fecal contaminated food or water, or by direct person-to-person spread. Airborne and fomite transmission are also likely. Aerosolization of vomitus presumably results in droplets contaminating surfaces or entering the oral/nasal mucosa and being swallowed.

From January 1, 2018 through December 31, 2018, public health departments reported 1052 foodborne disease outbreaks to the Centers for Disease Control and Prevention (CDC). Norovirus was the most reported etiological agent accounting for 27% of confirmed cases. The CDC annual outbreak reports for 2019 and 2020 were not available as of the date this report was prepared.

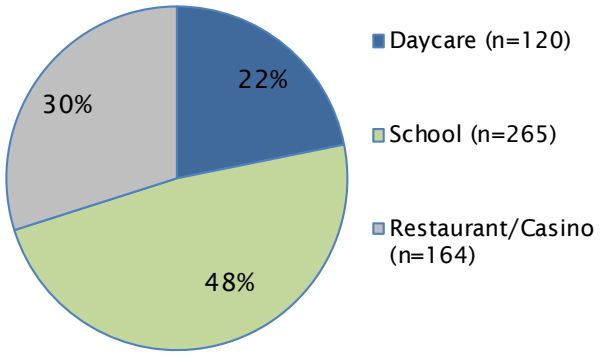
Most foodborne outbreaks of NoV illness are the result of direct contamination of food by a food handler immediately before its consumption. By contrast, NoV outbreaks in group living facilities are usually due to person-to-person, fomite, and aerosol transmission. A public vomiting incident (PVI) carries high risk for transmission to other nearby persons. Contaminated raw oysters, fruits, vegetables, and water have also caused outbreaks.

Cases of NoV are not reportable in Nevada unless they are part of an outbreak. In 2019, NoV was confirmed as the cause of three (3) outbreaks and suspected (not confirmed) as the cause of 17 other outbreaks in Washoe County. Of the fifteen (15) total viral gastroenteritis outbreaks reported in Washoe County, (53%) occurred in a school setting (40%) occurred in a childcare setting and there was one (1) outbreak at a casino. The median number of reported ill persons per outbreak was 39 (range: 5 - 164 reported ill persons per outbreak). A total of 549 persons were reported as ill of which 473 met the case definition. Only 2% of reported suspect cases (11/549) were confirmed by laboratory testing. Of the 549 reported ill persons, 48% (265/549) were associated with a school setting, 22% (120/549) were associated with a childcare setting and 30% (164/549) were associated with a convention hosted in a casino setting. The transmission modes were primarily person-to-person. In 2020 Washoe County did not able to confirm any outbreaks of NoV. Of the 13 total viral gastroenteritis outbreaks reported in Washoe County, 46% occurred in a school setting and 47% occurred in a childcare setting. The transmission modes were primarily person-to-person.

Figure 1.16 Reported Gastroenteritis Outbreaks by Facility type, Washoe County, 2020



(A) – Number of Outbreaks (n=15)



(B) – Number of Ill Persons (n=549)

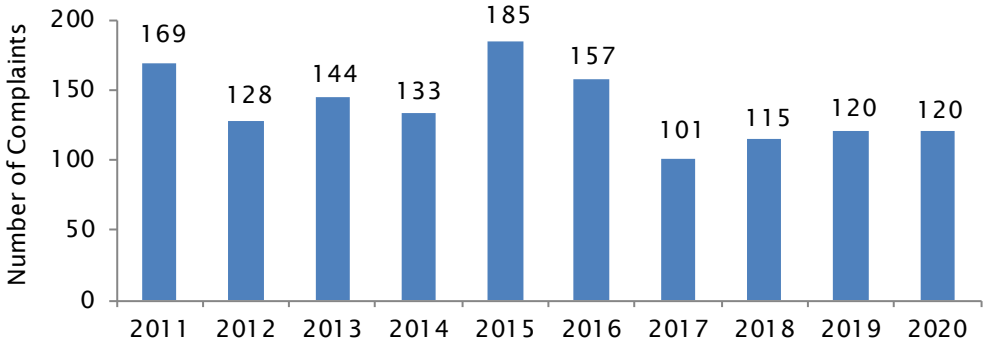
IV. Surveillance, Prevention and Control of Enteric Diseases

A. Investigation of Consumer Complaints

In 2020, the Division of Environmental Health Services (EHS) Food Safety Program received 120 complaints reporting a foodborne illness. Foodborne illnesses comprise the various acute syndromes that result from the ingestion of foods contaminated by infection-producing bacteria, parasites, and viruses. The Food Safety Program is

responsible for investigation of foodborne illness complaints in Washoe County. The purpose of these investigations is to identify and halt potential epidemics of foodborne illness.

Figure 1.17 Foodborne Illness Complaints, WCHD, 2011– 2020



B. Exclusion of Ill Food Handlers

In 2020, one (1) food service worker was excluded from work in 2020 to prevent transmission of confirmed or suspected diseases through handling food or person-to person contact. This individual was allowed to return to work after the Washoe County Health District (WCHD) determined no longer contagious.

C. Consumer Alerts and Recalls

The Food Safety Program monitored consumer alert and recall notices. Most of the recalls and alerts did not affect Washoe County residents, as most products were not shipped into the area. If a product was distributed in Washoe County, staff ensured that distributors and/or retail outlets were notified and complied with the recommendations. The Food Safety Program tracked two consumer alerts/recalls in 2020.

D. Outbreaks

In Washoe County during 2020 there were thirteen (13) viral gastroenteritis outbreaks, one (1) outbreak of Hand, Foot and Mouth Disease (HFMD) in a childcare setting and five (5) Influenza-Like Illness. There were two (2) investigations of permitted food establishments related to consumer illness complaints, but no outbreaks were associated with any of these facilities.

Norovirus Outbreak linked to Track and Field Convention

On December 11, 2019 Washoe County Health District received an email reporting that several attendees of a convention held at a hotel casino resort in Reno, NV in early December 2019 had experienced gastrointestinal illness during and after the event. There were reported to be over 1,000 attendees from across the nation at this annual meeting. There were several catered events and meals prepared by the hotel resort culinary staff over the course of the conference.

Environmental Health Services (EHS) and Epidemiology Program staff spoke with the reporting party the morning of December 12 and found there were reports of two to five persons hospitalized, but none of these hospitalizations were able to be confirmed. There were also reports of vomiting in conference meeting and event rooms. The reporting party obtained a line list of persons who had filed a complaint.

EHS staff met with hotel resort staff to discuss the complaints, food safety, and environmental cleaning practices. According to resort staff they had not received any formal complaints but there was a public vomiting incident (PVI) reported to have occurred in a meeting room on December 7, which was cleaned afterwards. However, a Christmas party was held for a local company in the same meeting room later that evening. Hotel resort staff had received complaints from attendees of the Christmas party that employees of the company had called in sick or went home sick with gastrointestinal illness by Monday of the following week.

Two separate groups of people were reported to have experienced gastrointestinal illness after attending events held at the hotel resort. The two groups were linked by the PVI that occurred in the room used by both groups on the same day. The meeting room was reported to have been cleaned by staff after the PVI, however staff only cleaned to a five-foot radius around the PVI event. The convention group resulted in a 127-person line list of all out of state persons. The second group resulted in a 37-person line list of Washoe County residents.

Washoe County Health District (WCHD) staff conducted phone interviews with 30 of the 37 persons from the second group and were able to obtain five stool samples. The samples were tested by the Nevada State Public Health Laboratory resulting in three positive results for norovirus with two different subtypes identified, G1 and G2. One specimen tested negative, and the other was a stool culture only and was not able to be tested for norovirus. Due to the initial cases in the first group reporting symptom onset as early as December 4th (prior to the start of the first event), the rapid onset of symptoms, and laboratory testing positive for norovirus, WCHD staff determined this was an outbreak caused by norovirus with the possible initial case being introduced from out of state.

Listeriosis Death of Infant

On August 22, 2019, EHS was notified by the Communicable Disease Epidemiology program of the death of an infant who tested positive for Listeriosis. The Epidemiology program requested assistance from EHS to collect cheese samples from the case's residence. The cheese was purchased from a local grocery store (Facility A). On August 22, 2019, EHS staff collected one cheese sample from the refrigerator at the residence and delivered it to the NSPHL for analysis.

Staff from EHS responded to grocery store (Facility A) on August 22, 2019 to investigate potential food sources. Upon investigation all product observed came from an approved source and was pasteurized. All product was observed to be under proper refrigeration and no violations were noted. EHS staff reviewed complaints received for the facility for the thirty days prior to the investigation with no complaints recorded.

On August 27, 2019 the NSPHL reported the cheese sample was negative for Listeria. It was determined by EHS that the likely source was unpasteurized soft cheese the mother reported consuming during the first trimester of pregnancy.

2. HEPATITIS

"Hepatitis" is a general term for inflammatory conditions of the liver. It is characterized by jaundice, hepatomegaly, anorexia, abdominal and gastric discomfort, abnormal liver function, clay-colored stools, and dark urine. It may be mild and brief, or severe, fulminate and life threatening. Hepatitis may be caused by: bacterial or viral infection, parasitic infestation, alcohol and/or drug abuse, chemical or biological toxins or transfusion of incompatible blood. This report will focus only on viral forms of hepatitis.

I. Hepatitis A Virus (HAV) Infection

A. Epidemiology

HAV is transmitted from person-to-person via the fecal-oral route. Historically, children have had the highest rates of HAV infection. They are often asymptomatic, and are a primary source of acute infection to household members and contacts in child-care facilities. As of July 1, 2002, Nevada Administrative Code Chapters 392.105 and 394.190 require all children entering a Nevada school (public or private) for the first time to be immunized against HAV. HAV can produce jaundice or a flu-like syndrome in adults. There is no chronic form of HAV but there is a relapsing form with a prolonged course (that can last for up to six months).

HAV infection follows a cyclic pattern. In the United States, nationwide increases in incidence were historically seen every 10-15 years. Washoe County has observed peaks in 1988 and 1996. Nationwide HAV incidence increased 1,325% from 2015 to 2019. This increase was primarily due to person-to-person outbreaks among persons who use drugs and those who are homeless.

1. Reported Incidence

In 2019, no cases of acute hepatitis A were reported in Washoe County. The national incidence rate of acute hepatitis A was 5.7 cases per 100,000 population, which was the most current national data.

In 2020, one (1) laboratory-confirmed case of acute hepatitis A was reported for an incidence rate of 0.2 cases per 100,000 population. The Healthy People 2020 national health objective for acute HAV is 0.3 cases per 100,000 population.

Figure 2.1 Rates of Reported Acute Hepatitis A Cases, Washoe County, 2011-2020

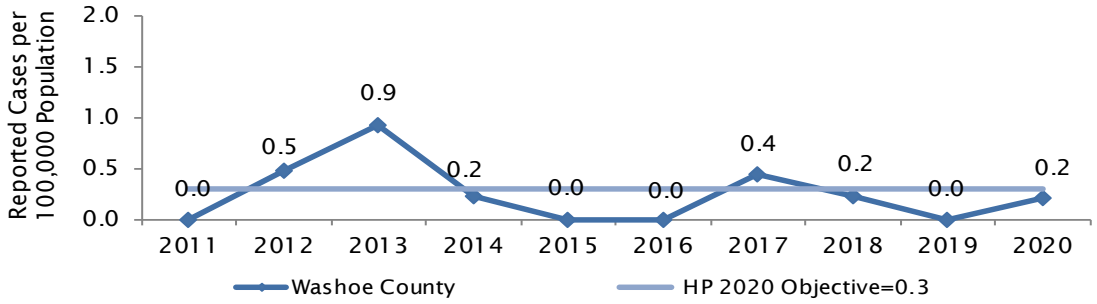
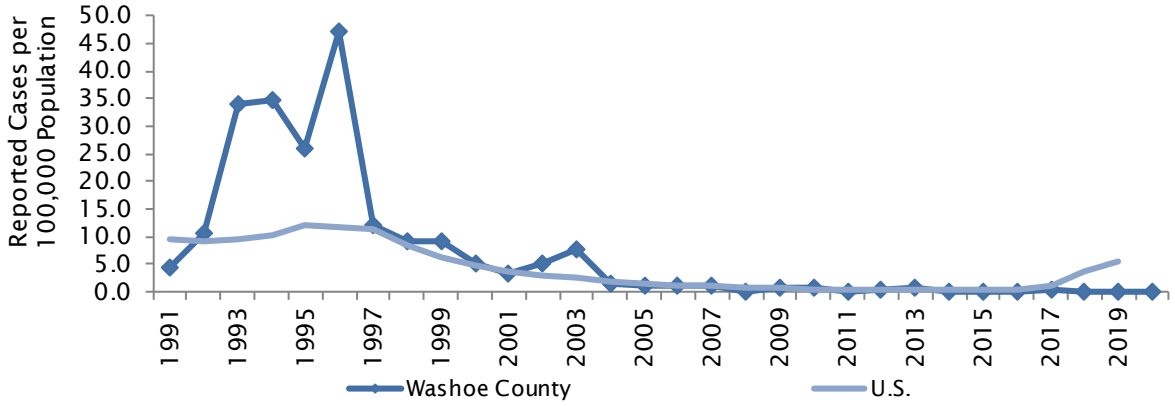


Figure 2.2 Rates of Reported Acute Hepatitis A Cases, Washoe County, 1988 – 2020



2. Population Affected

In 2019, no cases of acute hepatitis A were reported.

In 2020, one (1) case of acute hepatitis A was reported. The case was a white, non-Hispanic female in the 60+ year age group. The case was not hospitalized.

B. Prevention and Control

1. Post-exposure Prophylaxis

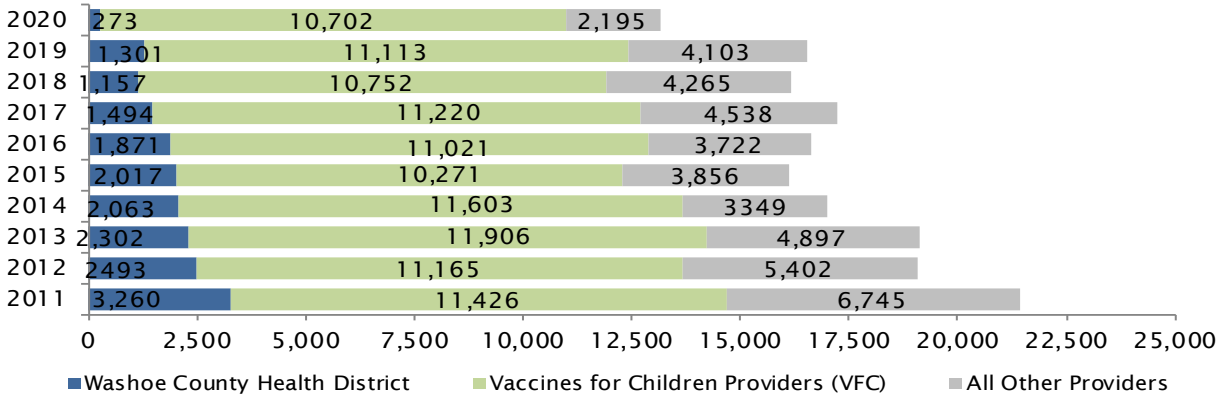
The 2020 case was interviewed, and two exposed contacts were identified. Neither contact received post-exposure prophylaxis because they were identified after 14 days from last date of exposure.

No outbreaks of hepatitis A were reported in 2019 or 2020.

2. Routine Hepatitis A Vaccination

HAV vaccine first became available in 1995.

Figure 2.3 Total Doses of HAV Vaccine Administered, Stratified by Provider, 2011 – 2020



II. Hepatitis B Virus (HBV) Infection

A. Epidemiology

Hepatitis B virus (HBV) is transmitted from person-to-person through activities that involve percutaneous or mucosal contact with infectious blood or body fluids. The risk for chronic infection varies according to age at infection and is greatest among young children. Approximately 90% of infants and 25%–50% of children aged 1–5 years infected with HBV will remain chronically infected compared to approximately 5% of adults. Persons born in HBV-endemic areas such as Southeast Asia, Africa, the Amazon Basin in South America, the Pacific Islands, and the Middle East are at higher risk of acquiring HBV infection at birth.

In 2019, the number of reported acute cases in U.S was 3,192, which corresponds to 20,700 estimated infections. Household, sexual, and needle-sharing contacts of persons with chronic HBV infection are at high risk to contract HBV and should be vaccinated. Individuals with a chronic HBV infection may remain asymptomatic or develop more serious complications like cirrhosis or liver cancer.

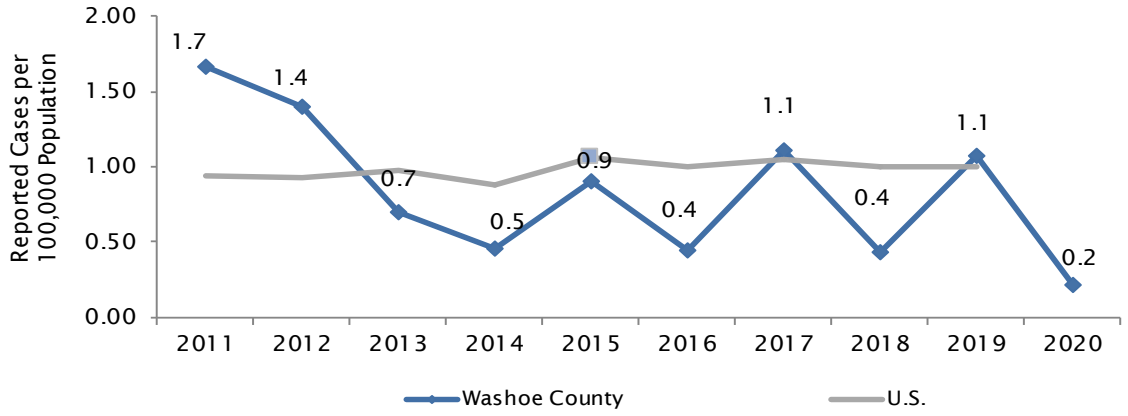
1. Acute Hepatitis B

a. Reported Incidence

In 2019, five (5) laboratory-confirmed case of acute hepatitis B were reported in Washoe County for an incidence rate of 1.1 cases per 100,000 population. The national incidence rate of acute hepatitis B was 1.0 case per 100,000 population, which was the most current data.

In 2020, one (1) laboratory-confirmed case of acute hepatitis B was reported in Washoe County for an incidence rate of 0.2 cases per 100,000 population.

Figure 2.4. Rates of Reported Cases of Acute Hepatitis B, Washoe County, 2011 – 2020



b. Population Affected

In 2019, five (5) cases of acute hepatitis B were reported, all were male. Four cases (80%) were in the 40-49 year age group and one case (20%) was in the 30-39 year age group. Four cases (80%) identified as White, non-Hispanic and one case (20%) identified as Hispanic. Two cases (40%) were hospitalized. No deaths were reported.

In 2020, one (1) case of acute hepatitis B was reported. The case was male and in the 50-59 year age group and identified as White, non-Hispanic. The case was hospitalized. No deaths were reported.

Figure 2.5 Reported Cases of Acute Hepatitis B by Age and Gender, Washoe County, 2020

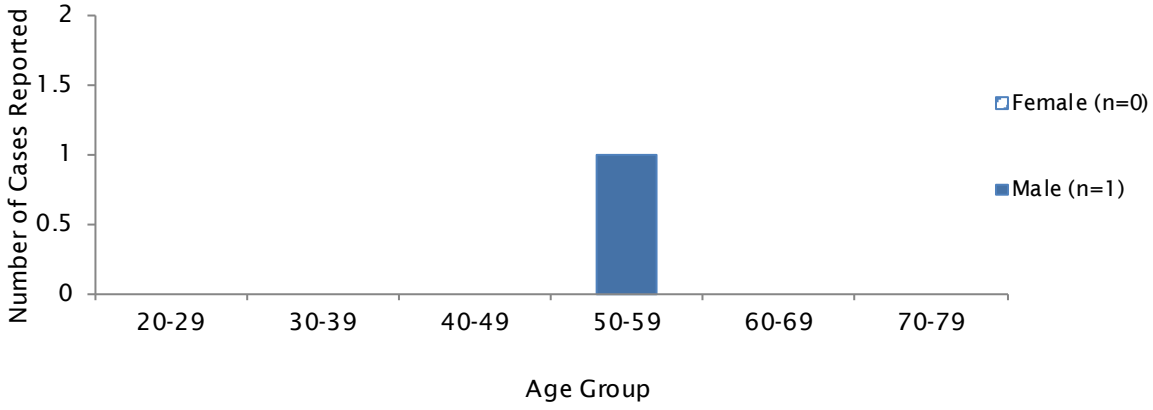


Table 2.1 Reported Risk Factors among Acute Hepatitis B Cases, Washoe County

	2019		2020	
Risk Factor (not mutually exclusive)	Number of Cases	%	Number of Cases	%
No history of HBV vaccine	3	60	0	0
Ever treated for a sexually transmitted disease	1	20	1	100
Injected drugs not prescribed by a doctor	3	60	0	0
Dental work or oral surgery	0	0	0	0
Incarcerated for longer than 24 hours	1	20	0	0
Male with sexual contact with 2-5 female partners	2	40	0	0
Female with sexual contact with 1 male partner	0	0	0	0
Male with sexual contact with 1 female partner	1	20	0	0
MSM (man with sexual contact with male partner)	0	0	1	100
Used street drugs but did not inject	2	40	1	100
Hospitalized	1	20	0	0
Surgery	0	0	0	0
Incarcerated for longer than 6 months	0	0	0	0
Tattoo	0	0	0	0
IV infusions and/or injections in outpatient setting	0	0	0	0
Blood exposure (not health care related, includes sharing needles)	1	20	0	0
Sexual contact of a person with confirmed acute or chronic HBV infection	0	0	0	0
Denied any risk factors	0	0	0	0
Unknown*	1	20	0	0

* Unable to locate for an interview

2. Chronic Hepatitis B

a. Reported Incidence

From 1990-2020, 1802 unique (non-duplicate) cases of chronic HBV infection were reported in Washoe County. In 2019, sixty-five (65) cases were reported, none had been previously reported. Thirty-two (32) of the 65 newly reported chronic HBV cases (51%) were male.

In 2020, sixty cases of chronic HBV infection were reported, and none had been previously reported. Thirty-three (33) of the 60 newly reported chronic HBV cases (55%) were male.

b. Reported Perinatal Incidence

In 2019, sixteen (16) pregnant women with chronic HBV infection were reported. Ten (10) cases (62.5%) were newly reported. One case moved out of the country, two cases moved out of the county, and three cases had not been reported to the program prior to delivery. Nine (9) of the 16 women (56.25%) delivered in 2019. Ten (10) infants were born to women with chronic HBV infection in 2019.

In 2020, eight (8) pregnant women with chronic HBV infection were reported. Three (3) cases (30%) were newly reported. Five (5) of the 8 women (62%) delivered in 2020 and three (3) of the 8 women (38%) delivered in 2021.

Eight (8) infants completed post-vaccination seroscreening in 2019. All eight (8) were born in 2018. Five (5) infants completed post-vaccination seroscreening in 2020. All five (5) were born in 2019.

Six (6) of the 16 women (37.5%) delivered in 2020, and one moved prior to delivery (6.25%). Twelve (12) infants were born to women with chronic HBV infection in 2020. All infants (100%) received HBIG and HBV vaccine within 12 hours of birth, as recommended.

Table 2.2 Post-Vaccination Testing of Infants Born to HBsAg-Positive Women, Washoe County, 2019-2020

Total Sero-screened	Test Results		HBIG Within 12 Hrs. of Birth	Hep B Dose 1 Within 12 Hrs. of Birth
	HBsAg negative	anti-HBs positive		
13	13	13	13	13
% of total	100	100	100	100

c. Population Affected

Figure 2.6 Chronic HBV Cases by Age at Time of Diagnosis and Gender, WashoeCounty, 1990-2020

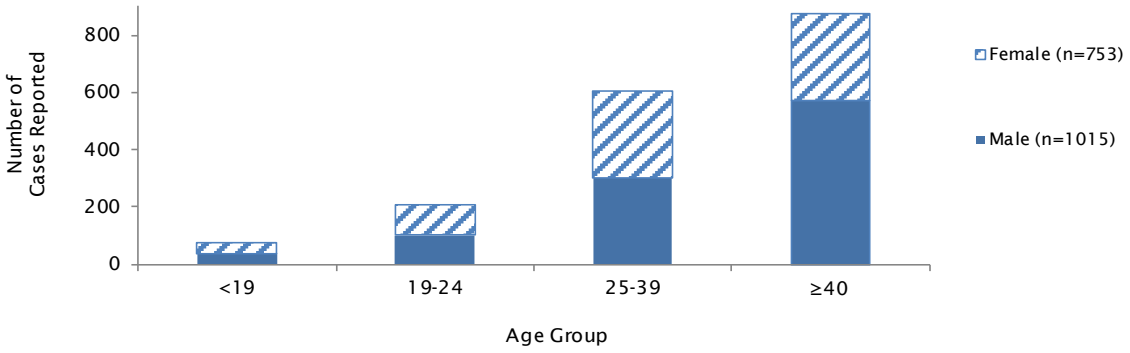


Figure 2.7 Chronic HBV Cases by Race/Ethnicity, Washoe County, 1990-2020

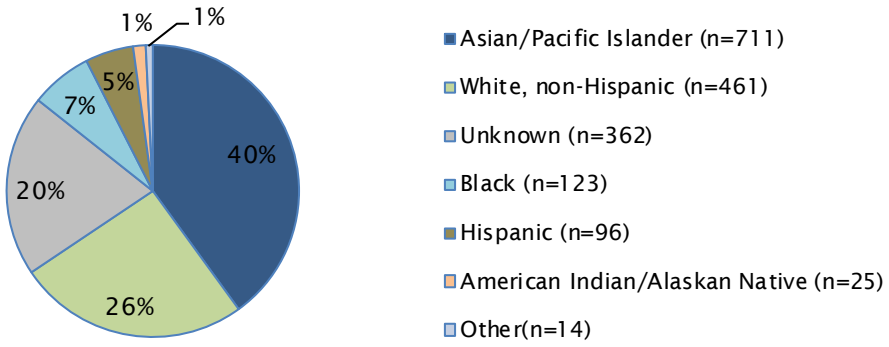


Figure 2.8 Newly Reported Chronic HBV Cases by Age and Gender, Washoe County, 2020

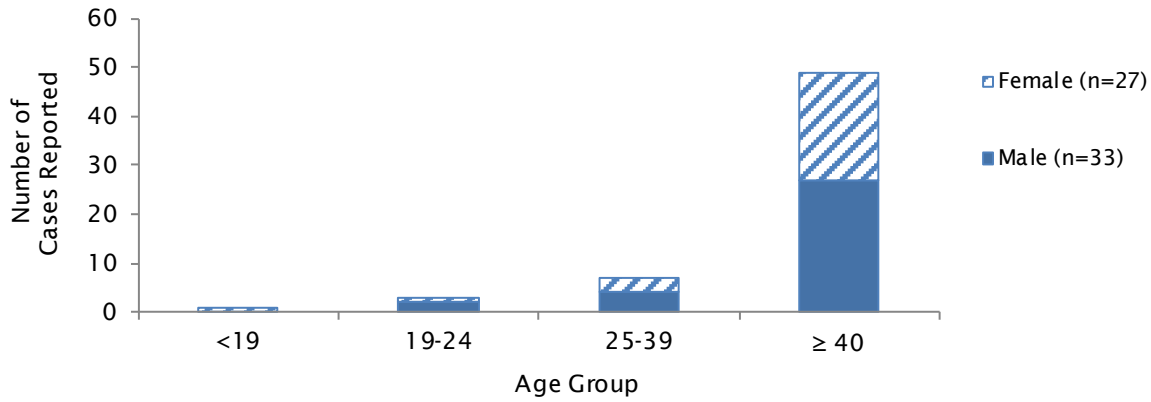
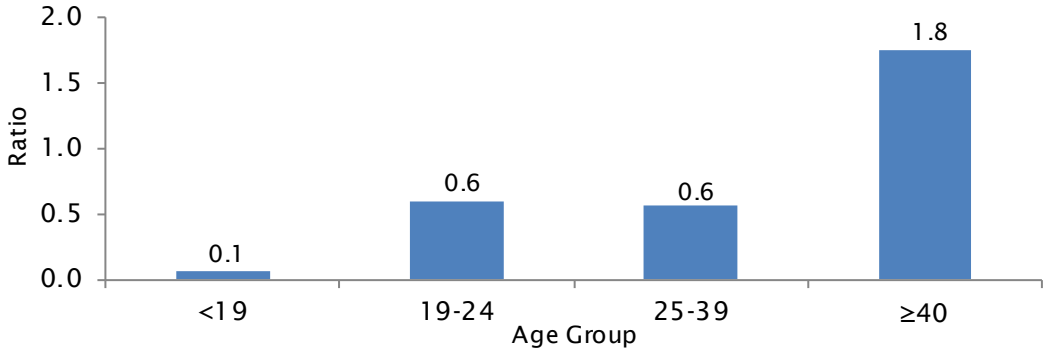


Figure 2.9 Age-Specific Ratio of Newly Reported Chronic HBV Cases, Washoe County, 2020



The age-specific ratio provides an easy way to see if a particular age group is being more impacted by a disease than would be expected based on the number of individuals in that age group. Figure 2.8 demonstrates that the 40 years and older age group was more heavily impacted.

In 2015, due to reduced program personnel, active surveillance for non-prenatal chronic hepatitis B was discontinued. The system only documents data available on the laboratory report. Therefore, a large proportion of newly reported cases are missing race/ethnicity information (Figure 2.9)

Figure 2.10 Newly Reported Chronic HBV Cases by Race/Ethnicity, Washoe County, 2020

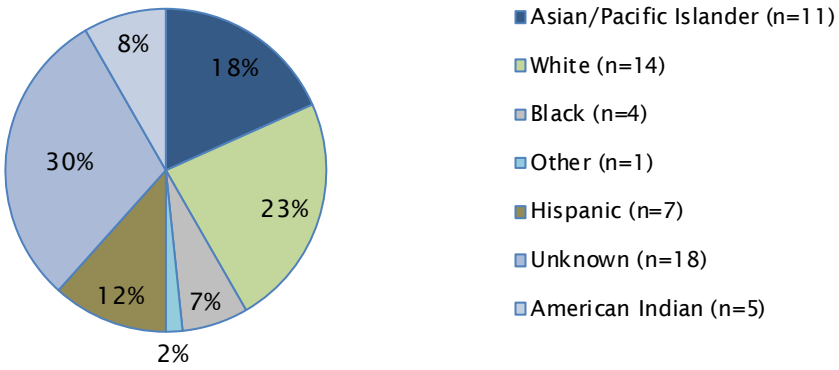
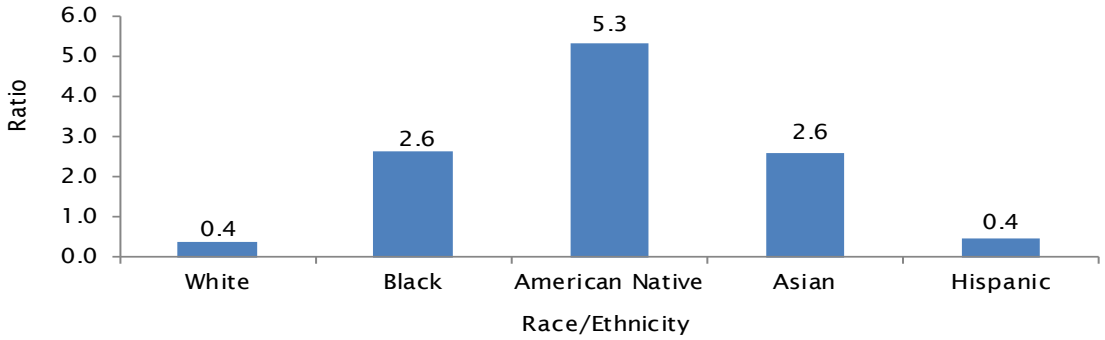


Figure 2.11 Race/Ethnicity-Specific Ratio of Newly Reported Chronic HBV Cases, Washoe County, 2020



The race/ethnicity-specific ratio provides an easy way to see if a particular race/ethnicity group is being more impacted by a disease than would be expected based on the number of individuals in that group. Figure 2.10 demonstrates that the Native Americans were more heavily impacted in 2020.

B. Prevention and Control

Beginning in 2014, due to restricted program resources, testing and/or vaccinations have only been provided to household and sexual contacts of perinatal HBV cases and acute HBV cases.

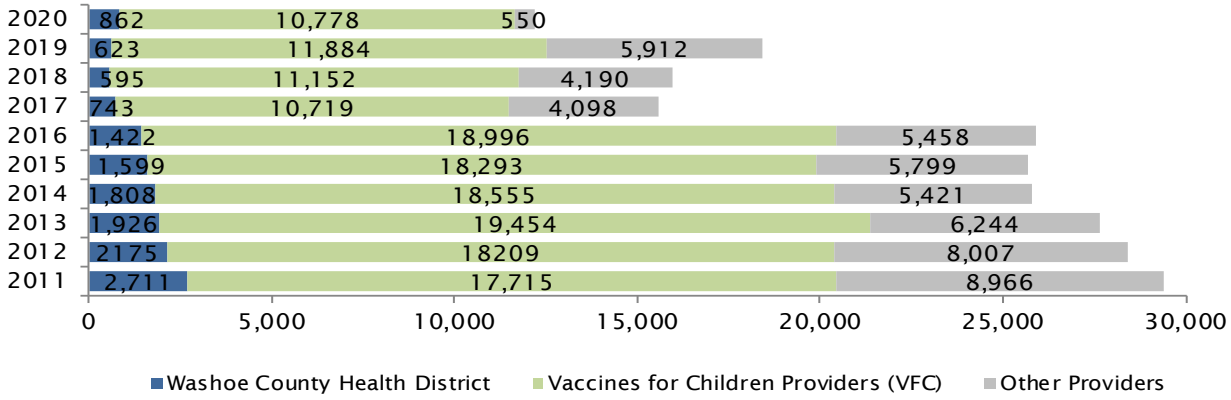
1. Hepatitis B Immune Globulin (HBIG) for Postexposure Prophylaxis

No sexual contacts of an acute hepatitis B case received HBIG in 2019 and 2020.

2. Routine Hepatitis B Vaccination

In Washoe County, HBV vaccine has been given routinely to infants since 1993. In 1997, an adolescent HBV immunization initiative began to close the gap among middle school children. Nevada Administrative Code (NAC) 392.105 and 394.190 requires all children entering a Nevada school (public or private) for the first time to be immunized against HBV.

Figure 2.12 Doses of HBV Vaccine Given, Stratified by Provider, 2011 – 2020



III. Hepatitis C

A. Epidemiology[1,2]

An estimated 2.4 million people in the United States were living with hepatitis C during 2013–2016 (most recent number). Hepatitis C virus (HCV) is transmitted primarily through parenteral or percutaneous exposures to blood, most notably injection drug use (e.g., sharing drug-injection equipment such as needles and syringes.) Other, less common exposures include perinatal (from an infected mother to her child during pregnancy or birth), healthcare exposures, sex with an infected person, unregulated tattoos or body piercings, sharing of personal items, blood transfusions, and organ transplants. More than half of people who become infected with HCV will develop chronic infection. Most HCV-infected people are asymptomatic and may not be aware of their infection. They are a source of HCV to others and are at risk for chronic liver disease. Of every 100 people infected with HCV, approximately 5–25 will develop cirrhosis within 10–20 years. Chronic HCV is the most common reason for liver transplantation in the United States. Chronic liver disease was the 9th leading cause of death in Washoe County and Nevada in 2020.

1. Acute Hepatitis C

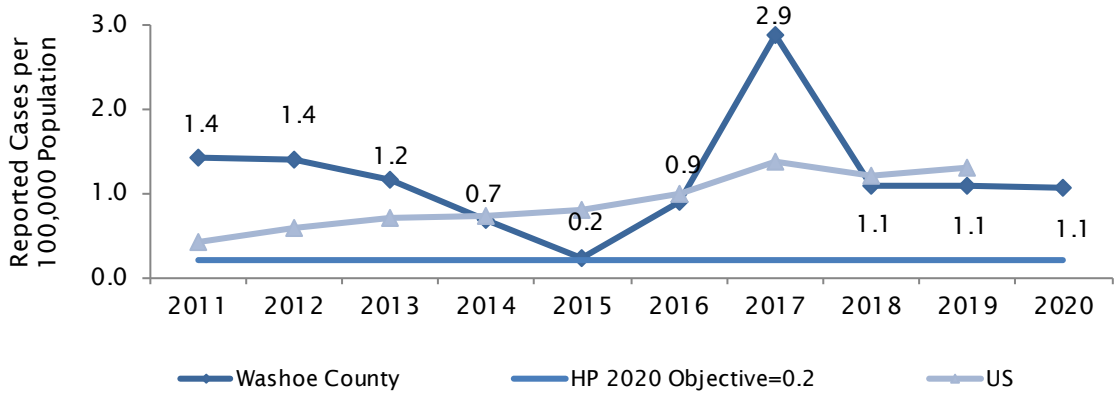
a. Reported Incidence

Five (5) cases of acute HCV infection were also reported in Washoe County in both 2019 and in 2020 for a rate of 1.1 cases per 100,000 population. The Healthy People 2020 national health objective is 0.2 acute cases per 100,000 population. In

[1] Centers for Disease Control and Prevention. Hepatitis C Questions and Answers for Health Professionals. Accessed 10 Apr 2021. Last Updated 7 Aug 2020. Available at https://www.cdc.gov/hepatitis/hcv/hcvfaq.htm.
[2] Centers for Disease Control and Prevention. Hepatitis C Questions and Answers for the Public. Accessed 10 Apr 2021. Last Updated 28 Jul 2020. Available at https://www.cdc.gov/hepatitis/hcv/cfaq.htm.

2019, the national incidence rate of acute hepatitis C was 1.3 cases per 100,000 population.

Figure 2.13 Rate of Reported Cases of Acute Hepatitis C, Washoe County, 2011–2020



b. Population Affected

In 2019, five (5) cases of acute hepatitis C were reported. There were three males and two females. Of the four (4) cases with known race and ethnicity, three were white, non-Hispanic and one was Native American/Alaskan Native. Two cases were hospitalized for their illness. No deaths were reported. None of the cases were interviewed; however, a medical chart review was performed for each case. All five cases (100%) had at least one risk factor for disease based upon medical chart.

In 2020, five (5) cases of acute hepatitis C were reported. There were two (2) males and three females. All three (3) cases with known race and ethnicity were white, non-Hispanic. One case was hospitalized for their illness. No deaths were reported. None of the cases were interviewed; however, a medical chart review was performed for each case. Four of the five cases (80%) had at least one risk factor for disease based upon chart review. Of these four cases, three (75%) had intravenous drug use, three (75%) used non-injected street drugs, and one (25%) had a history of incarceration.

2. Perinatal Hepatitis C

a. Case Reports

No (0) cases of perinatal hepatitis C were reported in Washoe County in 2019.

One (1) case of perinatal hepatitis C was reported in Washoe County in 2020. Only 217 cases of perinatal hepatitis C were reported nationally in 2019, the most recent national surveillance data available.

b. Population Affected

The single case of perinatal hepatitis C reported in 2020 was born to a mother who was chronically infected with HCV and had a detectable viral load at the time of delivery.

3. Hepatitis C Infection – Past or Present

a. Case Reports

WCHD received a total of 14,747 positive HCV test results from laboratories between May 1, 2002, and December 31, 2020. Of the 14,747 lab reports, 11,707 (79%) were Washoe County residents, which corresponded with a prevalence of 2.48% in Washoe County. Of 10,348 reported cases, 680 (5.8%) were newly reported in 2019 and 476 (4.1%) were newly reported in 2020.

Table 2.3 Hepatitis C Cases by Case Classification, Washoe County, May 2002 – December 2020 (Lab data only)

Case Classification	No. Cases	%
Acute Hepatitis C	84	0.8
Perinatal	2	0.0
Confirmed HCV Infection, Past or Present	8,574	82.9
Probable HCV Infection, Past or Present	807	7.8
Unable to be Classified	881	8.5
Total	10,348	100.0

b. Reported Hepatitis C Cases by Genotype

Genotype refers to the genetic make-up of an organism or a virus. There are at least seven (7) distinct HCV genotypes and 67 subtypes that have been identified. Genotypes 1a, 1b, 2, and 3 are the most common HCV genotypes in the United States. With the advent of hepatitis C therapies that are effective against many genotypes, genotyping is no longer required prior to treatment initiation. However, pre-treatment genotyping continues to be recommended for patients with evidence of cirrhosis and/or past unsuccessful hepatitis C treatment, because this knowledge can help tailor treatment regimens and improve patient outcome.[3]

Over 90% of people infected with HCV can be cured of their infection, regardless of HCV genotype, with 8–12 weeks of oral therapy. To provide health-care professionals with timely guidance as new therapies are available and integrated into hepatitis C treatment regimens, the Infectious Diseases Society of America (IDSA) and American Association for the Study of Liver Diseases (AASLD), in collaboration with the International Antiviral Society–USA (IAS–USA), developed evidence-based, expert-developed recommendations for hepatitis C management. These recommendations can be accessed at http://www.hcvguidelines.org/.

[3] Centers for Disease Control and Prevention. Hepatitis C Questions and Answers for Health Professionals. Accessed 10 Apr 2021. Last Updated 7 Aug 2020. Available at https://www.cdc.gov/hepatitis/hcv/hcvfaq.htm.

Of 10,348 case reports, 3,231 (31%) contained documented genotypes, which likely indicates a relatively small proportion of persons with HCV infection were actually in therapy. Of 3,231cases with a documented genotype, 2,190 (68%) had genotype 1; 444 (14%) had genotype 2; 540 (17%) had genotype 3; and 57 (2%) had two or more genotypes or other genotypes. It is important to note that superinfection (more than one genotype of HCV) is possible if risk behaviors (e.g., intravenous drug use) for HCV infection continue, but it is believed to be very uncommon.

c. Reported Hepatitis C Cases by Mortality

Of 10,348 cases, at least 502 (5%) expired. Of these 502 expired cases, hepatitis C was the primary cause of death in 97 cases (19%) and the secondary cause of death in 369 cases (74%). Primary versus secondary cause of death was not determined for 36 cases (7%).

d. Population Affected

WCHD Surveillance data 2002-2020 indicate:

- 61% of cases are in the 40-59 year age group among 10,311 cases with known age.
- 66% of cases were born between 1945 and 1965.
- Among 10,256 cases with known gender, 65% were male.
- 33% of the case reports (3,391 cases) were missing information on race/ethnicity.
- Among 6,957 cases with known race/ethnicity, 81% are White, non-Hispanic.
- African Americans are disproportionately affected by chronic HCV infection. They have the highest ratio of proportion of cases to population.

The proportion of the cases aged 30 and younger has been increasing over the past several years. It has increased from below 8% prior to 2012 to 12.5% in 2014, 15.1% in 2017, and 17.5% in 2018. In 2019 the proportion dropped to 12.9% and remained stable in 2020 at 12.7%. However, this is still elevated compared to past years. See Figure 3.3.

Figure 2.14 Reported Hepatitis C among Persons Aged ≤ 30 Years, Washoe County, 2005-2020

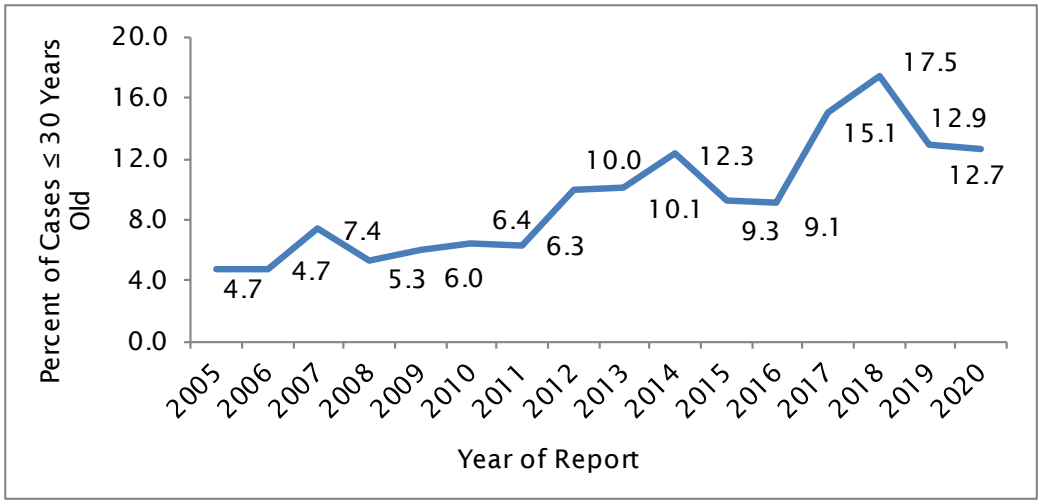


Table 2.4 Reported Cases of Hepatitis C by Age, Gender, Race and Ethnicity, Washoe County, May 2002 – December 2020

Demographic Characteristics		No. Cases	%	% population	Ratio
Age Group	<20	67	0.6	25.3	0.0
	20-29	693	6.7	13.6	0.5
	30-39	1,246	12.0	13.5	0.9
	40-49	2,668	25.8	11.5	2.2
	50-59	3,614	34.9	12.4	2.8
	>=60	2,023	19.5	21.3	0.9
	Unknown	37	0.4		
	Total	10,348	100.0	100.0	
Gender	Male	6,667	64.4	50.2	1.3
	Female	3,589	34.7	49.8	0.7
	Unknown	92	0.9		
	Total	10,348	100.0	100.0	
Race/Ethnicity	American Indian/Alaska Native, non-Hispa	164	1.6	1.6	1.0
	Asian/Pacific Islander, non-Hispanic	81	0.8	7.1	0.1
	African American, non-Hispanic	503	4.9	2.6	1.9
	White, non-Hispanic	5,658	54.7	62.6	0.9
	Hispanic	477	4.6	26.1	0.2
	Unknown	3,465	33.5		
	Total	10,348	100.0	100.0	

3. Prevention and Control

There is no vaccine for preventing HCV, no funding for vaccinating persons with chronic HCV against HAV and HBV, as well as no funding for treatment. Prevention

and control of HCV are limited to education and the collection, analysis and dissemination of data:

- HCV surveillance began on May 1, 2002.
- Sixteen (16) issues of *Epi News* were written and distributed to local health care providers during 2002-2020. These issues covered general information on hepatitis testing recommended actions and reviewed hepatitis surveillance project and results.
- A one-time survey was sent to 73 ordering health care providers, and 25 (34%) were returned. Of the 25 returned, 16 received the *Epi News;* 15 of the 16 who receive the *Epi News* said the information on HCV surveillance was useful; 6 of the 25 did not receive the *Epi News* and all 6 requested to be added to the distribution list.
- 1,500 CDC brochures on HCV prevention and HCV testing were distributed through Community Clinic (formerly Washoe Medical Center Clinic).
- An HCV section was added to the Washoe County Health District's website. There were 13,679 visits to this web page between May 2005 and December 2014.
- The HCV webpage was revised to include updated surveillance data, provider guidance and resources, and patient education materials.
- In 2020, the Centers for Disease Control and Prevention have mandated reporting of chronic HBV and HCV cases to better assess national, state, and local prevalence.

3. OTHER REPORTABLE COMMUNICABLE DISEASES and CONDITIONS

I. Respiratory Syncytial Virus (RSV)

A. Epidemiology

1. Population Affected

Respiratory Syncytial irus (RSV) is the most common cause of bronchiolitis and pneumonia among infants and children. Most children will have serologic evidence of RSV infection by 2 years of age. RSV also causes repeated infections throughout life, usually associated with moderate to severe cold-like symptoms. Severe lower respiratory tract disease may occur at any age, especially among the elderly or among those with compromised cardiac, pulmonary or immune systems.

In temperate climates, RSV infections usually occur during annual community outbreaks, and often last four to six months during the late fall, winter or early spring months. The timing and severity of outbreaks in a community vary from year to year.

2. Reported Incidence

In 2019, seven hundred thirteen (713) laboratory-confirmed cases of RSV were reported in Washoe County. Of the 713 cases, 624 (87.5%) were among children $\leq$ 2 years of age, which corresponds to an incidence of 3,649 cases per 100,000 children $\leq$ 2 years of age (population for this age group was 17,099 in 2019). The increase of the incidence rate is likely correlated with high incidence of influenza.

In 2020, six hundred seventeen (617) laboratory-confirmed cases of RSV were reported in Washoe County in 2020. Of the 617 cases, 492 (79.7%) were among children $\leq$ 2 years of age, which corresponds to an incidence of 2,823 cases per 100,000 children $\leq$ 2 years of age (population for this age group was 17,425 in 2020). The decrease of the incidence rate in 2020 is likely associated with COVID-19 prevention (e.g. school closing, mask requirements and social distancing) as these measures are often cited as reasons for lower rates of several viral respiratory pathogens including influenza, rhinoviruses, enteroviruses, and parainfluenza.[1]

[1] Olsen SJ, Winn AK, Budd AP, et al. Changes in Influenza and Other Respiratory Virus Activity During the COVID-19 Pandemic — United States, 2020–2021. MMWR Morb Mortal Wkly Rep 2021;70:1013–1019. DOI: http://dx.doi.org/10.15585/mmwr.mm7029a1

Figure 3.1 Rate of Reported Cases of RSV in Children ≤ 2 Years of Age, Washoe County, 2011-2020

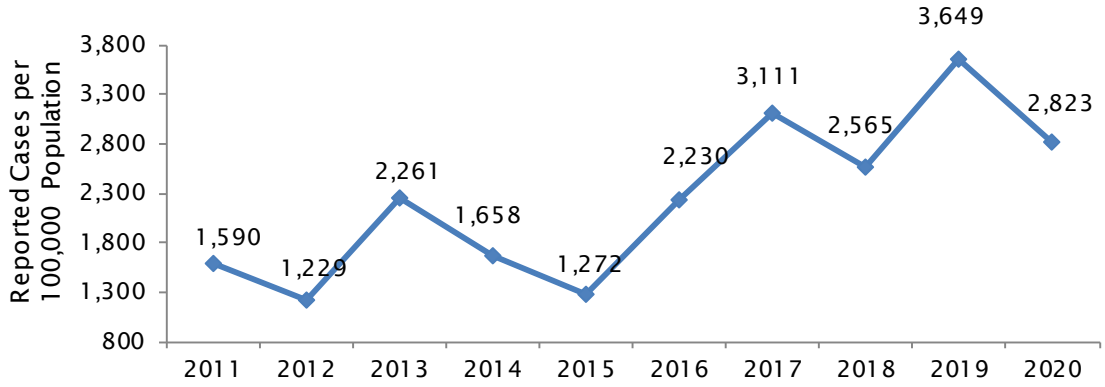
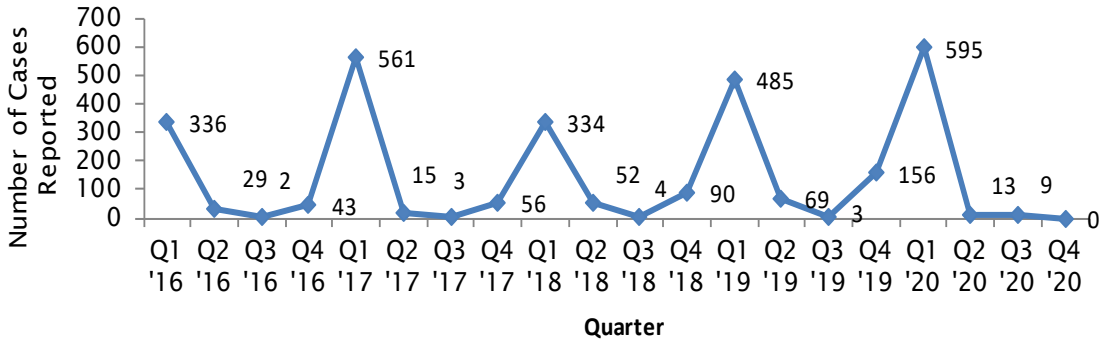


Figure 3.2 Reported RSV Cases by Quarterly Reporting, Washoe County, 2016 – 2020



B. Prevention and Control

There is no vaccine currently available for RSV. Proper hygiene and environmental cleaning, especially in child care settings, can be effective in reducing transmission.

II. Viral Meningitis

A. Epidemiology

Viral meningitis is caused by infection with one of several types of viruses. About 90% of cases are caused by non-polio enteroviruses (e.g., coxsackievirus and echovirus). Enteroviruses are typically spread person-to-person through the fecal-oral route, respiratory droplets and fomites. Herpesvirus and the mumps virus can also cause meningitis. Clinicians rarely identify which virus causes meningitis. It is a diagnosis of exclusion and is most likely under-reported.

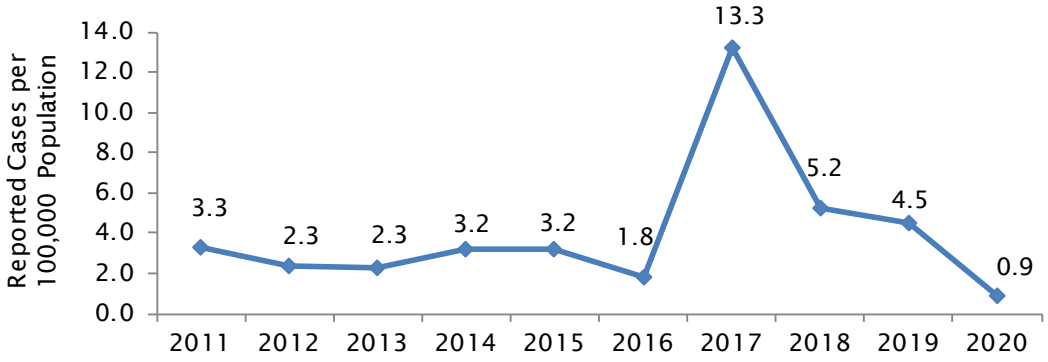
In all cases of viral meningitis the diagnosis is supported by a compatible clinical illness and laboratory tests that rule out possible bacterial etiologies.

1. Reported Incidence

In 2019, twenty-one (21) laboratory-confirmed cases of viral meningitis were reported in Washoe County for a reported incidence of 4.5 cases per 100,000 population.

In 2020, four (4) laboratory-confirmed cases of viral meningitis were reported in Washoe County in 2020 for a reported incidence of 0.9 cases per 100,000 population.

Figure 3.3 Rates of Reported Cases of Viral Meningitis, Washoe County, 2011-2020

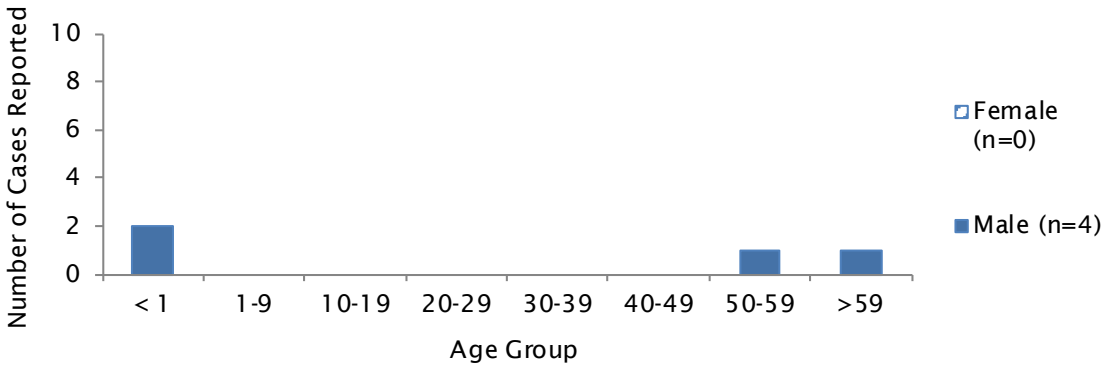


2. Population Affected

In 2019, the median age of cases in Washoe County was 28 years (range: <14 days - 71 years). Thirteen (13) cases (62%) were male. Sixteen (16) cases were white, non-Hispanic, two (2) Hispanic, one (1) Asian, and two (2) were of unknown race.

In 2020, the median age of 2020 cases in Washoe County were 29.5 years (range: 6 months - 71 years). All cases were male. Two (2) cases were white, non-Hispanic, one (1) Asian, and one (1) was of unknown race.

Figure 3.4 Viral Meningitis Cases by Age and Sex, Washoe County, 2020



B. Prevention and Control

No specific prevention or control measures are available for non-polio enteroviruses. Adherence to good hygienic practices, such as frequent and thorough hand washing (especially after diaper changes and before eating or preparing food), disinfection of contaminated surfaces by household cleaners (e.g., diluted bleach solution), and avoidance of shared utensils and drinking containers, is recommended to help interrupt transmission.

III. Hansen's Disease (Leprosy)

A. Epidemiology

Hansen's disease is a chronic bacterial disease of the skin, peripheral nerves and upper airway caused by *Mycobacterium leprae*.

1. Reported Incidence

No cases of Hansen's disease were reported in Washoe County in 2019 and 2020. From 1994 through 2020 only five (5) cases of Hansen's disease have been reported in Washoe County. One case was reported in each year 2003, 2005, 2007, 2009, and 2012.

2. Population Affected

Worldwide, countries that reported more than 1,000 new cases of Hansen's disease to the World Health Organization (WHO) between 2011 and 2015 are:

- Africa: Democratic Republic of Congo, Ethiopia, Madagascar, Mozambique, Nigeria, United Republic of Tanzania
- Asia: Bangladesh, India, Indonesia, Myanmar, Nepal, Philippines, Sri Lanka
- South America: Brazil

There have been dramatic decreases in the global disease burden: from 5.2 million in 1985 to 805,000 in 1995 to 753,000 at the end of 1999 and 129,192 new cases registered in 2020.[2] Most adults around the world, however, may face no risk at all of becoming infected with Hansen's disease. That is because evidence shows that 95% of all adults are naturally (genetically) unable to get the disease, even if they are exposed to the bacteria that causes it.[3]

Newly recognized cases in the U.S. are few and are usually diagnosed in immigrants or refugees who acquired the disease in their native countries. In 2019, a total of 49 cases were reported in the U.S. due to the large immigrant population in some states the disease is endemic in California, Florida, Hawaii, and Texas[3].

[2] https://www.who.int/publications/i/item/who-wer9636-421-444
[3] https://www.cdc.gov/leprosy/world-leprosy-day/index.html
[3] https://wonder.cdc.gov/nndss/static/2019/52/2019-52-table1o.html

B. Prevention and Control

Prevention and control of new cases depends on early recognition and treatment with multidrug therapy. Clinical and laboratory evidence suggest that, in most cases, infectiousness is lost within one day of appropriate treatment. Isolation, quarantine and restrictions on employment and school attendance are not warranted.

IV. Community-Wide Surveillance for Carbapenemase Producing Organisms (CPO)

A. Epidemiology

Carbapenemase-producing organisms (CPO) are bacteria that are naturally found in the digestive system but have become resistant to a group of antibiotics known as carbapenems. CPO are often found in a number of countries around the world, particularly in the healthcare systems.

Table 3.1 Reported CPO by Month, Washoe County, 2020

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
CRE	1	3	4	2	1	2	5	7	0	6	12	6	49
CRPA	6	5	2	2	3	6	5	4	1	2	4	1	41
CRA	0	0	0	0	0	0	0	0	0	0	0	0	0
Other CPO	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	7	8	6	4	4	8	10	11	1	8	16	7	90

2. Population Affected

In 2019, seven (7) cases of CPO were reported. Six (86%) occurred in males, two (28.5%) occurred in persons 60+ years of age. Nine (9) contacts were identified with a case-contact ratio equal to 0.8.

In 2020, five (5) cases of CPO were reported. Four (80%) occurred in males, four (80%) occurred in persons 60+ years of age. Nine (9) contacts were identified with a case-contact ratio equal to 0.8.

Figure 3.5 Reported Cases of CPO by Age and Gender, Washoe County, 2020

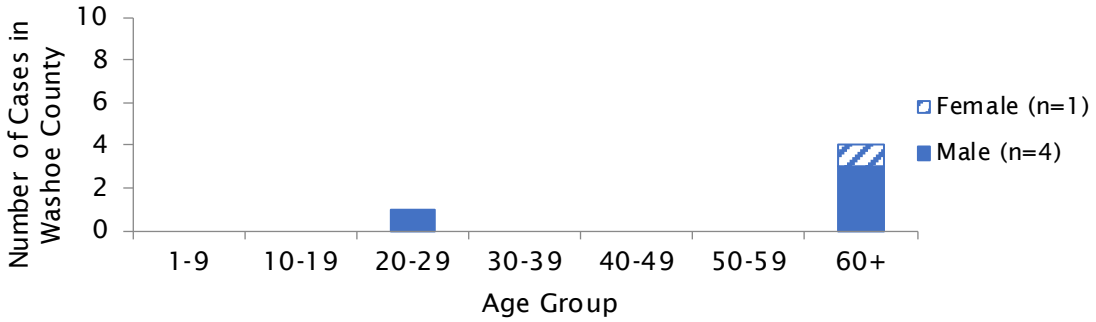
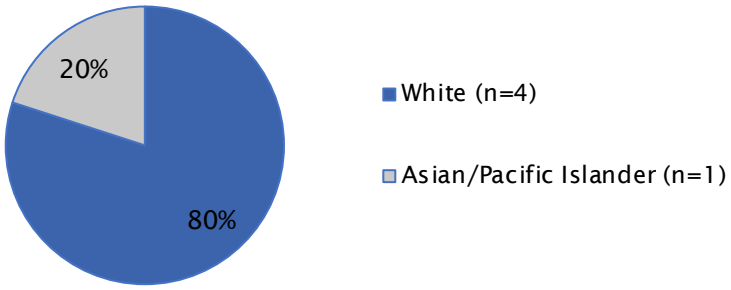


Figure 3.6 Reported Cases of CPO by Race/Ethnicity, Washoe County, 2020



B. Prevention

To prevent the spread of CPO, health care personnel and facilities should follow *infection control precautions:*

- Wash hands with soap and water or an alcohol-based hand sanitizer before and after caring for a patient:
- Carefully clean and disinfect rooms and medical equipment,
- Wear gloves and a gown before entering the room of a CPO patient,
- Keep patients with CPO infections in a single room or have them share a room with someone else who has a CPO infection:
- Whenever possible, dedicate equipment and staff to CPO patients,
- Remove gloves and gown and wash hands before leaving the room of a CPO patient, and
- Only prescribe antibiotics when necessary.

To prevent the spread of CPO, the public should:

- Avoid unnecessary exposures to health care measures in endemic countries, such as India, Taiwan, Turkey and others listed in "Carbapenemase-Producing Organisms: A Global Scourge."[1]
- Inform your health care professionals if you had a medical procedure done recently while travelling to an endemic country prior to seeking medical care in the United States even if for a regular procedure (e.g. dialysis) or seeking treatment (e.g. emergency room visit, elective surgery).

[1] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5884739/

4. SEXUALLY TRANSMITTED DISEASES

I. *Chlamydia*

A. Epidemiology

Chlamydia trachomatis causes the infection commonly known as chlamydia and is the most frequently reported sexually transmitted disease in the United States. Pelvic inflammatory disease (PID) caused by *Chlamydia trachomatis* is a major cause of infertility, ectopic pregnancy, and chronic pelvic pain. Chlamydia is transmitted through vaginal, anal, and oral sex. Pregnant women with chlamydia can transmit the infection to their infants during delivery, causing neonatal ophthalmia and pneumonia.

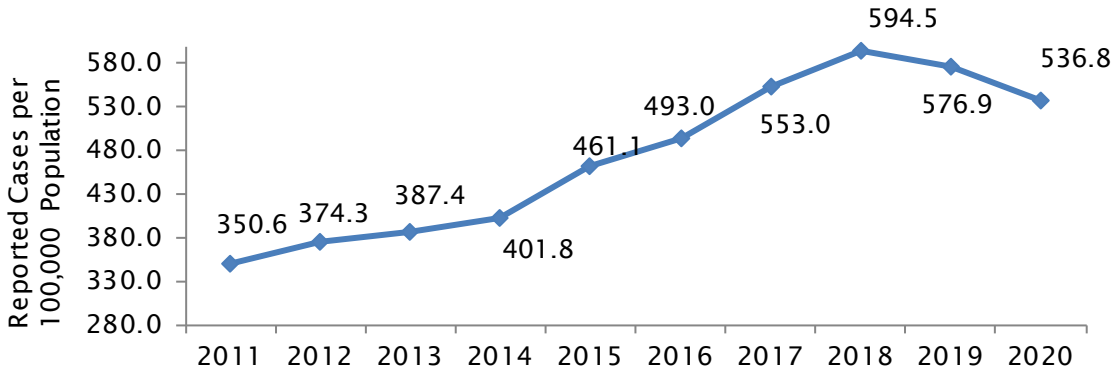
1. Reported Incidence

In 2019, chlamydia infection was the most commonly reported sexually transmitted disease (STD) in Washoe County with an incidence rate of 577 cases per 100,000 population. The 2019 national reported incidence rate was 553 cases per 100,000 population, which was the most current national data.

In 2020, incident rate was 537 cases per 100,000 in Washoe County. The Healthy People 2020 national health objective is to increase the proportion of sexually active female adolescents and young women who get screened for chlamydia to 76.5%.

While chlamydia infections have increased nationally for decades, the number of cases reported in Washoe County decreased slightly in 2020, from 2,683 in 2019 to 2,526 in 2020. A reprioritization of disease investigation for reportable STDs, has decreased the amount of contact tracing conducted by WCHD. Cases are investigated to determine and ensure appropriate treatment. The cases are then asked to inform their sexual partner(s) of the exposure.

Figure 4.1 Rates of Reported Chlamydia Cases, Washoe County, 2011– 2020

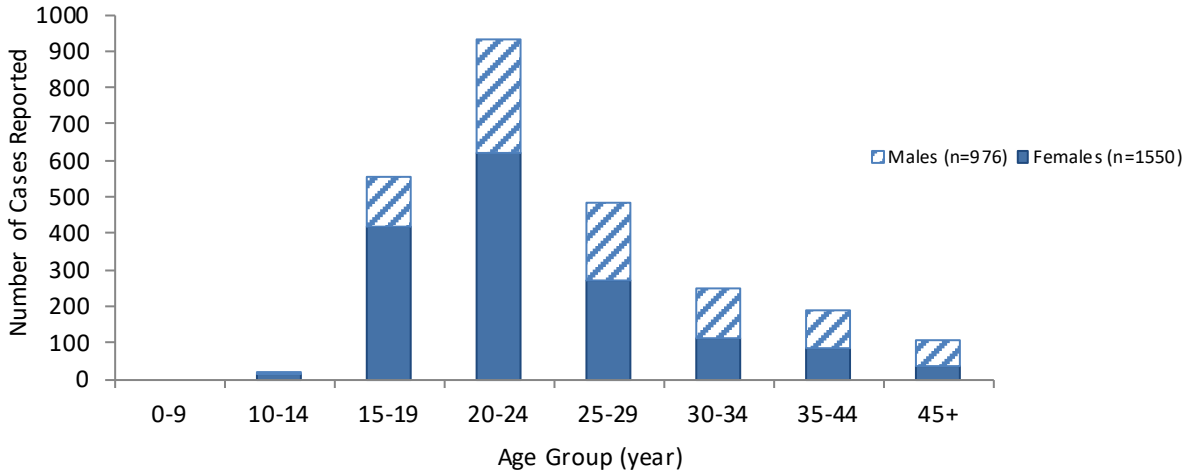


2. Population Affected

Of the 2,683 chlamydia cases reported in 2019, 1,651 (61.5%) occurred in persons 15-24 years of age; and 1,666 (62%) occurred in females.

Of the 2,526 chlamydia cases reported in 2020, 1,499 (59.3%) occurred in persons 15-24 years of age; and 1,550 (61.4%) occurred in females.

Figure 4.2 Reported Cases of Chlamydia by Age and Gender, Washoe County, 2020



In 2020, Black and Hispanic cases accounted for 8% and 27%, respectively, of total chlamydia cases. Blacks comprised 2.6 % and Hispanics 26% of Washoe County's population.

Figure 4.3 Rate of Reported Cases of Chlamydia by Race/Ethnicity, Washoe County, 2020

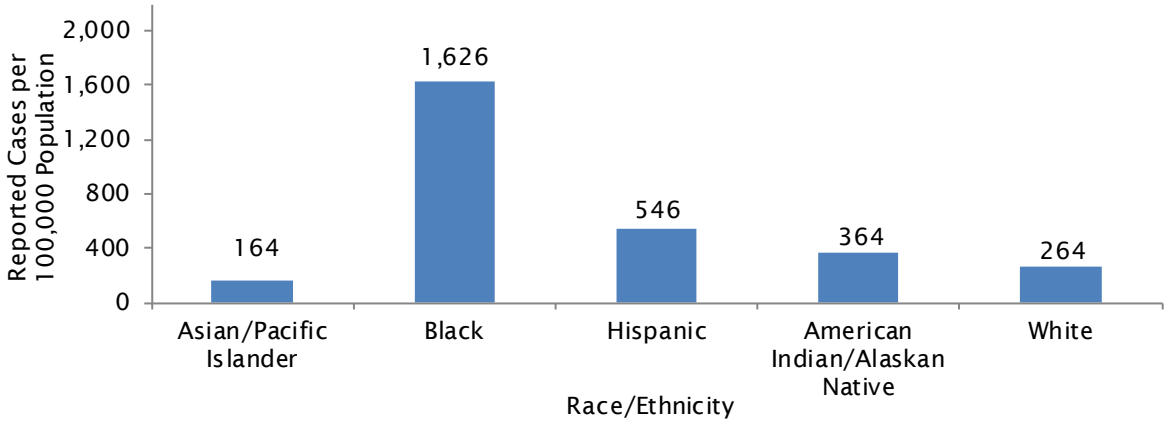
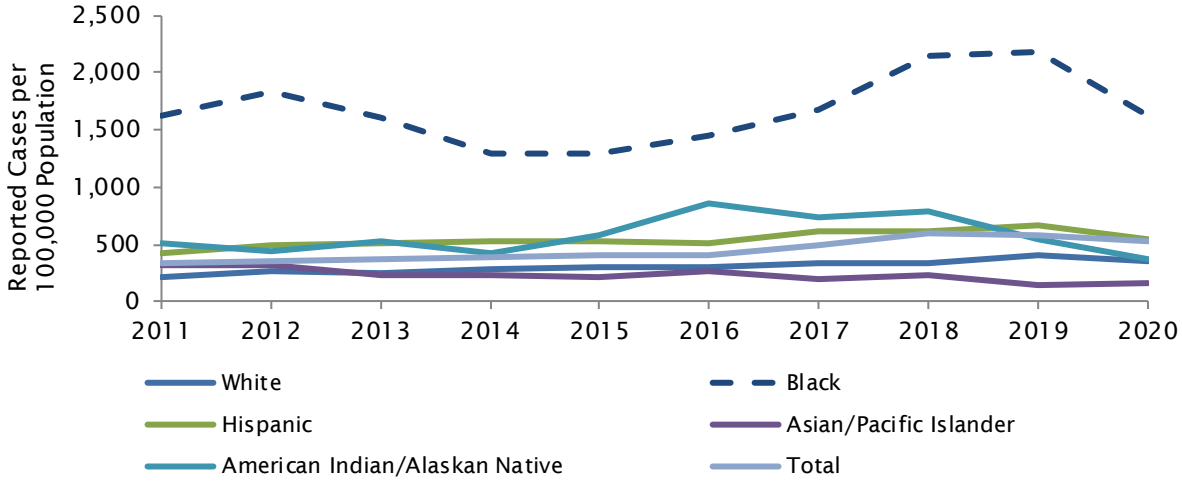


Figure 4.4 Rates of Reported Cases of Chlamydia by Race/Ethnicity, Washoe County, 2011-2020



Chlamydia rates among females aged 15 to 44 years was 1755 cases per100,000 in 2019 and 1,598.6 cases per 100,000 in 2020.

B. Prevention and Control

To increase efficient use of resources, reduce duplication of services provided in the community, serve those at highest risk of STD infection, and meet federal and regional testing recommendations, the Sexual Health Program has continued the following guidelines:

- Provide STD (chlamydia, gonorrhea, syphilis, and HIV) testing at sites where a specific target population would be known to congregate and where a higher positivity rate has occurred during previous testing
- Cease testing at off-site locations that duplicate services already available to the target population
- Provide technical assistance to build the capacity of other, established agencies that provide STD testing
- Continue STD testing and screening per CDC recommendations

II. Gonorrhea

A. Epidemiology

Gonorrhea, caused by *Neisseria gonorrhoeae*, is second only to chlamydia infections in the number of STD cases reported to the CDC. It is transmitted through sexual contact (vaginal, oral, or anal) and can also be transmitted from mother to child during birth. In both men and women, untreated infection can cause infertility and other health complications.

1. Reported Incidence

In 2019, 864 laboratory-confirmed cases of gonorrhea were reported in Washoe County for an incidence rate of 185.8 cases per 100,000 population. The 2019 national reported incidence was 188.4 cases per 100,000 population, which was the most current national data.

In Washoe County during 2020, 1,131 laboratory-confirmed cases of gonorrhea were reported for an incidence rate of 240.4 cases per 100,000 population. The new Healthy People 2020 national health objectives to reduce gonorrhea rates are as follows:

- Females aged 15 to 44 years: 251.9 new cases per 100,000 population
- Males aged 15 to 44 years: 194.8 new cases per 100,000 population

The increased incidence of gonorrhea in recent three years was concurrent with the increase of syphilis, which is also consistent with the national trend.

Figure 4.5 Rates of Reported Cases of Gonorrhea, Washoe County, 2011–2020

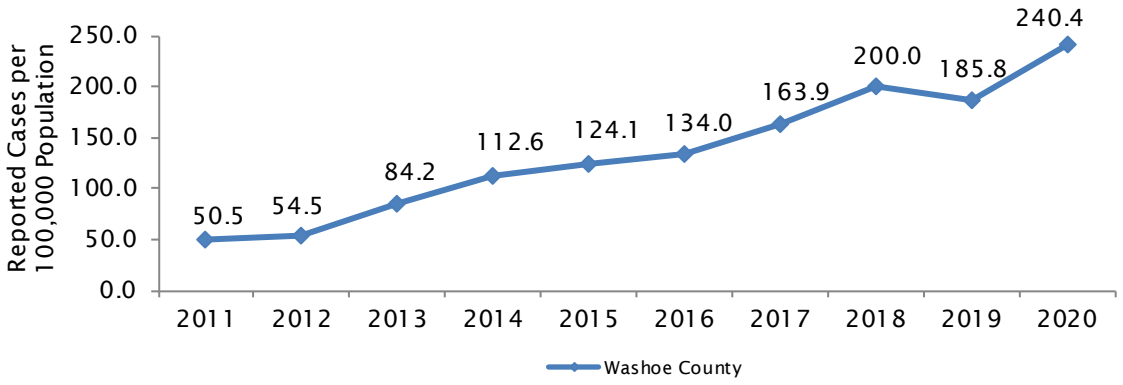
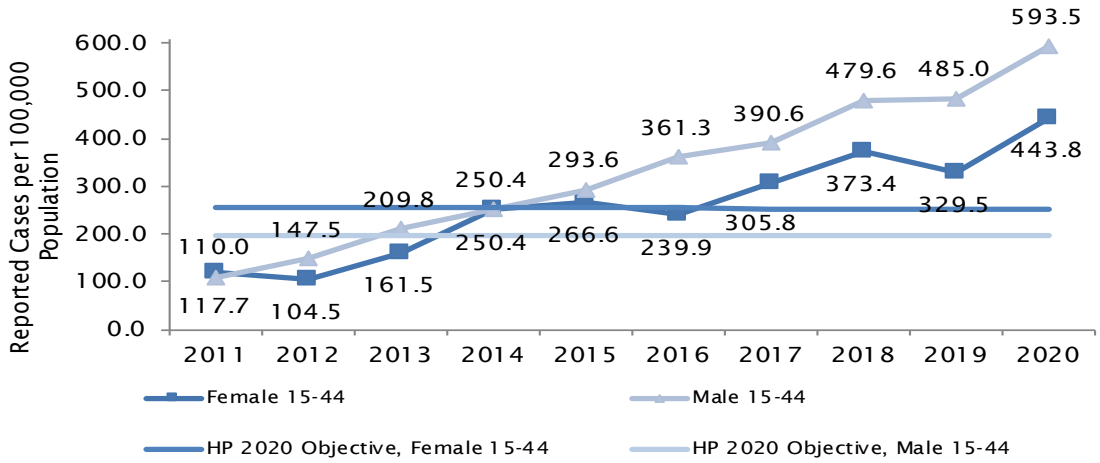


Figure 4.6 Rates of Reported Cases of Gonorrhea among Population Aged 15-44 Years, Washoe County, 2011 – 2020



2. Population Affected

In 2019, of the 864 cases reported, 261 (30.2%) were persons aged 15-24, 347 (40.2%) were persons aged 25-34, and 535 (62%) across both age groups were males.

In 2020, of the 1,131 cases reported, 357 (31.6%) were persons aged 15-24, 404 (35.7%) were persons aged 25-34, and 676 (59.8%) were males.

Nationally, rates of reported gonorrhea have increased 92% since a historic low in 2009. Increases in gonorrhea incidence have been noted to be higher among men since 2013. Men who have sex with men (MSM) are estimated to have reported gonorrhea 42 times higher than the estimated rate among men who have sex with women only.

Figure 4.7 Reported Cases of Gonorrhea by Age and Gender, Washoe County, 2020

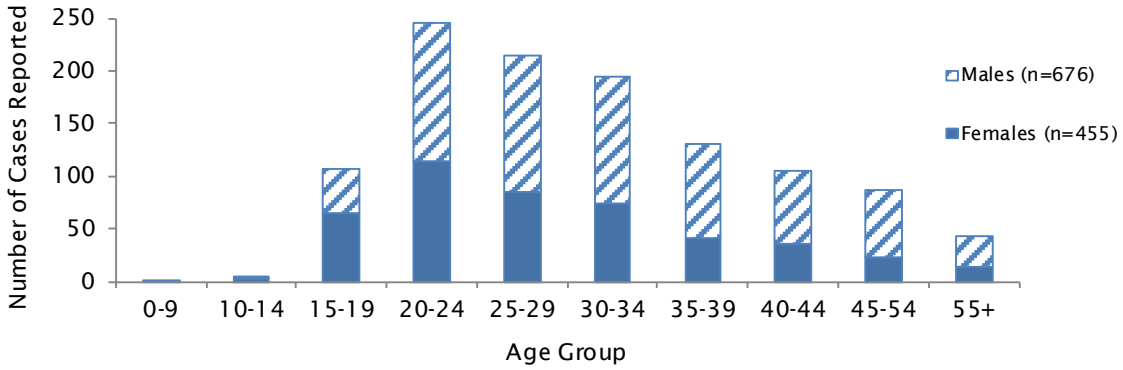


Figure 4.8 Reported Cases of Gonorrhea by Race/Ethnicity, Washoe County, 2020

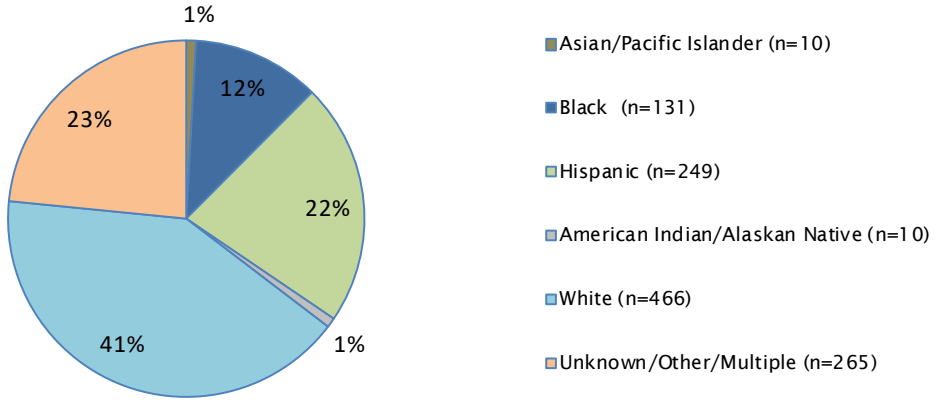


Figure 4.9 Rate of Incidence by Race/Ethnicity per 100,000 population of Gonorrhea Washoe County, 2020

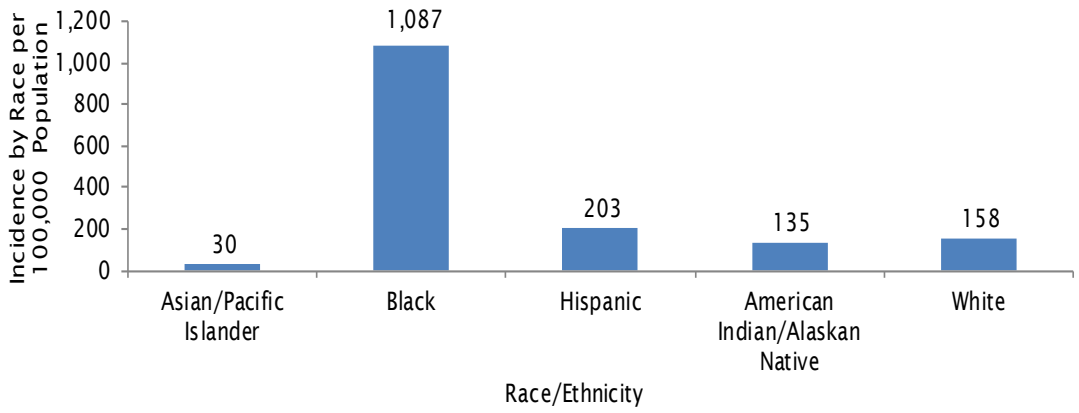
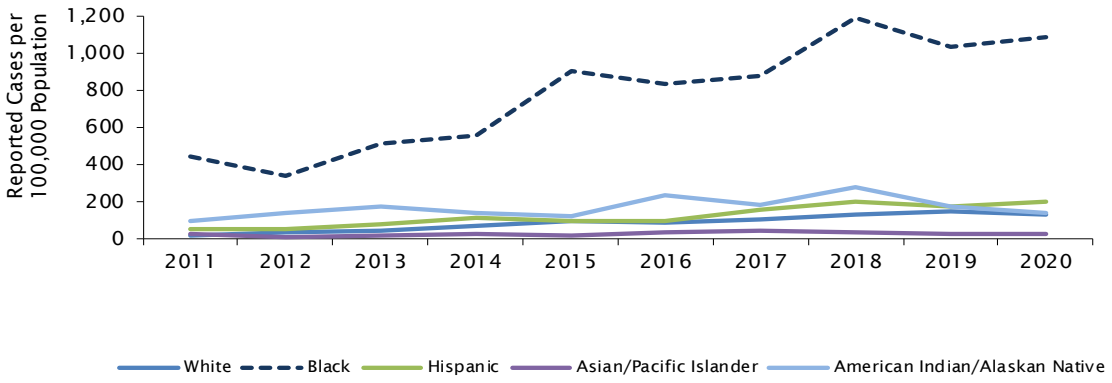


Figure 4.10 Rates of Reported Gonorrhea Cases by Race/Ethnicity, Washoe County, 2011-2020



III. Syphilis

A. Epidemiology

Syphilis is a complex STD caused by the bacterium *Treponema pallidum*. The "primary" stage of syphilis is typically marked by the appearance of a single chancre that is usually firm, round, small and painless. The chancre may last 3-6 weeks and heals on its own. The presence of a chancre greatly facilitates HIV transmission.

If adequate treatment is not administered, the infection progresses to the "secondary" stage marked by the appearance of a rough, red, or reddish-brown rash on the trunk and extremities which, unlike most other kinds of rashes, may involve the palms of the hands and soles of the feet. Patchy hair loss or alopecia is sometimes exhibited. Syphilis is contagious during the primary and secondary stages.

Untreated syphilis progresses to a latent stage that is defined as having serological proof of infection without signs or symptoms of disease. In early latent syphilis (one year or less from time of infection) the disease may still be contagious. Late latent

syphilis (infection for greater than one year) is not contagious but may progress to tertiary syphilis. Beginning in 2012, staff initiated reporting of early latent syphilis cases separate from the latent syphilis classification which includes late latent and unknown duration. This change is due to the complexity of diagnosing early latent cases and the possibility of early latent syphilis cases being contagious.

Tertiary syphilis is slowly progressive and may affect any organ. The more severe manifestations of tertiary syphilis include neurological and cardiovascular complications. Gumma lesions may also develop on the skin or mucous membranes.

Neurosyphilis is an infection of the brain or spinal cord that can occur during any stage of syphilis. Some of the symptoms include weakness, difficulty walking, confusion, vision loss/issues and hearing problems. Further testing including a lumbar puncture is recommended as soon as possible to diagnose; thereby decreasing complications.

Congenital syphilis is caused by the syphilis bacterium passing from an infected mother to her infant during fetal development or birth. It is a severe, disabling and often life-threatening condition for the infant.

Syphilis is easy to cure, especially when diagnosed and treated in its early stages (within the first year). Secondary and tertiary stages can also be cured, however damage that has already occurred may not be reversed. All stages of syphilis are treated with penicillin.

1. Reported Incidence

In 2019, 160 cases of primary (80 cases) and secondary syphilis (80 cases) were reported in Washoe County for an incidence of 34.4 cases per 100,000 population. Among females, the incidence rate was 21.2 cases per 100,000 population. This rate is three times higher than previous year. The incidence was 47.5 cases per 100,000 population among males.

In 2020, 133 cases of primary (73 cases) and secondary syphilis (60 cases) were reported in Washoe County for an incidence of 28.3 cases per 100,000 population. Among females, the incidence rate was 12.8 cases per 100,000 population. The incidence was 43.6 cases per 100,000 population among males.

The Healthy People 2020 national health objective is 1.4 new cases per 100,000 population among females and 6.8 new cases per 100,000 population among males. The reported incidences in Washoe County in 2019 and 2020 were far higher than HP 2020 objectives.

Figure 4.11 Rate of Reported Cases of Primary and Secondary Syphilis, Washoe County, 2011– 2020

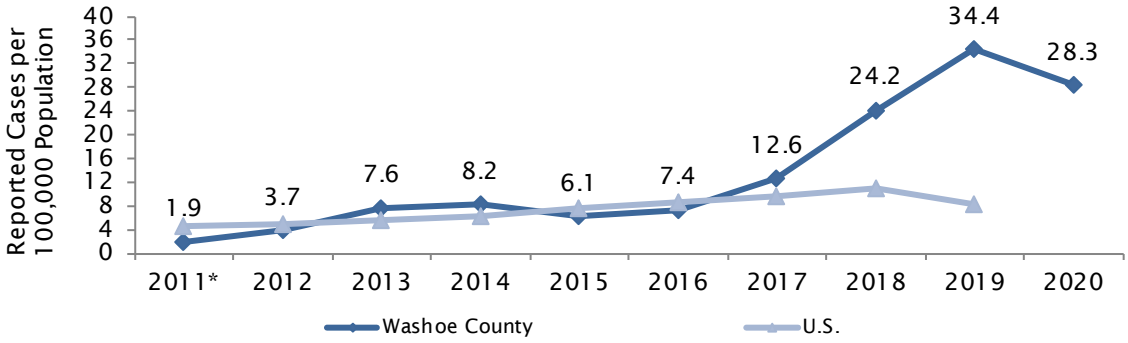


Table 4.1 Reported Cases of Syphilis, Washoe County, 2011 – 2020

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Syphilis										
Primary	2	7	19	20	15	15	24	50	80	73
Secondary	6	9	14	16	12	18	33	60	80	60
Early Latent	3	5	12	16	26	33	40	63	113	83
Late Latent	12	15	26	25	31	30	39	64	75	102
Neuro*	5	2	1	1	0	1	3	0	0	10
Congenital	0	0	0	1	2	1	2	5	5	6
Total	**28**	**38**	**72**	**79**	**86**	**98**	**141**	**242**	**353**	**334**

*Neuro syphilis cases are also counted in the respective stage of their diagnosis (primary, secondary, early latent, late latent)

2. Population Affected

Of the 160 cases of primary and secondary syphilis reported in 2019, 111 (69%) were males. Ninety-three (93) (58%) were White, non-Hispanic and 32 (20%) were Hispanic. The majority of primary and secondary stage cases, 63.1%, were within the age range of 17– 39 years. Fifty-three (53) cases (47.7%) were also positive for HIV. Forty-seven (47) cases (29.4%) were reported to be MSM (men who have sex with men) or bisexual.

Of the 133 cases of primary and secondary syphilis reported in 2020, 103 (77.4%) were males. Fifty-nine (59) (44.4%) were White, non-Hispanic and 46 (34.6%) were Hispanic. The majority of primary and secondary stage cases, 63.9%, were within the age range of 17– 39 years.

Figure 4.12 Reported Cases of Primary and Secondary Syphilis by Age and Gender, Washoe County, 2020

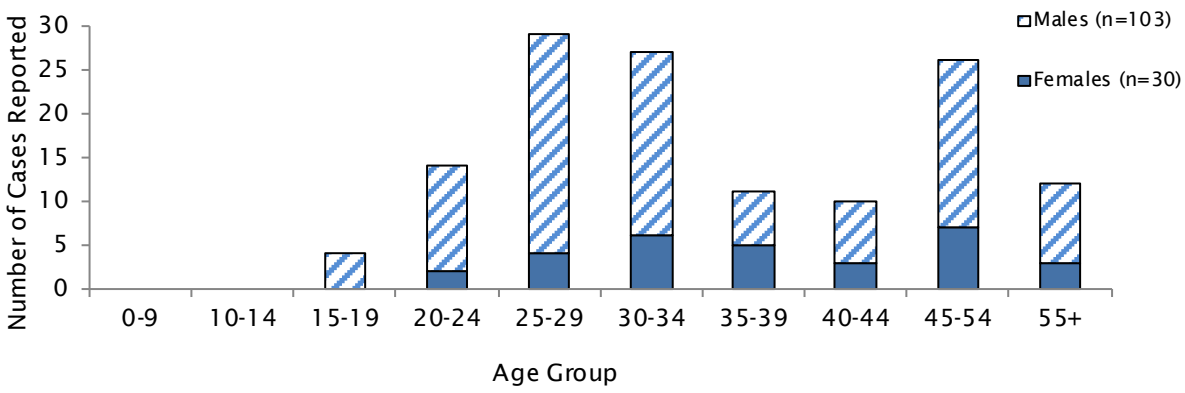


Figure 4.13 Reported Cases of Primary and Secondary Syphilis by Race/Ethnicity, Washoe County, 2020

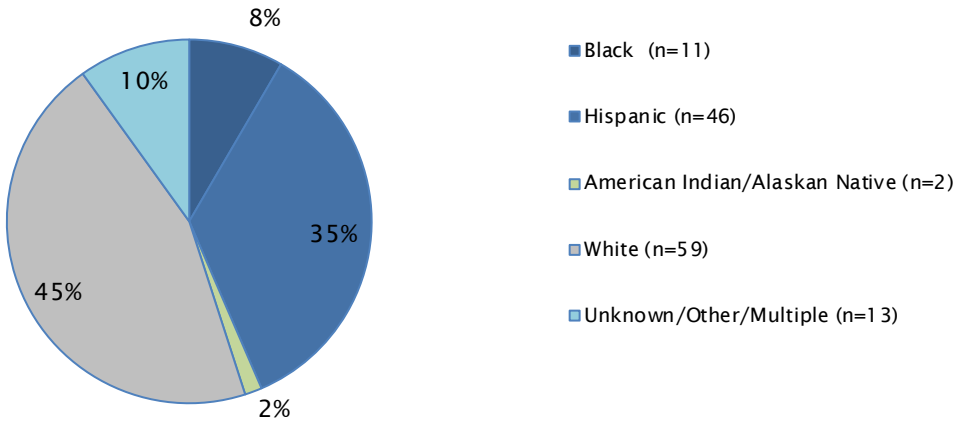
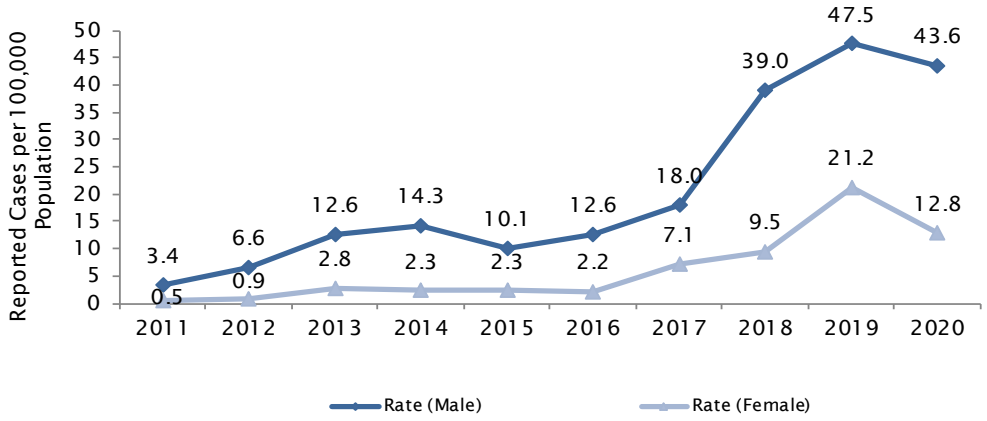


Figure 4.14 Rate of Reported Cases of Primary and Secondary Syphilis by Gender, Washoe County, 2011 – 2020



In 2019, one hundred thirteen (113) cases of early latent syphilis were reported. Eighty (80) were male and 33 were female. Race\ethnicity representation was reported as: 49

White, non-Hispanic, 37 Hispanic, 3 American Indian/Alaskan Native, 16 Black, and seven (7) of unknown race.

In 2020, eighty-nine (83) cases of early latent syphilis were reported in. Sixty-four (64) were males and 25 were female. Thirty-nine (39) were White, non-Hispanic, 32 were Hispanic, two (2) were American Indian/Alaskan Native, six (6) were Black, and 10 were an unknown race.

Figure 4.15 Reported Early Latent Syphilis by Age and Gender, Washoe County, 2020

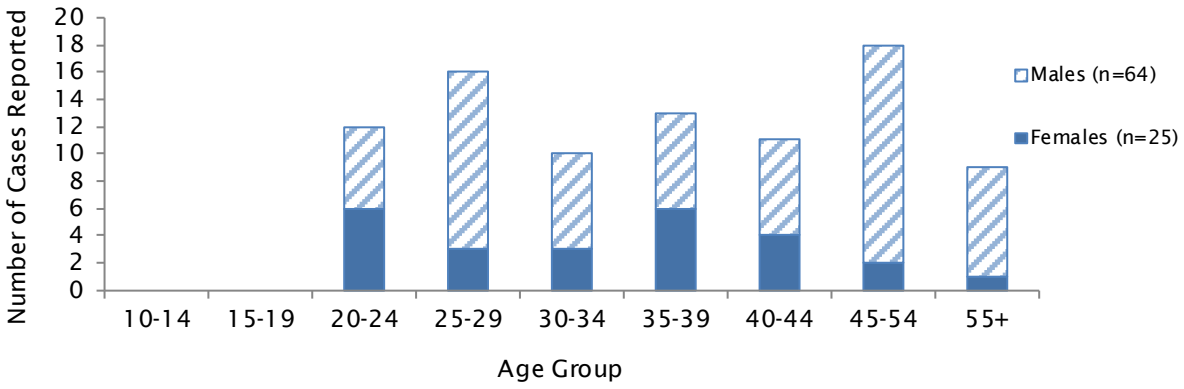


Figure 4.16 Reported Cases of Early Latent Syphilis by Race/Ethnicity, Washoe County, 2020

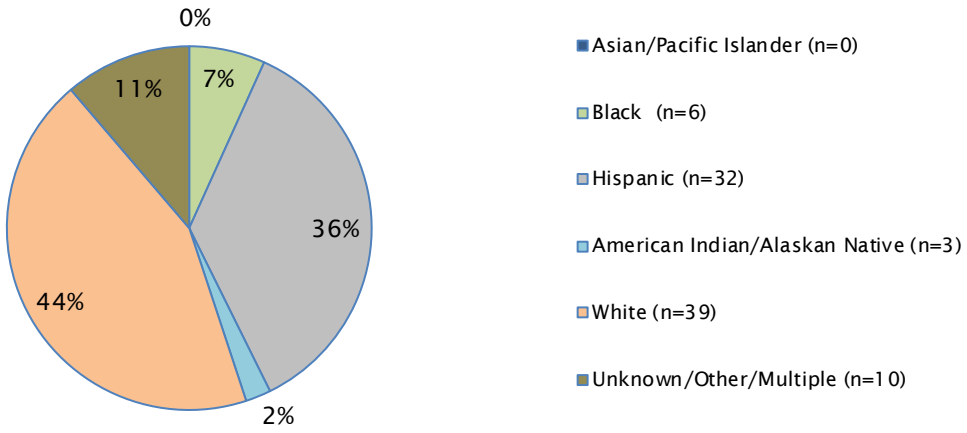
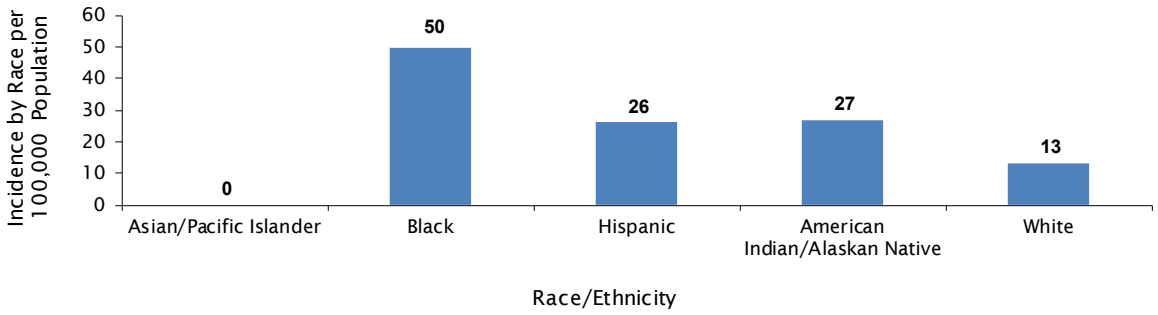


Figure 4.17 Reported Rate per 100,000 of Early Latent Syphilis by Race/Ethnicity, Washoe County, 2020



Investigation of case clusters and other early syphilis cases remains challenging due to transiency, anonymous partners, multiple partners, and lack of cooperation from index cases. Advances in social media and networking have impacted traditional disease investigation methods as anonymity of a partner is easier to maintain, leaving little or no method or information to contact a partner. Additionally, health providers in the community are often not aware of the symptomology and presentation of syphilis and may not screen for the infection. Community healthcare providers also may not perform a sexual history assessment with patients to gauge the risk level of the patient and appropriately screen for infections.

IV. Human Immunodeficiency Virus (HIV) and Advanced HIV Disease, HIV Stage 3

A. Epidemiology

Surveillance of infection with the Human Immunodeficiency Virus (HIV) incorporates staging designations that include advanced HIV disease, HIV Stage 3, that has traditionally been recognized as Acquired Immune Deficiency Syndrome (AIDS). Stages are defined as:

- *HIV infection, stage 0*: First positive HIV test result within 6 months after a negative HIV test result. The stage remains stage 0 until 6 months after the first positive test result. After 6 months, the stage may be classified as 1, 2, 3, or unknown if based on a CD4 test result or the diagnosis of an opportunistic infection (OI), otherwise known as an AIDS-defining condition. The diagnosis of an AIDS-defining condition or a low CD4 test result before the 6 months have elapsed does not change the stage from stage 0 to stage 3.
- *HIV infection, stages 1, 2, and 3*: Documentation of an AIDS-defining OI (excluding stage 0 as described above) is stage 3. Otherwise, the stage is determined by the lowest CD4 lymphocyte test result:
    - Stage 1—CD4 lymphocyte count of ≥500 or a CD4 percentage of total lymphocytes of ≥26
    - Stage 2—CD4 lymphocyte count of 200–499 or a CD4 percentage of total lymphocytes of 14–25
    - Stage 3—CD4 lymphocyte count of <200 or a CD4 percentage of total lymphocytes of <14 or documentation of an AIDS-defining condition.
- *HIV infection, stage unknown*: No reported information on AIDS-defining OIs and no information available on CD4 lymphocyte count or percentage.

1. HIV Infection

a. Reported Incidence

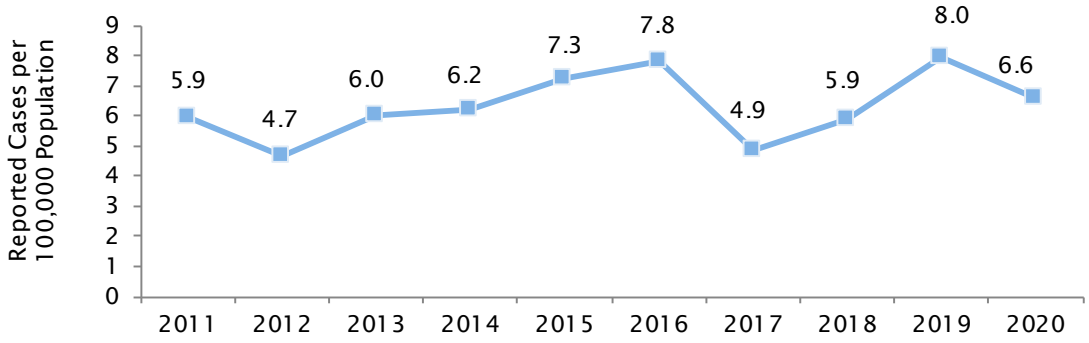
Between 1983 and 2020, a total of 1,685 cases of HIV infection have been reported in Washoe County. This number represents an unduplicated count of all persons who have been reported as either: 1) a case of HIV infection without progression to HIV infection, Stage 3 (AIDS), or 2) a case of HIV infection with progression to HIV infection, Stage 3 (AIDS) – depending on their health status at the time the HIV acquisition is first reported. The statistics presented in this report are based on these parameters for HIV infection.

In 2019, 37 cases of HIV infection (without progression to AIDS) and 10 cases of HIV infection with progression to AIDS were reported in Washoe County. The incidence of HIV infection in Washoe County was 8.0 cases per 100,000 population.

In 2020, 31 cases of HIV infection (without progression to HIV infection, Stage 3 (AIDS)) and ten (10) cases of HIV infection, Stage 3 (AIDS) were reported in Washoe County. The incidence of HIV infection in Washoe County was 6.6 cases per 100,000 population.

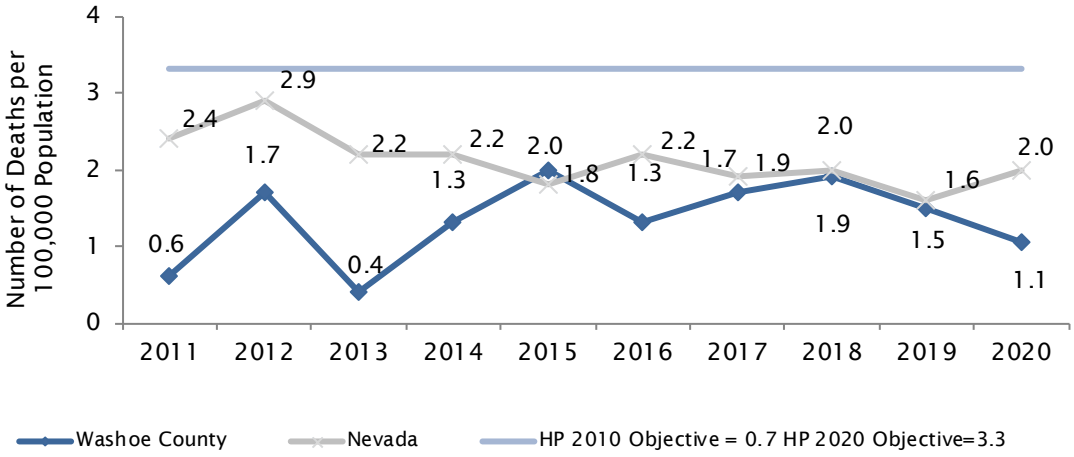
The overall increased incidence of HIV in recent years may be associated with advances in social media and networking that has impacted traditional disease investigation methods such as anonymity of the partner is easier to maintain, and desire of the index case to not disclose partner contact information, leaving little or no method to contact a partner. In 2019, the national incidence rate for HIV diagnoses was 13.2 cases per 100,000 population, the most current national data.

Figure 4.18 Rate of Reported Cases of HIV Infection, Washoe County, 2011-2020



The Healthy People 2020 national health objective for deaths due to HIV infection is 3.3 deaths per 100,000 population. The age-adjusted death rate in Washoe County was 1.06 per 100,000 population in 2020, which was below the HP 2020 objective.

Figure 4.19 Age-adjusted Death Rate Due to HIV Infection, Washoe County, 2011-2020



b. Population Affected

The HIV epidemic nationally is growing most rapidly among minority populations. Although in 2020, the highest number of reported cases of HIV infection in Washoe County was in those who identified as White, non-Hispanic persons; the number of reported cases among Blacks yielded rates that were significantly higher than number of cases repeated among white, non-Hispanic persons.

Figure 4.20 Reported Cases of HIV Infection by Age and Gender, Washoe County, 2020

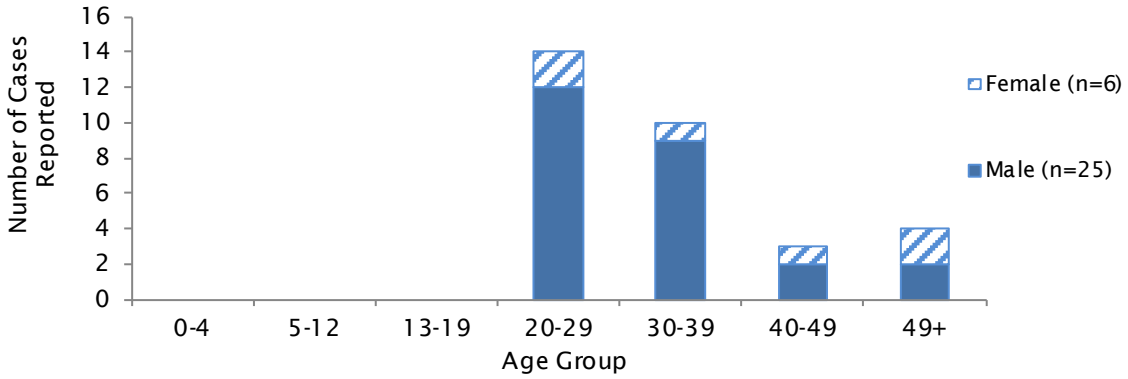


Figure 4.21 Reported Cases of HIV Infection by Race/Ethnicity, Washoe County, 2020

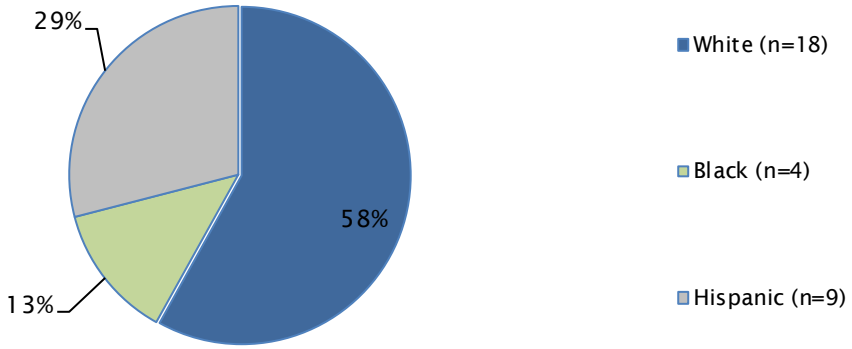


Figure 4.23 Rate of Reported Cases of HIV Infection by Race/Ethnicity, Washoe County, 2020

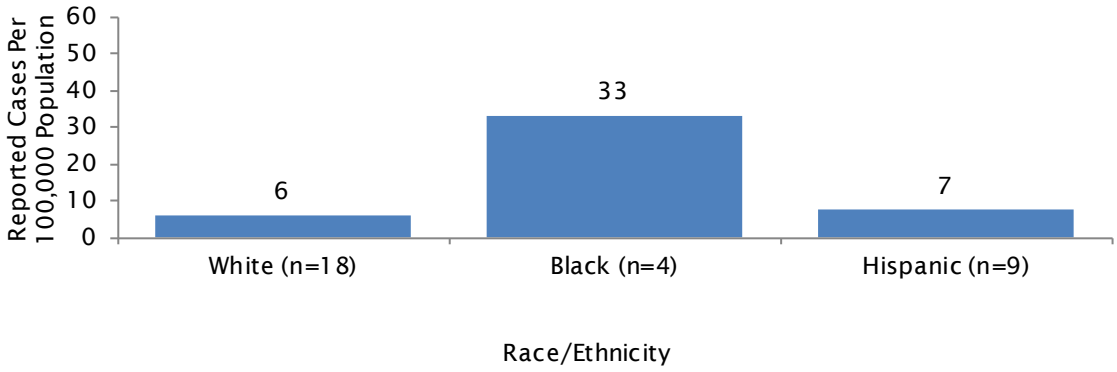


Figure 4.24 Reported Cases of HIV Infection by Age Group Represented as Percent of Total Cases, Washoe County, 2011-2020

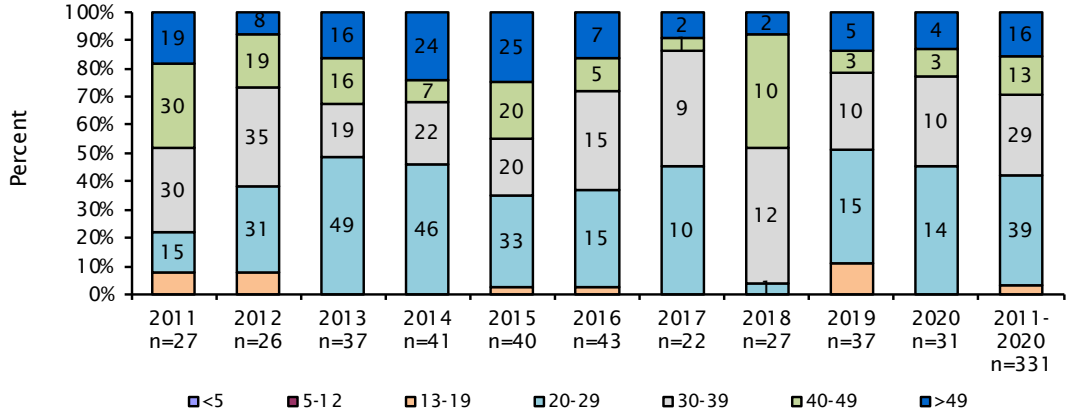
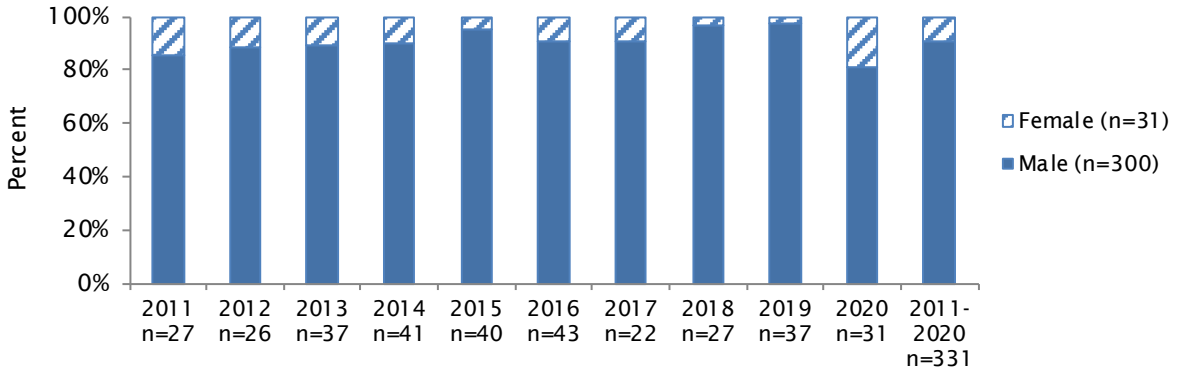
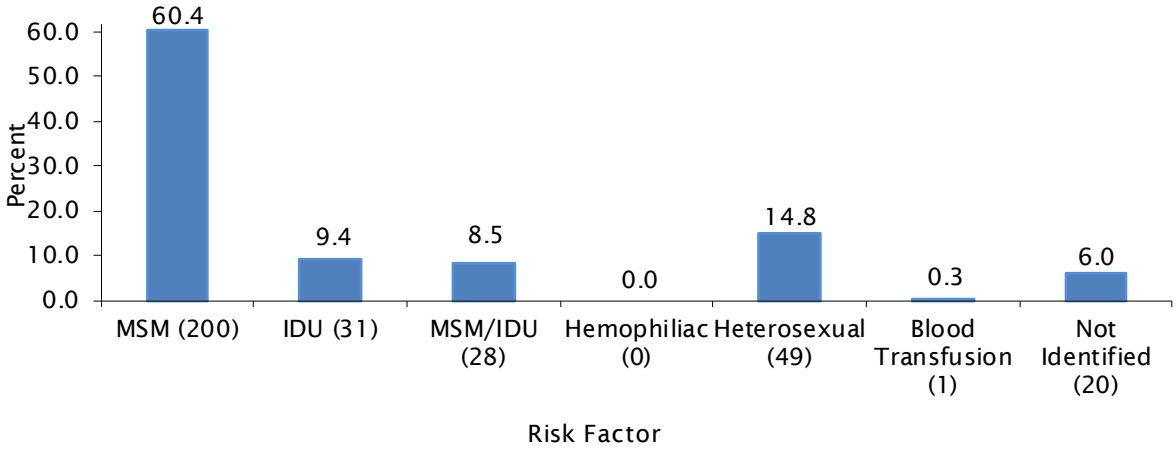


Figure 4.25 Reported Cases of HIV Infection by Gender Represented as Percent of Total Cases, Washoe County, 2011-2020



The most commonly-noted risk factors reported among those with HIV infection are: men who have sex with men (MSM), persons who report heterosexual contact only, and injection drug users (IDU), as well as MSM/IDU. Non-identified risks refer to cases in which the risk factor is still being investigated, the case did not identify a risk, or if the client's self-identified risk does not meet the definition allowed by federal guidelines.

Figure 4.26 Reported Cases of HIV Infection by Exposure Category Represented as Percent of Total Cases, Washoe County, 2011-2020



2. Stage 3 HIV Infection (AIDS)

a. Reported Incidence

If person living with HIV contracts an opportunistic infection, or their CD4+ T-lymphocyte count falls below 200 u/L, they meet the surveillance case definition for staging as HIV infection, Stage 3 (AIDS). A new HIV infection, Stage 3 case includes persons who were reported as a case of HIV infection during 2020 and had already progressed to Stage 3 infection (10 cases); or persons who were diagnosed with HIV in a year prior to progressing to HIV infection, Stage 3 diagnosis.

Since 1983, 1,082 cases of Stage 3 HIV infection (AIDS) have been reported in Washoe County. In 2019, 12 new cases of Stage 3 HIV infection were reported for an incidence of 2.6 cases per 100,000 population. Eleven (11) new cases were reported with incidence rate of 2.3 per 100,000 population in 2020. The most recent (2019) U.S. HIV infection, Stage 3 (AIDS) rate for persons aged 13 years and older is 6.2 per 100,000 population.

The Healthy People 2020 national health objective for Stage 3 HIV infection, traditionally called AIDS, is 13.0 new cases per 100,000 population among adolescents and adults. Effective in 2009, the national incidence of reported AIDS was not available, instead, only the incidence of HIV diagnosis was available.

Figure 4.27 Rate of Reported Cases of HIV Infection, Stage 3, Washoe County, 2011-2020

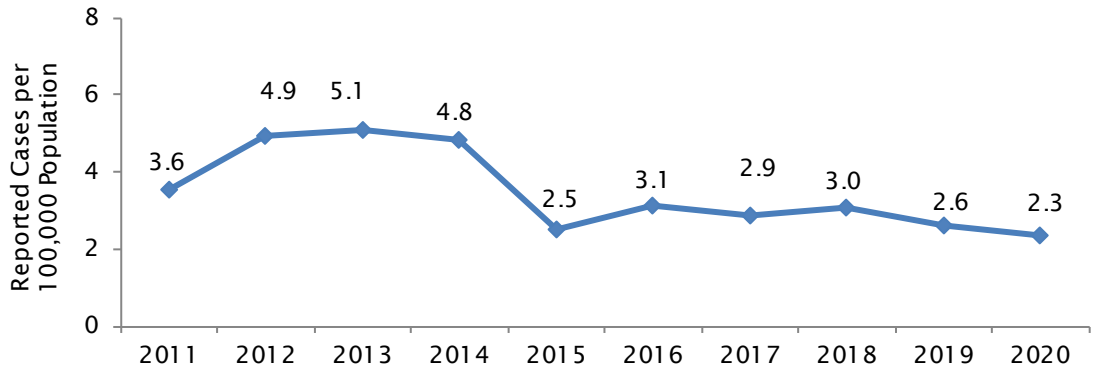
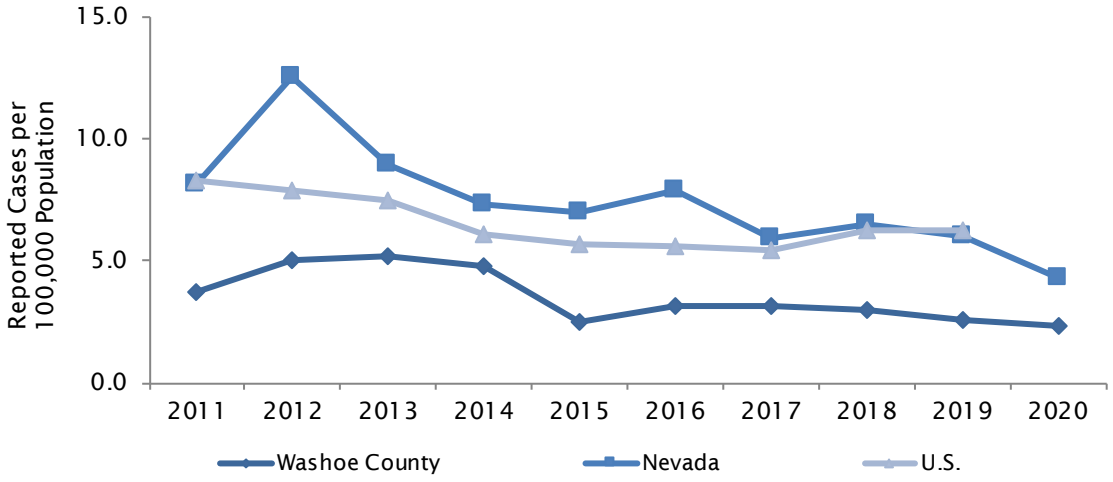


Figure 4.28 Rate of Reported Cases of HIV Infection, Stage 3, Washoe County, Nevada and U.S., 2011-2020



b. Population Affected

In Washoe County, the highest number of reported Stage 3 HIV cases was among White, non-Hispanic persons in 2019 and 2020 yet when adjusted for population, the rate was higher among people of color. All cases were reported in males. The 49+ age group reported the majority of Stage 3 infections. The risk category representing most infections was among men who have sex with men (MSM).

Figure 4.29 Reported Cases of HIV Infection, Stage 3 by Age and Gender, Washoe County, 2020

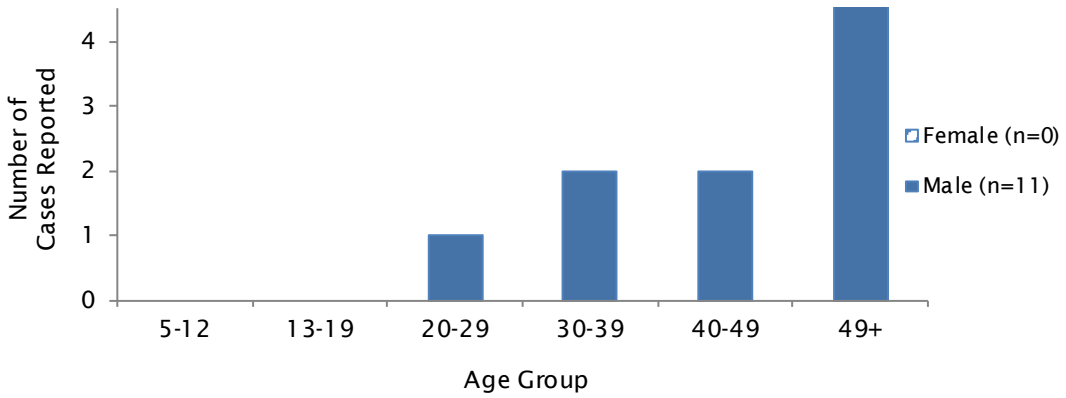


Figure 4.30 Reported Cases of HIV Infection, Stage 3 by Race/Ethnicity, Washoe County, 2020

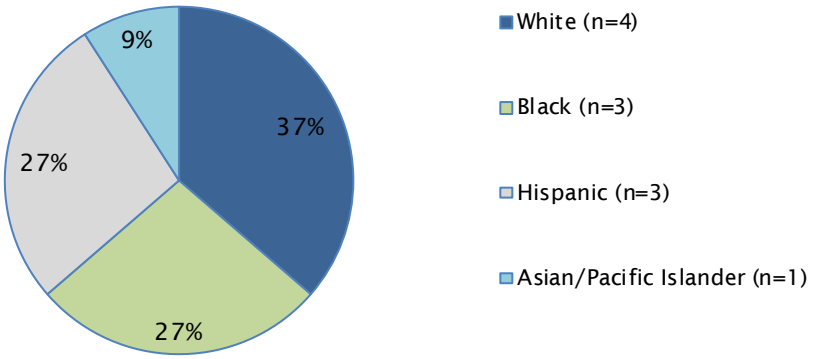


Figure 4.31 Rate of Reported Cases of HIV Infection, Stage 3 by Race/Ethnicity, Washoe County, 2020

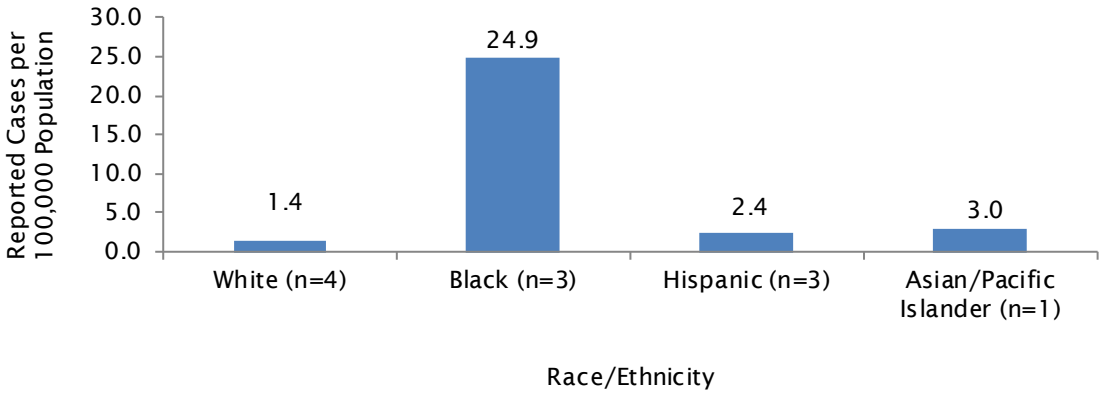


Figure 4.32 Reported Cases of HIV Infection, Stage 3 by Age Group Represented as Percent of Total Cases, Washoe County, 2011-2020.

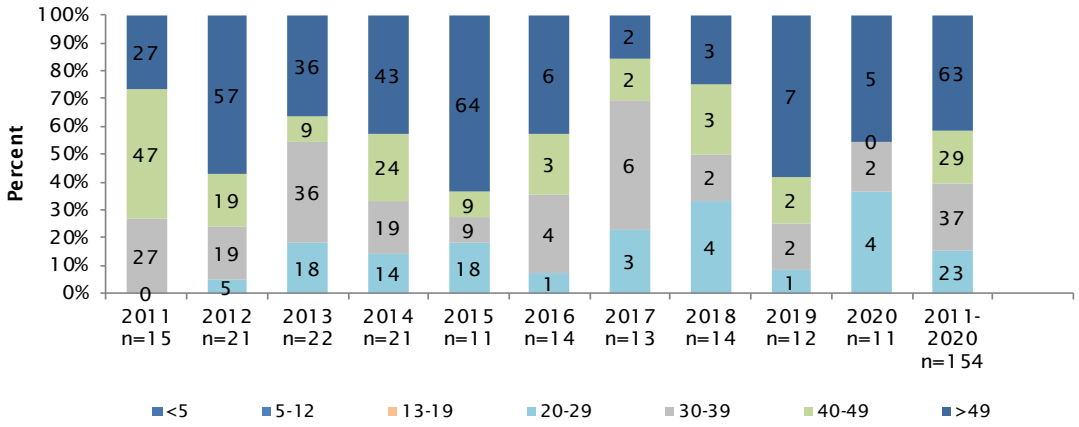


Figure 4.33 Reported Cases of HIV Infection, Stage 3 by Gender Represented as Percent of Total Cases, Washoe County, 2011-2020

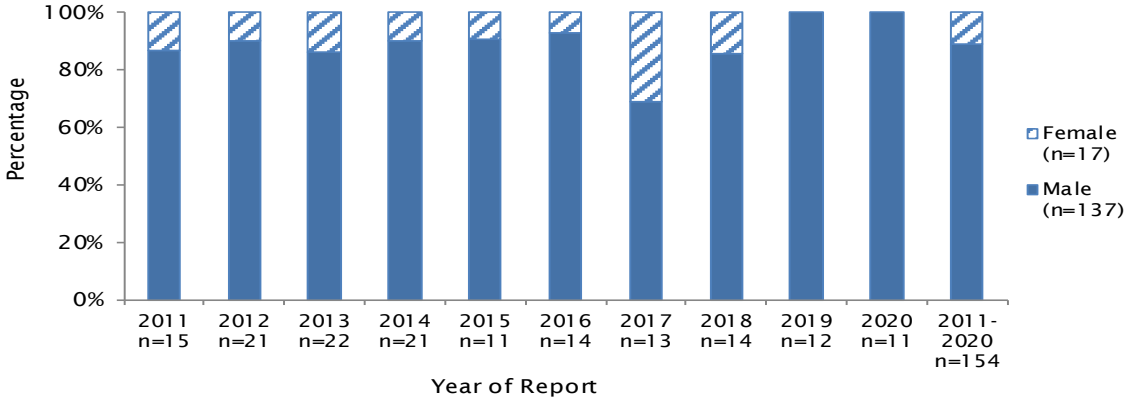
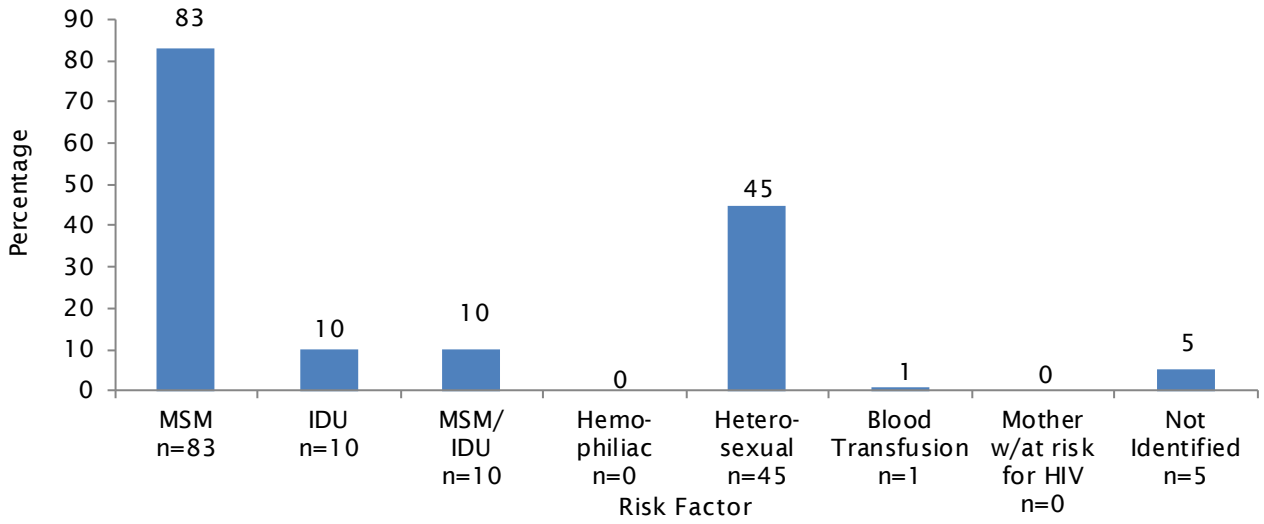
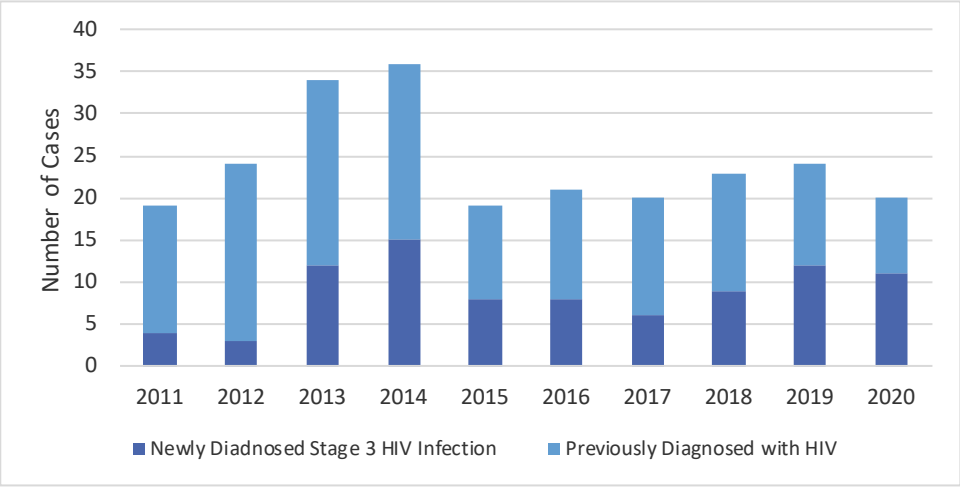


Figure 4.34 Reported Cases of HIV Infection, Stage 3 by Exposure Category Represented as Percent of Total Cases, Washoe County, 2011-2020



A significant number of Stage 3 cases were diagnosed as a newly diagnosed HIV case who have already advanced in their HIV disease at the time of diagnosis. This indicates that a person did not test for HIV earlier in their infection. A delay in testing after acquiring HIV may limit HIV treatment options, increases the risk of negative health outcomes, and increases the likelihood of transmitting HIV to others. Reducing the number of people that are undiagnosed with HIV is one of the national benchmarks to ending the HIV epidemic in the United States.

Figure 4.35 Reported HIV Stage 3 Diagnoses, Previously Diagnosed & Newly Diagnosed, Washoe County, 2011-2020



B. Prevention and Control

The Ending the HIV Epidemic in the U.S. plan is comprised of four pillars to be scaled up in efforts to end the HIV epidemic: diagnose, prevent, treat, and respond. WCHD is also guided by the activities prescribed in the Nevada Integrated HIV Prevention and Care Plan which guides HIV prevention and care activities in the state. Diagnose activities include offering HIV testing to provide opportunities for individuals to learn their HIV status. The prevent pillar consists of providing education, condom distribution, and referring for pre-exposure prophylaxis (PrEP) and post exposure prophylaxis (PEP) to prevent acquisitions of HIV.

Other prevention referrals include access to syringe service programs, harm reduction services, behavioral health and social services referrals that will support an individual in preventing the acquisition of HIV. Partner Services (disease investigation and contact tracing) also work to prevent HIV transmission and acquisition.

To support the treat pillar, WCHD provides active referral and linkage to HIV care services. In addition, the program identifies people living with HIV that are not engaged in HIV care services to determine barriers and work with the individual to re-link and engage in services.

The response pillar is addressed through surveillance of testing, disease reporting, and Partner Services outcomes. The program analyzes this information to identify disease clusters, elevated numbers of reported cases, and potential outbreaks. This work is done in conjunction with the STD portion of the program to address high-risk clients, co-morbidity, and opportunities for intervention at various entry points to the programs.

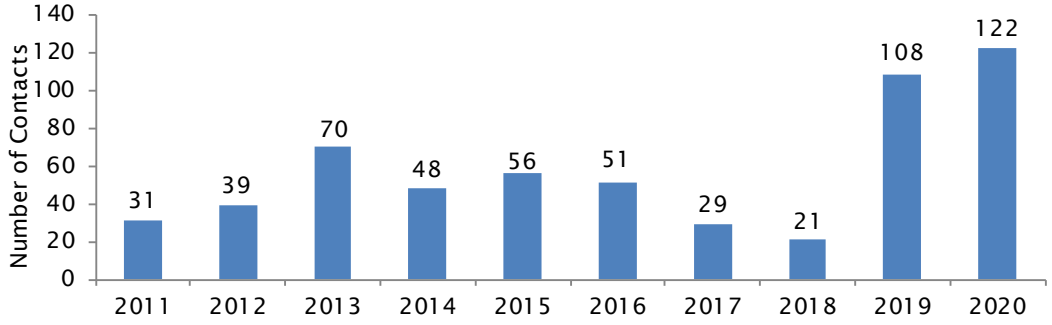
Disease Intervention Specialists interview cases of HIV infection and AIDS to identify sexual and percutaneous contacts for testing and treatment intervention. Of the 47 HIV and AIDS cases reported, a total of 108 contacts were identified in 2019.

In 2020, of the 40 HIV cases reported, a total of 122 contacts were identified. The following table shows the results of these investigations.

Table 4.36 Contacts to HIV/HIV infection, Stage 3 Cases, HIV Test Results, Washoe County, 2020

Contacts Identified in 2020	Total	Cumulative %
Negative Result Male	18	15%
Positive Result Male	5	4%
Not yet tested/Investigation ongoing/Refused testing Male	44	36%
Male Contacts who are **already** HIV positive	15	12%
Total Male	**82**	**67%**
Negative Result Female	20	16%
Positive Result Female	0	0%
Not yet tested/Investigation ongoing/Refused testing Female	20	16%
Female Contacts who are **already** HIV positive	0	0%
Total Female	**40**	**33%**
Total Contacts who refused Testing/Unable to locate	**62**	**51%**
Total Contacts who were Positive, newly diagnosed	**5**	**4%**
Total Contacts	**122**	**100%**

Figure 4.37 Number of Contacts to HIV/HIV Infection, Stage 3 Cases Identified, Washoe County, 2011-2020



WCHD program staff with input from a community testing workgroup of the Northern Nevada HIV Prevention Planning Group, review positivity data, community populations at higher risk for HIV acquisition and transmission, and funding/resource availability to evaluate the efficacy of testing at clinic and community sites. Direction from the National HIV/AIDS Strategy, the Ending the HIV Epidemic in the United States strategy, and CDC guidance on High Impact HIV prevention activities further directs testing efforts. Testing locations and targeted populations change based on the review of the recommendations and data. In 2020, the Northern Nevada HIV Prevention Planning Group designated the following as target populations that are priorities for HIV prevention activities:

- Men who have sex with men;
- People who inject drugs;
- People living with HIV;
- Sexually active heterosexuals;
- Youth/young adults (13-34 years of age).

The WCHD offers confidential HIV counseling and testing in its clinics and at various sites in the community. Of the 1,743 tests provided in 2020 by WCHD, seven (7) were

positive for a positivity rate of 0.40%. Between 1998 and 2020, the overall rate of positive HIV tests performed by WCHD has been less than 1%, at 0.50% (294/59,256). Testing community providers have increased their capacity to provide HIV tests in the community, moving toward the national goal of everyone between the ages of 13-64 having at least one HIV test in their lifetime and testing more often based on an individual's risk. Emphasis is placed on testing the target populations as well as individuals whose risk falls in the following groups:

- Partners of men who have sex with men;
- Partners of injection drug users;
- Those who present with an opportunistic infection;
- Contacts of HIV positive individuals;
- Sexual assault victims;
- Clients with a confirmed, concurrent STD;
- Pregnant women; and
- Those who specifically ask for an HIV test.

Figure 4.38 HIV Positivity Rates, WCHD HIV Testing, Washoe County, 2010-2020

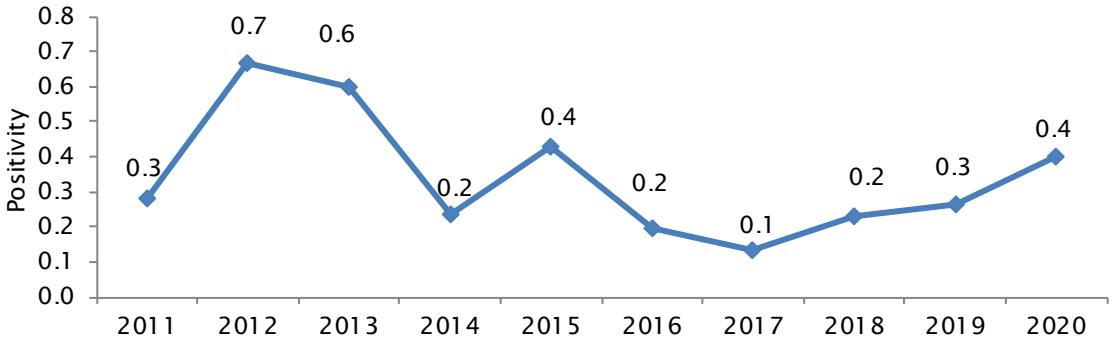


Table 4.39 demonstrates the results of HIV tests stratified by the type of testing site. Sites include the WCHD Sexual Health Clinic, TB and family planning clinics, jail and juvenile detention, and community-based testing provided by WCHD. These data do not include test results from Northern Nevada HOPES, a federally qualified health center that provides a significant number of HIV tests, or private medical providers in Washoe County. Therefore, the rates in Table 4.39 are not representative of the results of all HIV tests performed in Washoe County.

Table 4.39 Results of HIV Tests by WCHD Testing Site, Washoe County, 2020

Site Type	No. Tested	No. Positive	Positivity (%)
STD	553	2	0.36
TB	1	0	0.00
Prison/Jail	172	0	0.00
Family Planning	564	0	0.00
Other*	453	5	1.10
Total	**1,743**	**7**	**0.40**

*Other sites refer to community based (offsite) testing provided by WCHD, i.e., routine offsite testing sites, special events, and other outreach events.

5. TUBERCULOSIS

I. Epidemiology

A. Tuberculosis

1. Reported Incidence

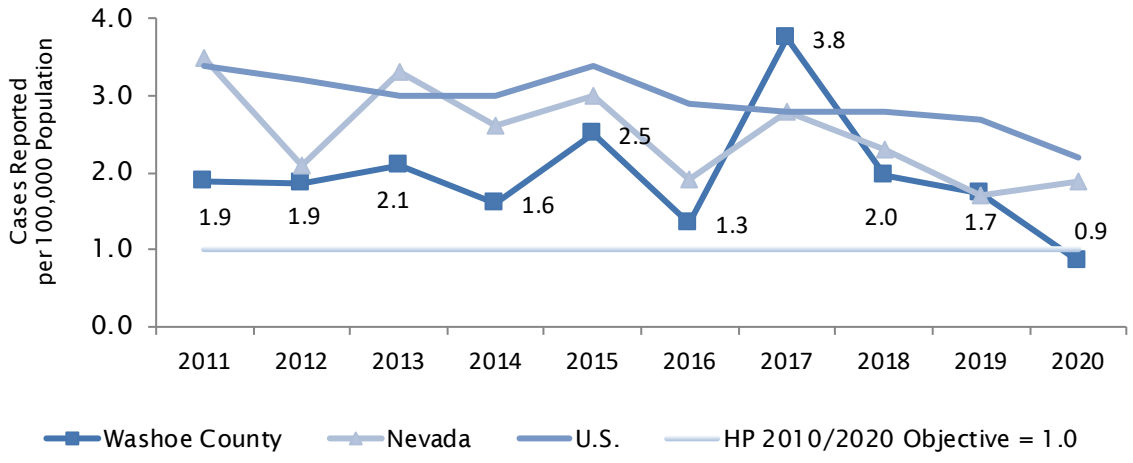
In 2019, eight (8) cases of TB were reported in 2019 with incidence rate of 1.7 cases per 100,000 population.

In 2020, four (4) cases of tuberculosis (TB) were reported in Washoe County for an incidence rate of 0.9 cases per 100,000 population. Variability in the number of TB cases from year to year is expected, but the decrease in 2020 was likely influenced by the COVID-19 pandemic. The CDC indicated that TB cases may have gone undetected, and that transmission may have been reduced due to mask-wearing and social distancing.

The average number of cases in Washoe County over the past 10 years has been 9.5 cases per 100,000 population per year. The national incidence of TB in 2020 was 2.2 cases per 100,000 population, representing a 20% decrease from 2019. The Healthy People 2020 national health objective for the annual incidence of TB is 1.0 new case per 100,000 in population. The National TB Program Objectives and Performance Targets for 2020 are:

- Less than 0.4 cases per 100,000 for US born persons. The 2020 U.S. rate was 0.7 cases per 100,000.
- Less than 1.5 cases per 100,000 for US born non-Hispanic Blacks. The 2020 U.S. rate was 2.0 cases per 100,000.
- Less than 11.1 cases per 100,000 for foreign born persons. The 2020 U.S. rate was 11.5 cases per 100,000.
- Less than 0.3 cases per 100,000 for children <5 years of age. The 2020 U.S. rate was 0.9 cases per 100,000.

Figure 5.1 Rates of Reported Cases of TB, Washoe County, 2011-2020



2. Population Affected

In 2019, Washoe County treated two (2) males and six (6) females for active TB. The median age of male cases was 77.5 years (range: 62 – 93 years); the median age of female cases was 56 (range 54 – 75 years).

In 2020, Washoe County treated three (3) males and one (1) female for active TB. The median age of male cases was 70 years (range: 64 – 80 years); the median age of female cases was 48 (one case 48 years old).

Figure 5.2 Reported Cases of TB by Age and Gender, Washoe County, 2020

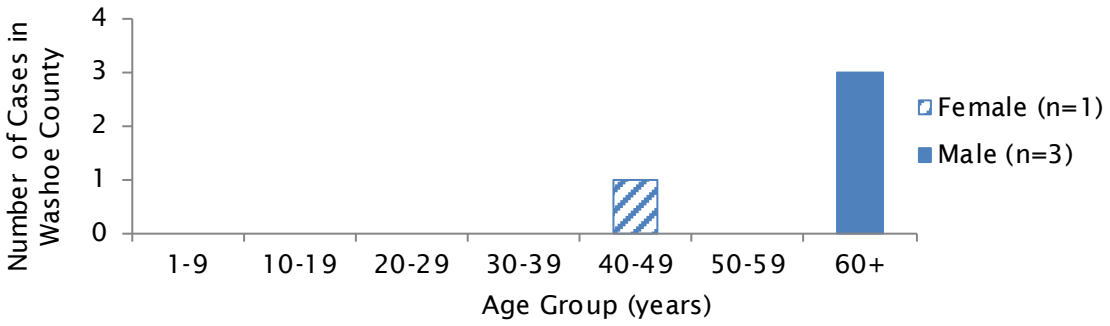


Figure 5.3 Reported Cases of TB by Sex, Washoe County, 2011-2020

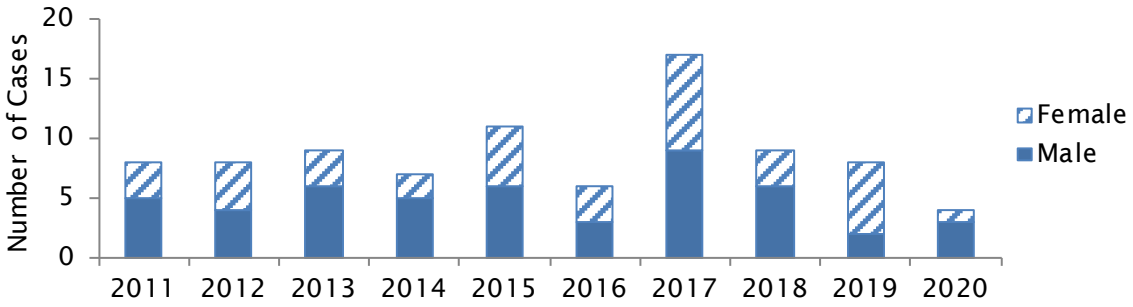
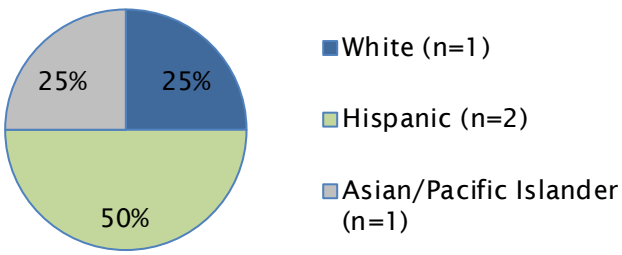


Figure 5.4 Reported Cases of TB by Race/Ethnicity, Washoe County, 2020



In 2019, seven (87.5%) of the reported TB cases in Washoe County were born in foreign countries where TB is endemic.

In 2020, (100%) of the reported TB cases in Washoe County were born in foreign countries where TB is endemic.

Figure 5.5 Proportions of Reported Cases of TB by Birth Country, Washoe County, 2020

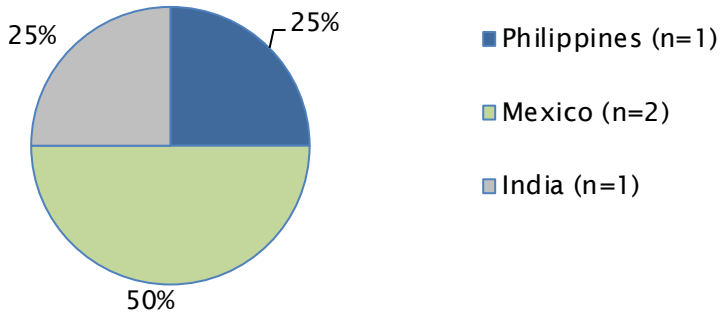
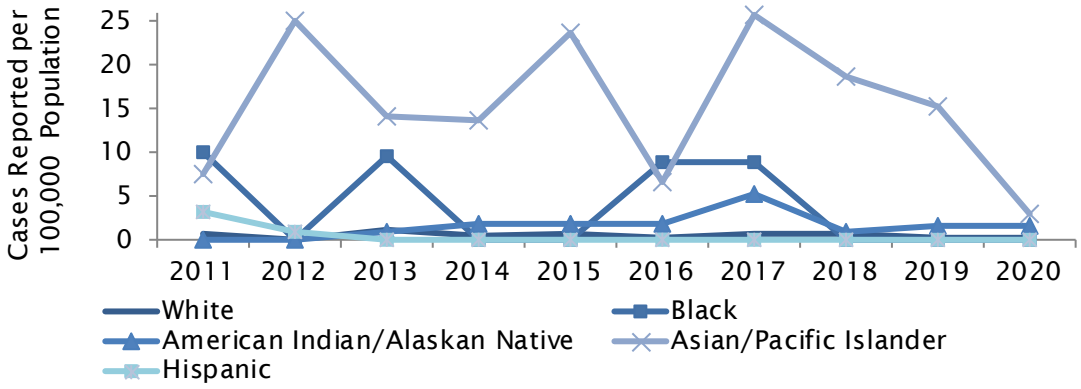


Figure 5.6 Rates of Reported Cases of TB by Race/Ethnicity, Washoe County, 2011-2020



3. Drug Resistant TB

Isoniazid, also known as isonicotinic acid hydrazide (INH), is an antibiotic used for the treatment of tuberculosis.

In 2019, two INH resistant cases were treated by WCHD TB Program. No cases of multi-drug resistant TB (MDR-TB) or extremely-drug resistant TB (XDR-TB) were reported or treated in Washoe County in 2019.

In 2020, one case of low level INH resistance was identified. This case was sensitive to high level INH. No cases of multi-drug resistant TB (MDR-TB) or extremely-drug resistant TB (XDR-TB) were reported or treated in Washoe County in 2020.

4. TB and HIV Co-infection

All cases of TB diagnosed in Washoe County for 2019 and 2020 were screened for HIV. There were no TB cases co-infected with HIV during those two years.

B. Latent Tuberculosis Infection (LTBI)

Estimated Prevalence

The definition of "latent tuberculosis infection" is infection with *Mycobacterium tuberculosis* that is without any disease process due to the infection. Interferon Gamma Release Assays (IGRA) and Tuberculin Skin Tests (TST) are reported by all labs and providers now, but since not all individuals receive these tests, it is difficult to estimate the burden of infection in Washoe County.

In 2019, the WCHD TB Program received approximately 950 lab reports screening for Tuberculosis. In 2020, the WCHD TB Program received approximately 754 lab reports screening for tuberculosis. These included blood serology, skin testing, respiratory testing, and fluid or tissue cultures. These reports helped assess patients for TB disease, TB infection or to rule out TB. The WCHD TB Program treated some of the latent TB identified through testing, and some were treated through primary providers. Most individuals with a positive test for TB and a normal chest x-ray (almost always latent TB) were not treated for LTBI as this treatment continues to be optional. The emphasis on treatment for latent TB continues to be for those who are at highest risk to progress to active disease. This includes those who are immunocompromised, diabetic, have renal disease, recent converters, children under 5, and those needing to use medicines that could decrease their immune response. The WCHD TB program prioritizes treatment for those patients with these risk factors and offers treatment to these cases when they are unable to treat this infection through their primary provider. The program provides support for primary providers who choose to treat these high-risk individuals for LTBI.

Young children are very high risk for progression to active disease. In 2019 and 2020, no children under the age of 5 years were diagnosed with LTBI in Washoe County. Children are the highest priority for screening, diagnosis, and treatment when identified in contact investigations or high-risk settings.

2. Population Affected

The WCHD TB Program provides testing for Washoe County residents who are at high-risk for progression to TB disease. This includes close contacts to TB cases, new immigrants, and foreign-born persons from countries where TB is endemic. The WCHD TB Program partners with the homeless shelters for evaluation of residents, educates primary care providers in the diagnosis and treatment of TB, and encourages primary care providers to treat latent TB in their own patients.

In 2019, a total of 154 clients were evaluated by the WCHD TB Program for tuberculosis. Of these, 118 were evaluated with one or more of the following tests: QuantiFERON-TB Gold Plus (QFT-Plus), T-SPOT, or a Tuberculin Skin Test (TST). The total number of individuals with a positive TST, QFT-Gold Plus or T-SPOT was 23. In addition, the program collected 42 sputum specimens, and monitored patient treatment with 22 blood draws for CBC-CP and/or HIV testing.

In 2020, the WCHD TB Program had 985 client encounters. The majority of these were associated with active cases. Test to monitor treatment these cases included 15 chemistry panels and one CBC (complete blood count). Contacts to active cases or suspect cases were screened in 2020 with 59 Quantiferon Gold-Plus tests and 38 sputum samples. Only one Tuberculin Skin Test was performed in 2020 on a pediatric contact.

Table 5.1 Tuberculosis Screening Tests (QFT/TST), WCHD TB Program, 2011-2020

Year	Total # of Persons Tested	# Positive	Percent Positive
2011	116	70	60.3
2012	151	88	58.3
2013	271	106	39.1
2014	133	73	54.9
2015	141	77	54.6
2016	86	34	39.5
2017	177	30	16.9
2018	174	62	35.6
2019	154	23	14.9
2020	42	14	33.3

II. Prevention and Control

A. Tuberculosis

1. Active Cases

In 2019, fourteen (14) active cases of TB were treated by the WCHD TB Program. These included the eight (8) cases reported in 2019 and six (6) cases reported in 2018 that completed their treatment in 2019.

Of the eight (8) cases of TB diagnosed in 2019, seven (7) completed a full course of curative treatment in 12 months. One (1) case (93 years old) was unable to tolerate medicine and passed away.

Of the nine (9) cases diagnosed with TB in Washoe County in 2018, all nine (9) completed a full course of curative treatment within 12 months.

In 2020, seven (7) active cases of TB were treated by the WCHD TB Program. These included the four (4) cases reported in 2020 and three (3) cases reported in 2019 that completed their treatment in 2020. One (1) presumptive case of ocular TB did not complete a second round of treatment and was not counted as a case.

Of the four (4) cases of TB diagnosed in 2020, all four (4) completed a full course of curative treatment within 12 months.

Of the eight (8) cases diagnosed with TB in Washoe County in 2019, all eight (8) completed a full course of curative treatment within 12 months including three (3) who completed treatment in 2020.

The Healthy People 2020 national health objective for completing a course of curative treatment for TB within 12 months is 93%. WCHD TB Program met this goal for both 2019 and 2020 at 100% each year.

At times, PCP's or infectious disease physicians will manage the treatment of an active TB case. All active cases of TB in 2020 were managed and treated by the WCHD TB Program.

2. Contacts

When a person with TB is identified, a contact investigation is initiated to identify individuals who have had close contact with the case, and may possibly become infected. Contacts are counted in the same year the index case is reported, regardless of when the contact is tested or evaluated. Example: Contacts of an index case reported in 2020, but not tested until 2021 are counted with 2020 data.

In 2019, the TBPCP conducted contact investigations for five (5) cases of infectious TB. Also this year, contacts to a smear negative-culture positive c se were tested. This case may have been infectious at some time in the prior year.

In 2020, the WCHD TB Program conducted contact investigations for four (4) cases of infectious TB.

There were twenty-five (25) contacts identified to **smear and culture positive** cases. Of these, nineteen (19) completed an evaluation for TB utilizing QFT-Gold Plus serology and chest x-ray. Six (6) refused evaluation. Fifteen (15) were not infected and four (4) tested positive. Three (3) of the four (4) positives completed a full course of treatment for LTBI. One (1) was treatment intolerant.

There was one (1) extra-pulmonary case of TB in 2020 (ocular). No contact investigation completed on this case.

Table 5.2 Evaluated Contacts to TB Cases, Washoe County 2011-2020

Year	# of Contacts Tested	# Positive	% Positive	# Diagnosed with TB	% Diagnosed with TB
2011	54	14	26	0	0.0
2012	178	18	10	1	0.6
2013	365	18	5	1	0.3
2014	35	5	14	0	0.0
2015	56	4	7	0	0.0
2016	14	4	29	1	7.1
2017	93	19	20	0	0.0
2018	227	9	4	1	0.4
2019	336	27	8	0	0.0
2020	19	4	21	0	0.0

B. Latent Tuberculosis Infection (LTBI)

1. Treatment of LTBI

Persons with latent TB infection have a 5-10% risk of developing active TB disease during their lifetime. The risk is greatest within two years after infection occurs. Persons with certain medical conditions (e.g., diabetes, HIV infection, taking certain medicines, organ transplants, silicosis, low body weight, hemodialysis, etc.) are at an increased risk of developing active TB during their lifetime. Additionally, infants and children under 5 years of age have an increased risk of developing TB disease. Treating LTBI infection can significantly reduce a person's risk of ever developing TB disease.

The Healthy People 2020 national objectives for LTBI therapy are:

- For individuals diagnosed with latent TB infection (LTBI) who are contacts to **sputum-AFB-smear-positive** TB cases, increase the proportion that start treatment to 91%. Four (4) of four (4) identified in 2020 were started on treatment (100%).

- For those that were started on treatment for LTBI, increase the proportion that complete treatment to 81%. Three (3) of four (4) who started treatment for LTBI in 2020 completed treatment (75%). One patient was intolerant to treatment.

- For immigrants diagnosed with LTBI who had an abnormal chest x ray read overseas and for whom treatment is recommended, increase the proportion that start treatment to 93%. Four (4) of four (4) immigrants diagnosed with LTBI started treatment (100%).

- And for those immigrants who start treatment, increase the proportion that complete treatment to 83%. Four (4) of four (4) who started treatment completed treatment (100%).

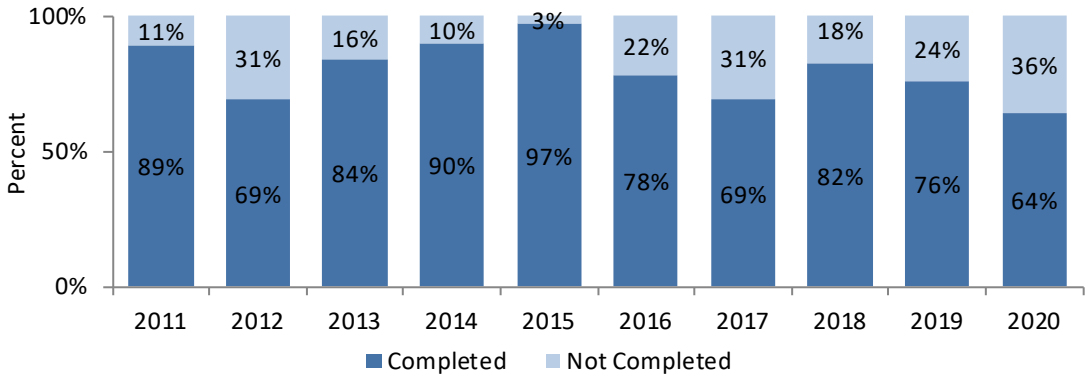
A total of Fifty-one (51) LTBI diagnosed clients were evaluated in 2019 by the WCHD TB Program. These included cases from contact investigations, immigrant evaluations, civil-surgeon referrals, suspect cases for active disease, and those at high risk for progression to TB disease. Thirty-five (35) started treatment (69%). Seven (7) were lost to follow up, four (4) were referred to their PMD, two (2) were deferred for pregnancy, two (2) moved, and one (1) refused. Of the thirty-five who started treatment, thirty-two (32) completed (91%). One (1) was lost to f/u, one (1) was intolerant, and there was one (1) death.

The overall completion rate for treatment of LTBI for the WCHD TB Program in 2019 was 39 out of 51 (76%).

A total of forty-five (45) clients diagnosed with LTBI were evaluated in 2020 by the WCHD TB Program. These included cases from contact investigations, immigrant evaluations, civil-surgeon referrals, suspect cases for active disease, and those at high risk for progression to TB disease. Thirty-three (33) started treatment (73%). Four (4) moved, three (3) declined treatment, one (1) was lost to follow up, one (1) was deferred due to pregnancy, one (1) was referred to PMD, one (1) had prior treatment, and one (1) was not treated due to advanced age. Of the thirty-three (33) who started treatment, twenty-nine (29) completed (88%). Two (2) were lost to f/u, one (1) was intolerant, and one (1) declined to continue treatment.

The overall completion rate for treatment of LTBI for the WCHD TB Program in 2020 was twenty-nine (29) out of forty-five (45) (64%).

Figure 5.7 Completion Rate for Treatment of LTBI, 2011-2020



6. VACCINE PREVENTABLE DISEASES

In 2020, an assessment of vaccination coverage showed that 72.2% of children aged 19-35 months had received age-appropriate vaccinations at the time of their visiting clinics or healthcare providers located in Washoe County (Data source: Nevada Division of Public and Behavioral Health, July 2020). The Healthy People 2020 national health objective for vaccine coverage among children aged 19-35 months is 80%. The vaccines include: DTaP (4 doses), polio (3 doses), MMR (1 dose), Hib (3 doses), hepatitis B (3 doses), varicella (1 dose), and PCV (4 doses). These are highly effective vaccines against diphtheria, tetanus, pertussis, polio, measles, mumps, rubella, *Haemophilus influenzae* type b (Hib) disease, hepatitis B, varicella (chickenpox), invasive pneumococcal disease, influenza and rotavirus.

The WCHD works closely with the Washoe County School District, Immunize Nevada – Nevada, private health care providers, and childcare providers to increase immunization rates and reduce vaccine-preventable diseases. The WCHD and the Vaccines For Children (VFC) providers administer the vast majority of childhood vaccines in Washoe County.

Vaccination against these diseases has reduced reported cases to record-low levels. No cases of diphtheria, polio, or rubella have been reported in Washoe County in the last decade. Sporadic cases of mumps are occasionally reported. One case of tetanus was reported in 2017 and one-case of measles was reported in 2018.

Table 6.1 Summary of Laboratory-Confirmed Cases of Vaccine Preventable Diseases (VPD), Washoe County, 2011 – 2020

VPD	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Diphtheria	0	0	0	0	0	0	0	0	0	0
Measles	0	0	0	0	0	0	0	1	0	0
Mumps	1	1	3	4	2	3	2	0	2	1
Polio	0	0	0	0	0	0	0	0	0	0
Rubella	0	0	0	0	0	0	0	0	0	0
Tetanus	0	0	0	0	0	0	1	0	0	0
Varicella	0	0	0	0	0	0	0	0	4	4

Table 6.2 Vaccine-Specific Doses Administered, Washoe County, 2020

Vaccine	WCHD	VFC Providers	All Other Providers	Total
DTaP, DT	191	4,702	64	4,957
DTaP-HepB-IPV	292	9,372	5	9,669
DTaP-IPV/Hib	213	5,803	32	6,048
DTaP-IPV	293	4,560	7	4,860
Td,Tdap	1,266	17,548	12,265	31,079
IPV	293	618	103	1,014
MMR	896	3,280	951	5,127
MMRV	13	7,369	46	7,428
Varicella	1,009	2,725	506	4,240
Rotavirus	182	11,994	26	12,202
Total	4,648	67,971	14,005	86,624

I. Invasive *Haemophilus influenzae* type b (Hib)

A. Epidemiology

Since the licensure of conjugate Hib vaccines for children in 1987, and for infants in 1990, rates of invasive Hib disease among children under 5 years of age have declined by more than 95% in the United States. Rates for adults have remained stable.

1. Reported Incidence

No cases were reported in 2019 and 2020. The Healthy People 2020 national health objective is 0.27 cases per 100,000 population in children under 5 years of age.

2. Population Affected

No cases were reported in 2019 or 2020. No death was reported.

Ten (10) cases of invasive *Haemophilus influenzae*, non-type b, were reported in 2019. The median age was 62.5 years old (Range: 7 and 95 years). Seven cases (7) were male, eight (8) were White, non-Hispanic, one (1) Black and one (1) Hispanic. No deaths were reported.

No cases of invasive *Haemophilus influenzae*, non-type b, were reported in 2020.

B. Prevention and Control

Haemophilus influenzae type b (Hib) vaccine is an inactivated vaccine indicated for active vaccination against *Haemophilus* influenzae type b. There are three monovalent conjugate Hib vaccines, ActHib® (PRP-T), Hibrix® (PRP-T), and PedvaxHib® (PRP-OMP) and one combination conjugate Hib vaccines Pentacel® (DTaP-IPV/Hib) licensed for use in the United States.

Table 6.3 Doses of Hib-Containing Vaccine Administered, Washoe County, 2020

Vaccine	WCDHD	VFC Providers	All Other Providers	Total
Hib	265	12,386	22	12,673
Hib-Hep B	0	0	0	0
DTaP-IPV/Hib	213	5,803	32	6,048
Total	478	18,189	54	18,721

II. Invasive Meningococcal Disease

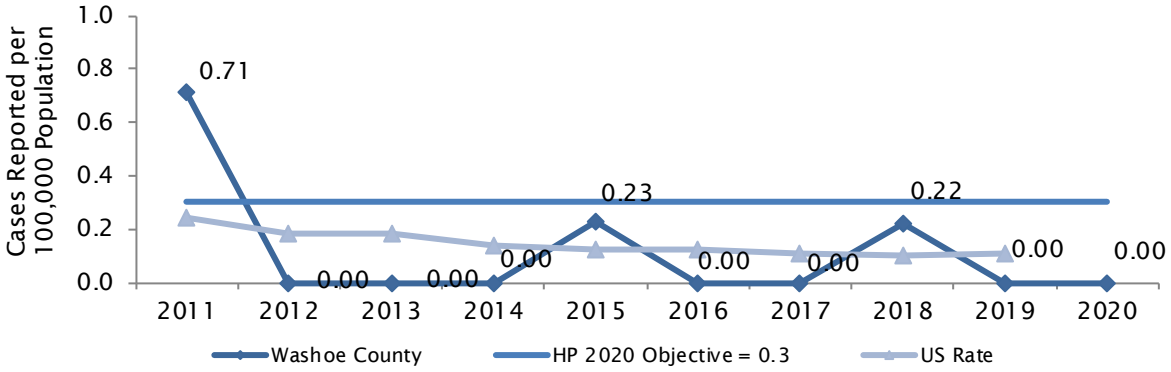
A. Epidemiology

Meningococcal disease is an acute serious illness caused by the bacteria *Neisseria meningitidis.* It is a leading cause of bacterial meningitis and sepsis in the United States. Even with appropriate antibiotic therapy the case fatality rate of meningococcal disease is 10% to 15%. Up to 20% of survivors have permanent health problems including hearing loss, neurological damage or loss of a limb. Anyone can get meningococcal diseases, but rates of disease are highest in children younger than 1 year old with a second peak in adolescence. Among teens and young adults, those 16 through 23 years old have highest rates of meningococcal disease.

1. Reported Incidence

No case was reported in Washoe County in 2019 or 2020. The 2019 national incidence rate was 0.11 cases per 100,000 population, which was the most current national data. The Healthy People 2020 national health objective for meningococcal disease is 0.3 cases per 100,000 population. Three fatalities due to invasive meningococcal disease have been reported in Washoe County. These occurred in 2002, 2010, and 2011.

Figure 6.1 Rates of Reported Cases of Invasive Meningococcal Disease, Washoe County, 2011 – 2020



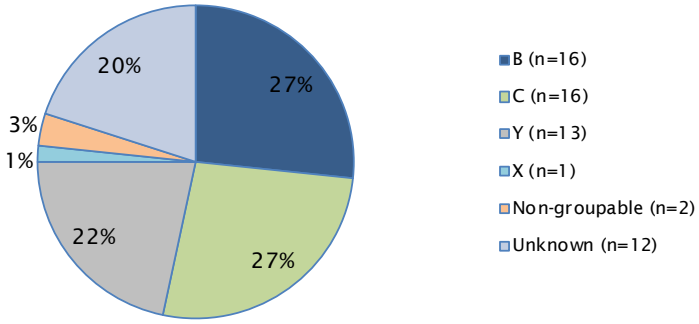
In the United States, most cases (95% – 97%) of invasive meningococcal disease are sporadic; however, since 1991, the frequency of localized outbreaks has increased. Serogroup B accounts for one-third of U.S. cases, however most of these outbreaks have been caused by serogroup C. The current quadrivalent meningococcal vaccine protects against serogroups A, C, Y and W-135. In 2019, coverage with meningococcal conjugate vaccine (≥1 dose) increased to 88.9 % among adolescents aged 13-17 years in the U.S. from 86.6% in 2018.[1] National data for 2020 was not available.

Nationally, from 2013 to November 2018, outbreaks of serogroup B meningococcal disease occurred on 10 college campuses. Two deaths were reported from the University of Wisconsin-Madison and the University of Oregon. Several students suffered

[1] https://pubmed.ncbi.nlm.nih.gov/32817598/

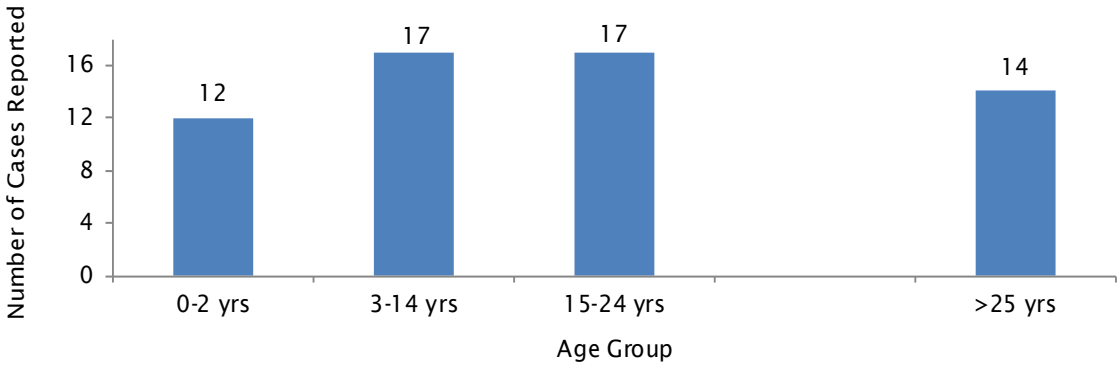
neurological effects such as memory loss and difficulty concentrating. One student had both feet amputated.

Figure 6.2 Meningococcal Serogroups, Washoe County, 1995-2020 (n=60)



2. Population Affected

Figure 2.3 Invasive Meningococcal Disease Cases by Age, Washoe County, 1995 – 2020



B. Prevention and Control

Meningococcal quadrivalent vaccine is an inactivated vaccine indicated for the active vaccination against meningococcal disease caused by the serogroups A, C, Y and W-135. In 1974, the first meningococcal quadrivalent polysaccharide vaccine, Menomune® was licensed for use in the United States but is no longer available.

Currently there are three quadrivalent conjugated meningococcal vaccines, Menactra® (MenACWY-D), Menveo® (MenACWY-CRM) and and MenQuadfi® (ManACWY-TT) indicated for the active vaccination against serogroups A, C, Y and W-135 licensed for use in the United States.

Table 6.4 Doses of Meningococcal Vaccine Administered, Washoe County, 2020

Vaccine	WCDHD	VFC Providers	All Other Providers	Total
Meningococcal	1,393	9,699	2,080	**13,172**

III. Invasive Pneumococcal Disease

A. Epidemiology

Streptococcus pneumoniae (pneumococcus) is a leading cause of illness in young children, and a cause of illness and death among elderly persons and persons with certain underlying medical conditions. *S. pneumoniae* causes meningitis, bacteremia, pneumonia, and otitis media. In Nevada, only meningitis caused by *S. pneumonia* had historically been a reportable condition. Effective January 1, 2007, enhanced surveillance to include all invasive pneumococcal diseases (IPDs) was implemented. Effective January, 2011, all IPDs became reportable in Nevada.

Eighty-eight percent (88%) of all serotypes that are known to cause invasive disease are included in the 23-valent polysaccharide vaccine, which was licensed in 1983. Before the pneumococcal conjugate vaccine (PCV) was introduced in 2001, over 80% of invasive isolates in children under 5 years of age were included in a 7-valent vaccine. Since February 2010, PCV13 has been licensed and recommended for children in the U.S. and PCV13 replaced the previous version of Prevnar®, known as PCV7. This new vaccine covers the 13 pneumococcal serotypes, which cause the majority of pneumococcal infections in young children.

1. Reported Incidence

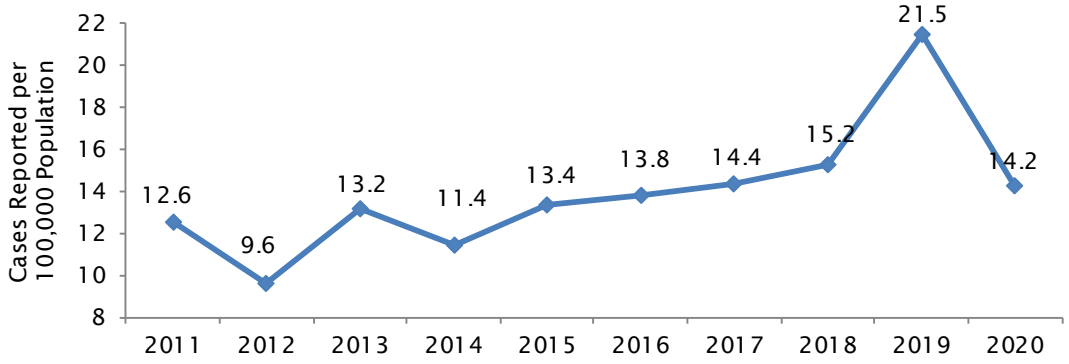
In 2019, 100 laboratory-confirmed cases of invasive pneumococcal disease (IPD) were reported in Washoe County with incidence rate of 21.5 cases per 100,000 population.

In 2020, sixty-seven (67) laboratory-confirmed cases of invasive pneumococcal disease (IPD) were reported in Washoe County for an incidence rate of 14.2 cases per 100,000 population.

The national incidence rate (all invasive pneumococcal disease) in 2018 was 8.0 cases per 100,000 and 7.0 cases per 100,000 population among children under five years. The Healthy People 2020 national health objective for IPD is 12 cases per 100,000 population among children under 5 years. Washoe County's incidence in 2020 for this age group was 0 cases per 100,000 population.

The Healthy People 2020 national health objective for IPD is 36 cases per 100,000 population among adults 65 years and older. Washoe County's incidence in 2020 for this age group was 30.4 cases per 100,000 population. Of the 67 IPD cases in 2020, six (6) cases were fatal. Three (3) were white, non-Hispanic, one (1) Black, and one (1) American Indian. Five (5) cases were male.

Figure 6.2 Rate of Reported Cases of Invasive Pneumococcal Disease, Washoe County, 2011 – 2020



2. Population Affected

Figure 6.3 Invasive Pneumococcal Disease Cases by Age and Gender, Washoe County, 2020

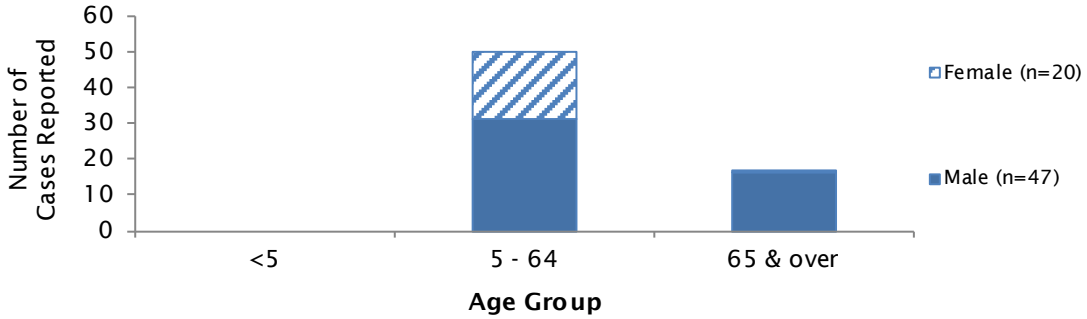
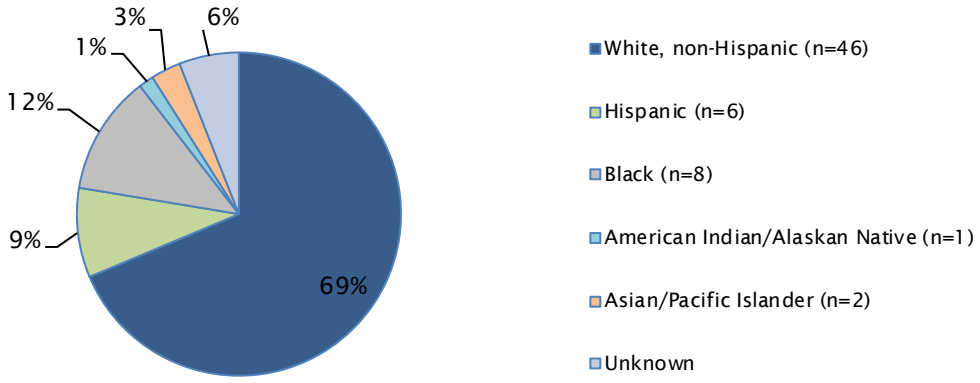


Figure 6.4 Invasive Pneumococcal Disease Cases by Race/Ethnicity, Washoe County, 2020



B. Prevention and Control

Pneumococcal vaccine is an inactivated vaccine indicated for the active vaccination against *Streptococcus pneumoniae* (pneumococcus). There is one pneumococcal 13 valent conjugate vaccine, Prevnar 13® (PCV13) and one pneumococcal 23 valent polysaccharide vaccine, Pneumovax 23® (PPSV23) licensed for use in the United States.

Since October 31, 2007, *Streptococcus pneumoniae* vaccination has been required for all children enrolled in a childcare facility in Nevada.

Table 6.5 Doses of Pneumococcal-Containing Vaccine Administered, Washoe County, 2020

Vaccines	WCHD	VFC Providers	All Other Providers	Totals
PNUcon*	476	21,104	2,720	24,300
PNUps**	49	3,478	6,012	9,539
TOTALS	525	24,582	8,732	33,839
*conjugated vaccine **polysaccharide vaccine				

IV. Pertussis

A. Epidemiology

Pertussis, or "whooping cough," is caused by the bacteria *Bordetella pertussis*. The bacteria attaches to the ciliated epithelial cells of the respiratory tract. Toxin produced by the bacteria paralyzes the cilia which interferes with the clearing of pulmonary secretions. Pneumonia is the most common complication. Young infants are at highest risk for developing complications. A nearly half of infants under the age of 1 year who are infected with pertussis are hospitalized and about one in four (23%) develop pneumonia.[2]

1. Reported Incidence

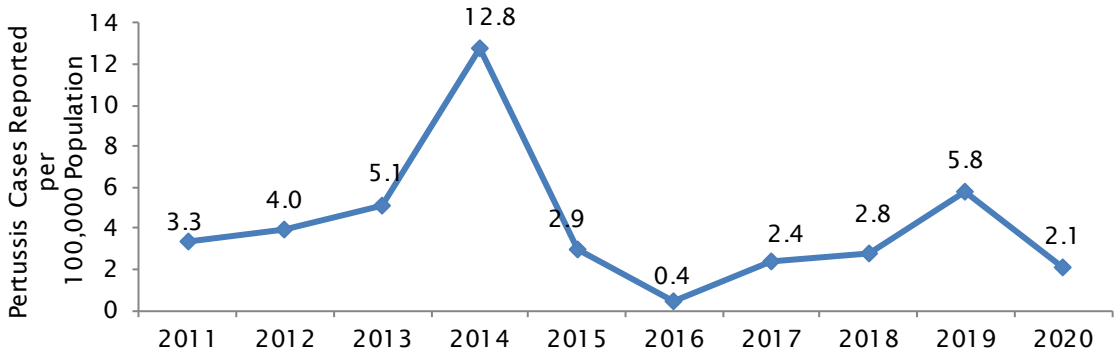
In 2019, fourteen (14) confirmed and 13 probable cases of pertussis were reported in Washoe County with an incidence rate of 5.8 cases per 100,000 population.

In 2020, six (6) confirmed case and four (4) probable cases of pertussis were reported in Washoe County for an incidence rate of 2.1 cases per 100,000 population.

The 2019 provisional national incidence was 5.67 cases per 100,000 population[3]. The Healthy People 2020 national health objective for pertussis is to reduce the number of cases in children under age 1 year by 10% from the 2004-2008 baseline of 2,777 to 2,500 or fewer cases.

[2] Centers for Disease Control and Prevention. Pertussis. Accessed November 2021 from https://www.cdc.gov/pertussis/about/complications.html

Figure 6.5 Rates of Reported Cases of Pertussis, Washoe County, 2011– 2020



Note: In 2014, the highest incident rate was reported in the past decades (12.8 cases per 100,000 population) see 2014 Annual Communicable Disease Summary for further details.

2. Population Affected

In 2019, the median age of reported pertussis cases was 18.6 years (range: 2 months – 77 years). Eleven (11) cases were female, seventeen (17) white, non-Hispanic, three (3) Hispanic, and five (5) unknown. One (1) case was hospitalized for 5 days each and no deaths were reported.

In 2020, the median age of reported pertussis cases was 33.5 years (range: 6 – 77 years). Seven (7) cases were female, eight (8) white and two (2) unknown. One (1) case was hospitalized for 5 days each and no deaths were reported. Seventy-six (76%) of reported cases had received the recommended doses of pertussis-containing vaccine. One household cluster (3 confirmed and 1 probable case) was identified. Six (6) contacts received prophylaxis.

Table 6.6 Rate of Reported Cases of Pertussis by Age, Washoe County 2019 and 2020

	2019		2020	
Age	No. of Cases	%	No. of Cases	%
< 1	2	7.4%	0	0.0%
1-9	3	11.1%	3	30.0%
10-19	15	55.6%	1	10.0%
20-29	2	7.4%	1	10.0%
30-39	2	7.4%	0	0.0%
40-49	2	7.4%	2	20.0%
50-59	1	3.7%	0	0.0%
60-65	0	0.0%	1	10.0%
+65	0	0.0%	2	20.0%
Total	27	100.0%	10	100.0%

B. Prevention and Control

A vaccine for pertussis has been available in the U.S. since the 1940s. In 1991 the FDA approved the first acellular pertussis containing vaccines because of concerns about the safety of whole-cell pertussis. Initially pediatric diphtheria, tetanus, acellular vaccine DTaP vaccine was only approved for the fourth and fifth dose of the vaccine series. In 1997, the ACIP recommended DTaP for all 5 doses in the diphtheria, tetanus, acellular

pertussis vaccine series to replace whole-cell pertussis vaccine. In 2005, the FDA approved two adolescent/adult formulations of tetanus, diphtheria, acellular pertussis vaccines.

Acellular pertussis vaccine is an inactivated vaccine indicated for the active vaccination against pertussis. It is only available in combination with diphtheria and tetanus vaccine antigens. There are two pediatric formulations of diphtheria, tetanus, acellular pertussis vaccines, Daptacel® (DTaP) and Infanrix® (DTaP) and two adolescent/adult formulations of tetanus, diphtheria acellular pertussis vaccines Boostrix® (Tdap) and Araceli® (Tdap).

There are seven (7) pediatric diphtheria, tetanus, and acellular pertussis vaccines licensed in the United States, some contain other vaccine antigens for other pathogens. These include diphtheria, tetanus, acellular pertussis, hepatitis B, inactivated polio vaccine-Pediarix® (DTaP-HepB-IPV); diphtheria, tetanus, acellular pertussis, inactivated polio vaccine, *Haemophilus influenzae* type b-Pentacel® (DTaP-IPV/Hib); diphtheria, tetanus, acellular pertussis, inactivated polio vaccine-Kinrix® (DTaP-IPV), and Quadracel® (DTaP-IPV); diphtheria, tetanus, pertussis, inactivated polio, and hepatitis B - Pediarix® (DTaP-Hep B – IPV); and diphtheria, tetanus, pertussis, inactivated polio, *Haemophilus influenzae* type b and *Neisseria meningitidis* Vaxelis® (DTaP-IPV-Hib_HepB).

Table 6.7 Doses of Pertussis-Containing Vaccine Administered, Washoe County, 2020

Vaccines	WCHD	VFC Providers	All Other Providers	Totals
DTaP	191	4,702	64	4,957
DTaP-HepB-IPV	292	9,372	5	9,669
Tdap	1,242	17,288	11,929	30,459
DTaP-IPV/Hib	213	5,803	32	6,048
DTaP-IPV	293	4,560	7	4,860
TOTALS	2,231	41,725	12,037	55,993

V. Rotavirus

A. Epidemiology

Rotavirus is the most common cause of severe diarrhea among children. In the U.S., the highest rates of illness occur among infants and young children, and most children are infected by 5 years of age. Adults can also be infected, though disease tends to be mild. The annual epidemic peak in the U.S. characteristically starts during autumn in the southwest and moves sequentially to reach the northeast by spring.

1. Reported Incidence

In 2019, eleven (11) laboratory-confirmed cases of rotavirus were reported in Washoe County and five of them were younger than 2 years old.

In 2020, seven (7) laboratory-confirmed cases of rotavirus were reported in Washoe County. Of the 7 cases, 4 (57%) were in the age group 0 – 2 years. The 2020 reported

incidence of rotavirus infection in Washoe County was 23.0 cases per 100,000 children ≤ 2 years of age (population for this age group was 17,425 in 2020).

Figure 6.6 Rate of Reported Cases of Rotavirus in Children ≤ 2 Years of Age, Washoe County, 2011-2020

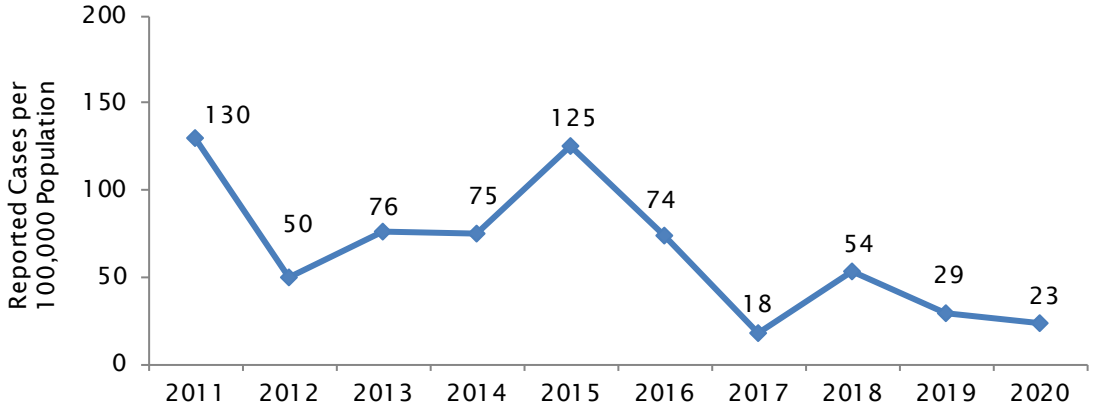
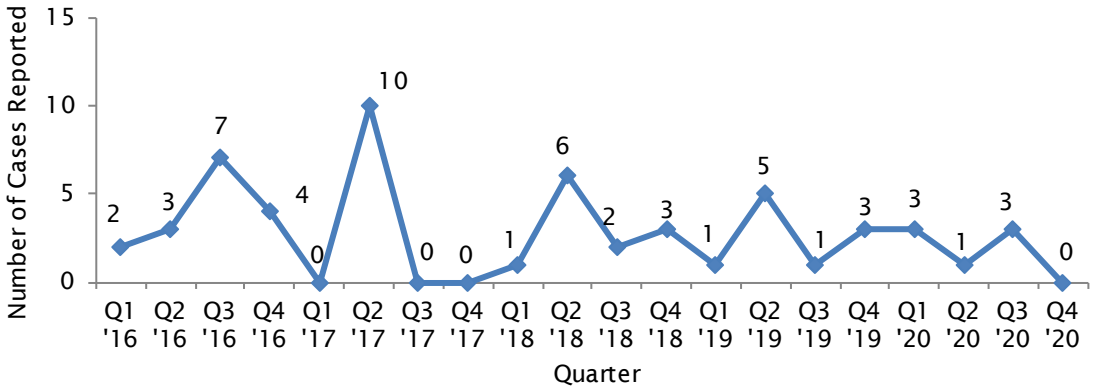


Figure 6.7 Number of Reported Rotavirus Cases by Quarter, Washoe County, 2016-2020



In 2019 and 2020, no confirmed rotavirus outbreaks were reported or identified in Washoe County.

B. Prevention and Control

Rotavirus vaccine is an oral live virus vaccine indicated for the active vaccination against rotavirus. There are two rotavirus vaccines, RotaTeq® (RV5) and Rotarix® (RV1) licensed for use in the United States.

Table 6.8 Doses of Rotavirus Vaccine Administered, Washoe County, 2020

Vaccine	WCHD	VFC Providers	All Other Providers	Total
Rotavirus	182	11,994	26	12,202

VI. Influenza

A. Epidemiology

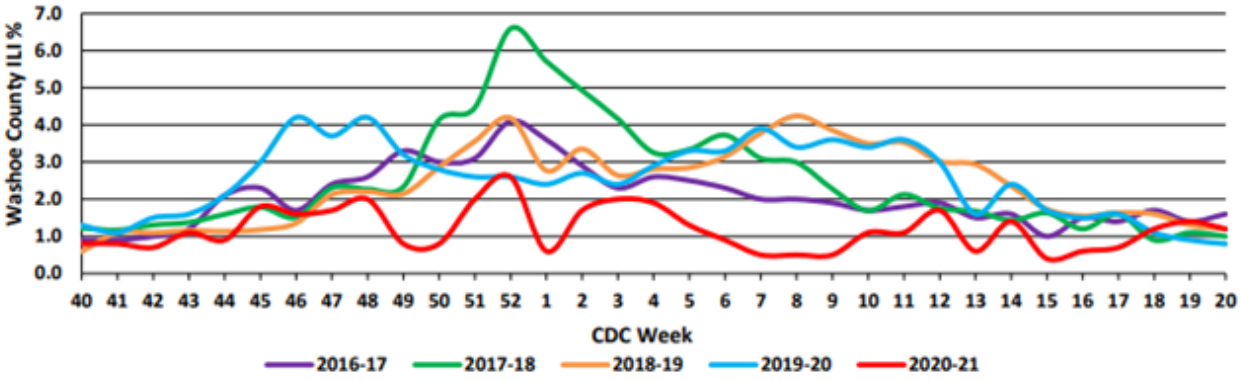
The Washoe County Health District has participated in the CDC national influenza surveillance program since 1984 and conducts year-round influenza surveillance. Emergency departments, urgent cares, private providers, and University of Nevada, Reno (UNR) Student Health Center participate by reporting the number of patients seen with influenza-like illness (ILI) on a weekly basis and collecting specimens for PCR testing.

The definition of ILI was formerly defined as a fever ≥ 100˚ F **AND** a cough and/or sore throat, in the absence of a known cause other than influenza. As of 2021, the definition of ILI changed to "fever (≥ 100˚F [37.8˚C]) and cough and/or sore throat", with the removal of the "in the absence of a known cause other than influenza.

Nationally, the 2019-2020 influenza season was classified as having overall moderate severity by the Centers for Disease Control and Prevention (CDC).1 Influenza-like illness (ILI) activity in the United States increased in MMWR week 44 (2.4%) and peaked at week 52 (6.9%). At the local level, Washoe County ILI activity also increased in week 44 (1.8%), however, peaked during weeks 46 (4.2%) and 48 (4.2%).

The 2020-2021 influenza season was classified as having overall unusually low severity by the CDC. ILI activity in the United States increased in week 41 (1.3%) and peaked at week 48 (1.6%). At the local level, Washoe County ILI activity increased in week 43 (1.3%), and, peaked during week 53 (3.0%).

Figure 6.8 ILI Activity Reported by Washoe County Sentinel Providers, 2016-17 through 2021-21 ILI Seasons



During 2019-2020 season, a total of 266 influenza hospitalizations were reported during the 2019-2020 season in Washoe County. Among hospitalized flu cases, 69.2% were not vaccinated with the seasonal flu vaccine. Among those hospitalized, 134 were influenza A (not subtyped) and 35.8% of the 134 cases were vaccinated. Among the 69 influenza B cases hospitalized, 17.4% were vaccinated.

During 2020-2021 season, there were 11 influenza related hospitalizations reported during the 2020-2021 season in Washoe County. Of the hospitalized cases, rapid

diagnostic test results showed that 54.5% identified as influenza type A and 45.5% identified as influenza type B. Among the hospitalized cases, only 36.4% were vaccinated with a seasonal flu vaccine.

Table 6.9 Number of Hospitalized Cases, ICU Cases and Fatalities with Laboratory-Confirmed Influenza, Washoe County Influenza Surveillance, 2020-2021

	Cumulative for 2019-2020 Influenza Season September 29, 2019 - May 16, 2020								Cumulative for 2020-2021 Influenza Season September 27, 2020 - May 22, 2021							
	Hospitalized		Vax§		ICU		Death		Hospitalized		Vax§		ICU		Death	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Total # of cases reported	266	100	82	31	57	21	7	2.6	**11**	**100**	**4**	**36**	**1**	**9.1**	**0**	**0**
Influenza A (2009 H1N1)	13	4.9	6	7.3	4	7	0	0	0	0	0	0	0	0	0	0
Influenza A (seasonal H3)	1	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Influenza A (not subtyped)	134	50	48	59	31	54	4	57	0	0	0	0	0	0	0	0
Influenza A (RIDT*)	49	18	16	20	5	8.8	2	29	6	55	1	25	0	0	0	0
Influenza B (RIDT*)	8	3	3	3.7	1	1.8	0	0	5	46	3	75	1	100	0	0
Influenza B (non-RIDT**)	61	23	9	11	16	28	1	14	0	0	0	0	0	0	0	0
Influenza (unknown type, RIDT*)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

The 2019-2020 season concluded with a total of 238 pneumonia and influenza (P&I) deaths. During week 18, a higher than normal percentage of deaths were attributed to pneumonia and influenza (21.7%). A review of death certificates reported for week 18 indicated 50% of the registered deaths listed COVID-19 as the cause of death. The first COVID-19 deaths in Washoe County were registered in week 14. National data for P&I and epidemic threshold percentages for weeks 14 and 43 were not available.

Surveillance is also conducted for respiratory syncytial virus (RSV) and data are included in weekly reports. The total number of RSV cases reported during the 2019-2020 influenza season was 771. The highest number of cases were reported during week 6 (n=103) The 2019-2020 season concluded with a total of 238 pneumonia and influenza (P&I) deaths.

Figure 6.9 Pneumonia and Influenza Mortality Surveillance, 2020-2021

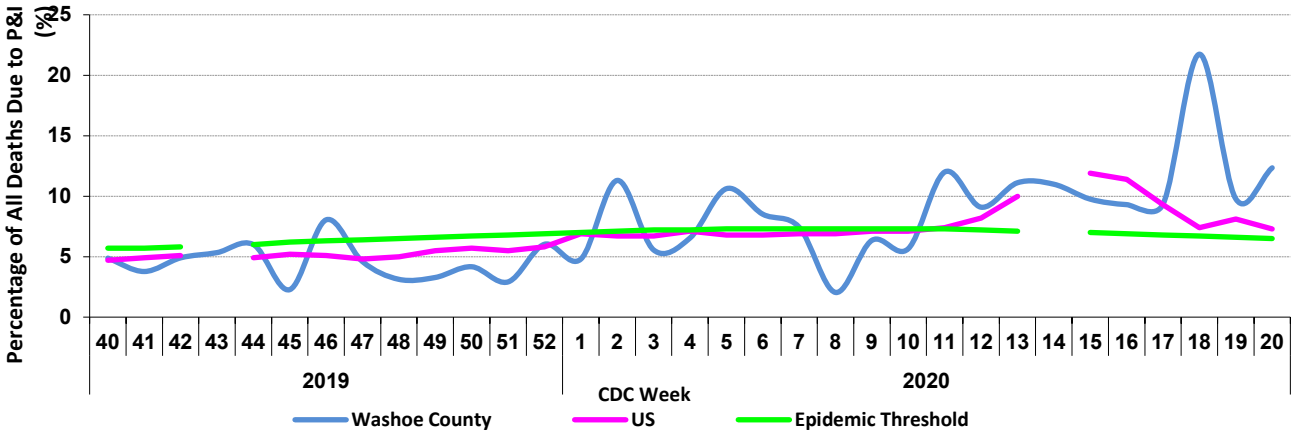


Figure 6.10 Test Results from Sentinel Providers, Washoe County Influenza Surveillance, 2019 – 2020

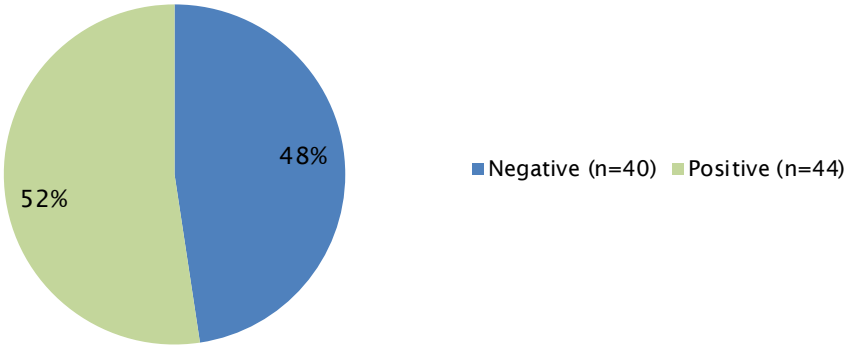


Figure 6.11 Influenza Positive Specimens by Type, Washoe County Influenza Surveillance, 2019–2020

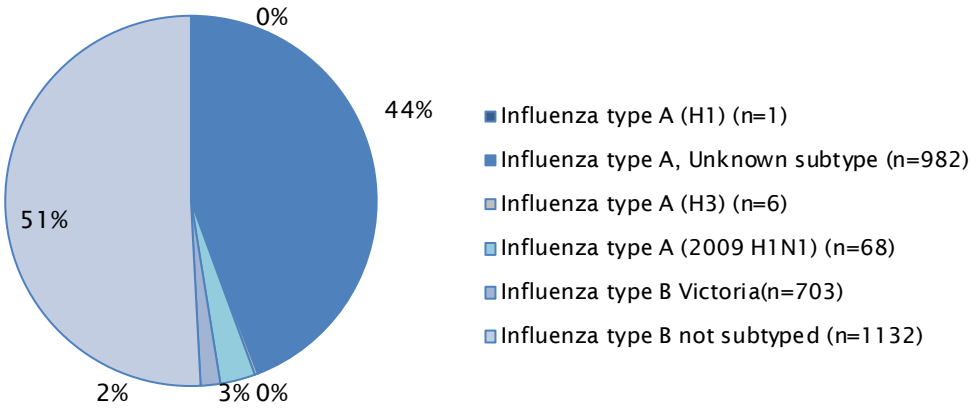
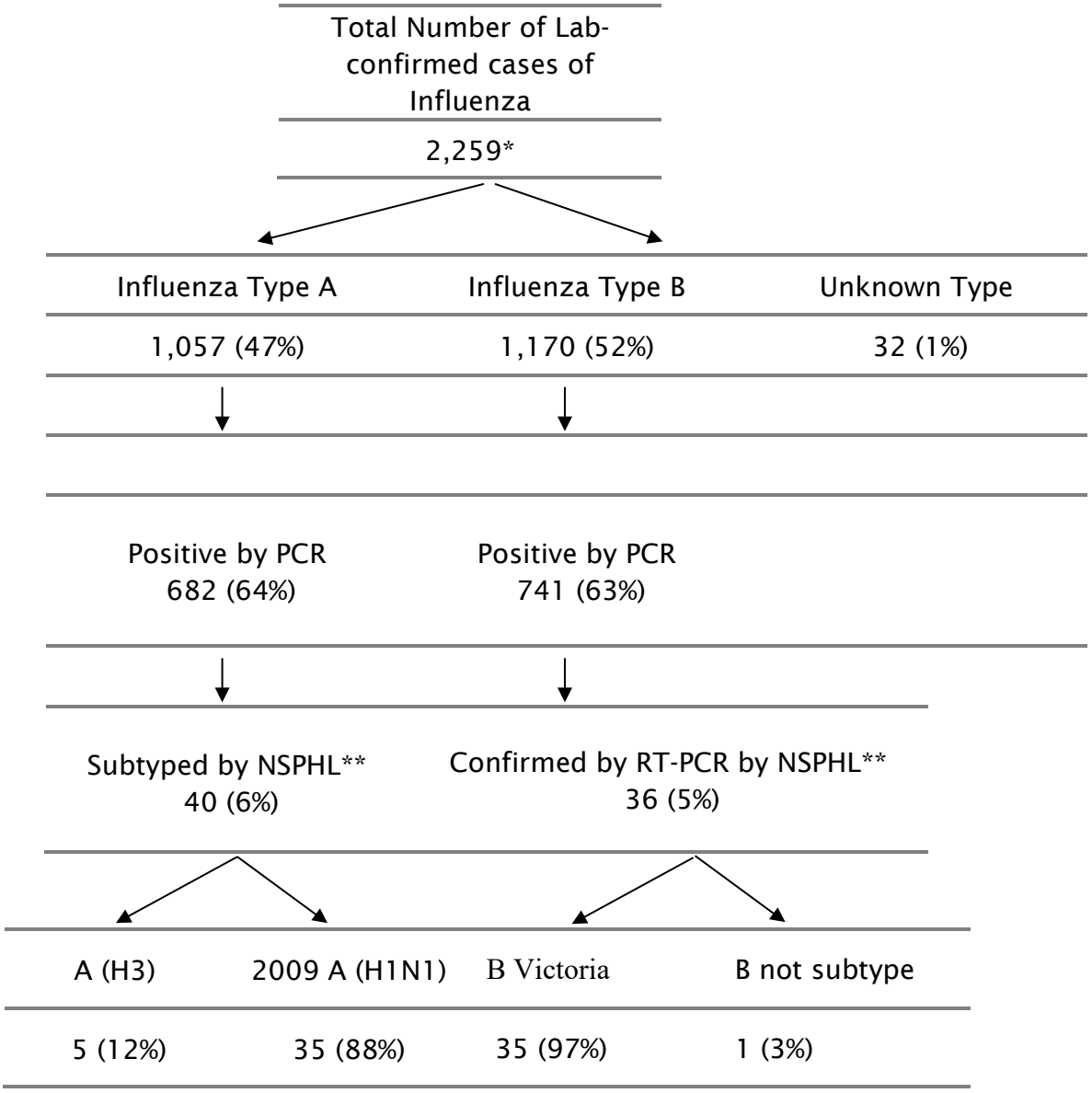


Figure 6.12 Influenza Testing Results, Washoe County, October 6, 2019 - May 16, 2020

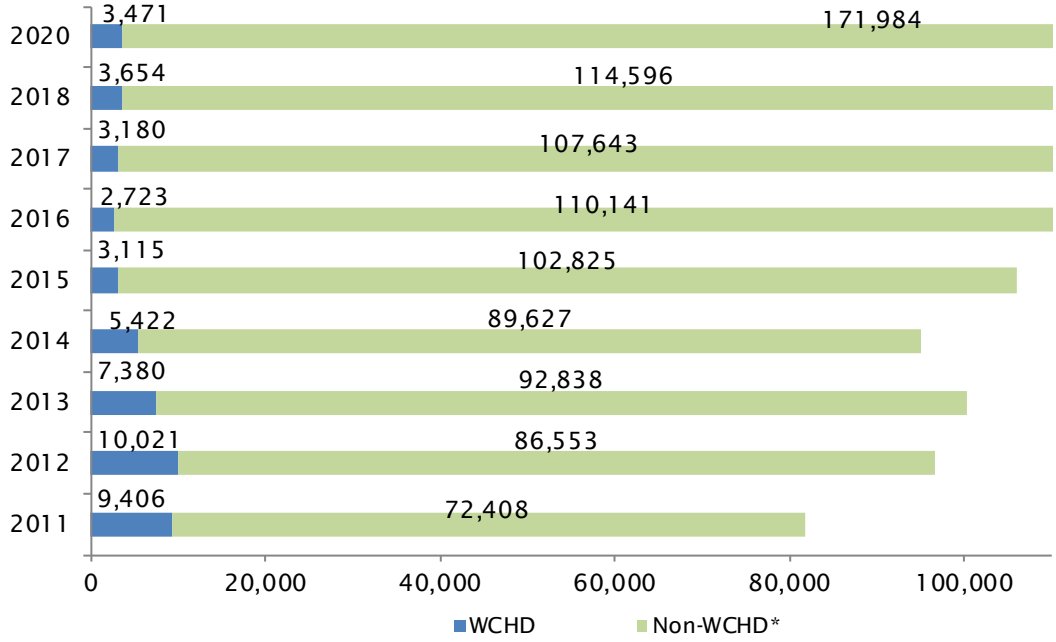


* Nevada State Public Health Laboratory. Note that some facilities in addition to recruited sentinel sites submit specimens to NSPHL for testing.

B. Prevention and Control

Since 2010 the Advisory Committee on Immunization Practices (ACIP) has recommended for all persons 6 months of age and older to receive an annual influenza vaccination unless there is a contraindication. Vaccinating persons at high risk for influenza complications is the most effective means of reducing the impact of influenza. The majority of influenza vaccine is administered from the beginning of fall through December, which is the optimal time to vaccinate.

Figure 6.13 Total Doses of Influenza Vaccine Administered by WDHD and Non-WCHD Clinics, 2011 – 2020



7. VECTOR-BORNE DISEASES

I. Mosquito-Borne Diseases

A. Arboviral Encephalitides

Arthropod-borne viruses or "arboviruses" occur in nature by cycling between vertebrates and invertebrate disease vectors. Humans and domestic animals can become accidental hosts when exposed to vector species. Mosquitoes in the genus *Culex* are the primary vectors of mosquito-borne arboviruses. Two *Culex* species (*Culex tarsalis* and *Culex pipiens*) are common in the Truckee Meadows. Viruses associated with these two species and human diseases include: St. Louis Encephalitis (SLE), Western Equine Encephalomyelitis (WEE), and most recently West Nile Virus (WNV).

1. West Nile Virus Reported Incidence

WNV first appeared in the United States in New York in 1999 and caused West Nile Virus Disease. WNV disease is often categorized into two primary groups: neuroinvasive disease such as aseptic meningitis or encephalitis and nonneuroinvasive disease such as West Nile Fever. Table 7.1 summarizes human WNV disease in the U.S.

Table 7.1 Summary of WNV Cases, U.S., 2011-2020

Year	Neuroinvasive disease	Non-Neuroinvasive	Total Human Cases Reported to CDC	Deaths	Case Fatality Rate (%)
2011	486	226	712	43	6.0
2012	2,873	2,801	5,674	286	5.0
2013	1,267	1,202	2,469	119	4.8
2014	1,347	858	2,205	97	4.4
2015	1,455	720	2,175	146	6.7
2016	1,309	840	2,149	6	0.3
2017	1,425	672	2,097	146	7.0
2018	1,658	989	2,647	167	6.3
2019	633	338	971	60	6.2
2020	505	159	664	52	7.8
Total	12,958	8,805	21,763	1,122	5.5

No cases were reported in 2019 and 2020.

B. Parasitic Diseases

1. Malaria

Malaria is caused by infection with any of four species of the protozoan parasite *Plasmodium* (i.e., *P. falciparum*, *P. vivax*, *P. ovale*, *P. malariae*). The *Plasmodium* parasite is transmitted by the bite of an infected Anopheline mosquito. Until the 1940s, malaria was endemic in the United States.

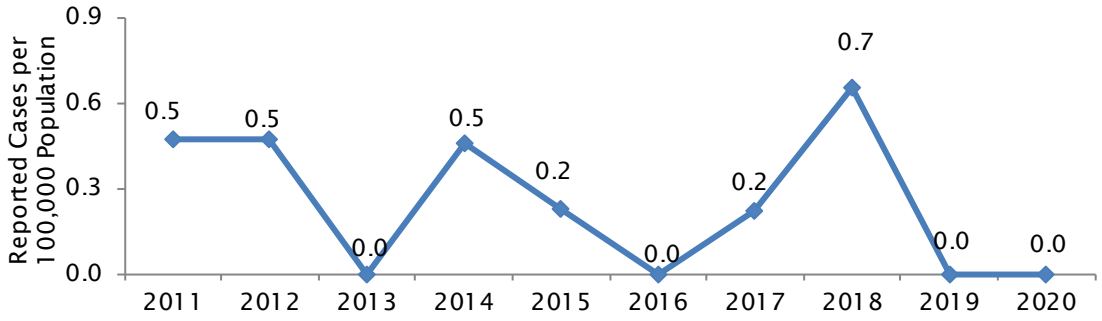
Anopheles mosquitoes are present in the Truckee Meadows, although not in dense enough numbers for local transmission of malaria to occur. The Truckee Meadows region does not have the breeding habitats to support larger populations of this mosquito.

The Healthy People 2020 national health objective for malaria is to reduce the number of cases of malaria reported in the United States from 1,298 new cases reported in 2008 to 999 new cases in 2020.

a. Reported Incidence

No cases were reported in 2019 and 2020.

Figure 7.1 Annual Rates of Reported Cases of Malaria, Washoe County, 2011 – 2020



b. Population Affected

There were no reported cases in 2019 and 2020.

C. Mosquito-Borne Disease Surveillance, Prevention & Control

The Washoe County Health District's Vector-Borne Disease Program (VBDP) conducts field surveillance, prevention, and control activities in Washoe County for diseases transmitted to people by animal vectors.

1. Surveillance

Mosquito-borne disease surveillance consists of monitoring conditions necessary for viral disease transmission, including adequate extrinsic incubation temperature and a minimum density of mosquitoesand the presence of virus in sentinel animal vectors. These contributing conditions are monitored in order to evaluate the risk of virus transmission to humans.

a. Environmental Conditions

Extrinsic incubation temperature refers to the temperature needed for the pathogen to survive and multiply within the hemocoel (a blood-containing body cavity) and salivary glands of the mosquito. Daily average temperatures must exceed 65° F for Western Equine Encephalitis (WEE) and 75° F for Saint Louis Encephalitis (SLE) for 10 days or

more. The optimal average daily temperature for West Nile Virus (WNV) appears to be approximately 80°F.

b. Mosquito Population Density

Adult mosquito surveillance is conducted through the use of New Jersey Light Traps. The minimum density of mosquitoes required for transmission of WEE and SLE is 10 or more females per New Jersey trap per night. The minimum density for WNV appears to be lower, although the value has not yet been determined definitively. Densities of vector-competent mosquito species are plotted against daily average temperatures, providing a "real-time" indicator of disease transmission risk.

c. Testing for the Presence of Arboviruses

1) Sentinel Chickens

Studies show that sentinel birds will test positive for antibodies to WEE, SLE and WNV approximately two weeks before the disease occurs in humans. This provides a window of opportunity to increase control efforts in the geographic area where the virus is identified.

No sentinel chickens were utilized during the 2019 and 2020 seasons.

2) Wild Birds

No wild birds were tested for Arboviruses during the 2019 season. One Rock Wren was tested during the 2020 season and was negative for arbovirus.

3) Mosquitoes

Collection of adult female mosquitoes for arbovirus testing was conducted by WCHD-VBDP in cooperation with the Nevada State Department of Agriculture, Animal Disease Laboratory (ADL) and the Nevada State Department of Agriculture, Entomology Program. Adult female mosquitoes were trapped using a variety of trapping methods. VBDP staff trapped and identified (to the species and sex) of 7,080 mosquitoes from 355 pools in 2019 and 5,119 mosquitoes from 248 pools in 2020.

The Nevada State Department of Agriculture ADL performed tests (RT-PCR) for all pools, which included tests for the primary arboviruses of concern. This included the Flaviviruses West Nile Virus and St. Louis Encephalitis (family *Flaviviridae*, genus *Flavivirus*) and the Alphavirus Western EquineEncephalomyelitis (family *Togaviridae*, genus *Alphavirus*). Results are typically reported within 24-48 hours of submission allowing the VBDP and other participating agencies to respond to foci of infected mosquito populations with appropriate control measures.

No mosquito pools tested positive for Arboviruses during the 2019 and 2020 seasons.

2. Mosquito Abatement

a. Ground and Aerial Larvicides and Aerosol Fog Applications

The use of ArcGIS software and digital orthophotography (provided by Washoe County

IT-GIS) has become a standard tool in conducting field surveys and aerial larvicide applications. Digital maps provide for highly accurate larvicide applications while GPS units simultaneously records treated areas. Table 1.2 shows the numbers of acres treated and numbers of treatment.

Table 7.2 Acres Treated for Mosquito Control, 2019 and 2020

	2,019		2020	
Method/Location	Acres Treated	Number of Treatments	Acres Treated	Number of Treatments
Larvicide Applications	4,557	60	1,684	67
Adulticide Fog Applications	2,384	10	455	4
Totals	6,941	70	2,139	71

b. Storm Drain Catch Basins

A geodatabase (ArcGIS® software) is used to manage the survey and treatment data and is currently populated with over 20,000 catch basins. Field staff utilize mobile GIS/GPS "PDA's" (Nomad®) equipped with ArcPad® software allowing digital maps to be taken into the field. This equipment automates field data collection (e.g., date visited, number of larvae present, treatment used, etc.) as well as integrates the data into the geo-database. Continued surveillance of storm drain catch basins confirms that they are a significant source of urban mosquitoes, especially *Culex pipiens* and *Culiseta incidens*. No storm drain treatments were conducted during the 2019 season. Thirty-two storm drains were treated during the 2020 season.

II. Flea-borne Diseases

A. Plague

Plague, caused by the bacterium *Yersinia pestis*, is endemic in most of the western United States. It is transmitted by fleas and often associated with exposure to rodents. When outbreaks occur in rodent populations, there is often a "die off" of the rodent host population and fleas seek new hosts for blood meals. People living in or visiting areas where there has been a rodent die off are at increased risk for contracting plague.

a. Reported Incidence

No cases of plague (*Yersinia pestis*) were reported in Washoe County in 2019 or 2020.

b. Population Affected

No cases of plague (*Yersinia pestis*) were reported in Washoe County in 2019 or 2020.

B. Surveillance, Prevention and Control

1. Animal Testing

The VBDP screens and submits rodents to the Nevada Department of Agriculture Animal Diseases Lab (ADL) to test for *Yersinia pestis*. Zero (0) of four (4) rodent tissue specimens collected by VBDP staff tested positive for plague by ADL using fluorescent antibody testing. Results are summarized below.

No animals were tested for plague during the 2019 and 2020 seasons.

2. Flea Suppression

The VBDP conducts regular flea suppression in Washoe County to reduce the risk of plague. Rodent burrows are treated with a dust insecticide, DeltaDust®, that kills fleas on rodents and fleas in the burrow. Treatment sites are chosen based on history of plague activity, flea load of reservoir rodent populations and areas of human recreation.

In 2019 the VBDP conducted flea suppression at the following locations:

- Bartley Ranch Regional Park
- Sparks Marina
- Sand Harbor

No flea suppression was conducted during the 2020 season.

III. Tick-Borne Diseases

A. Lyme Disease

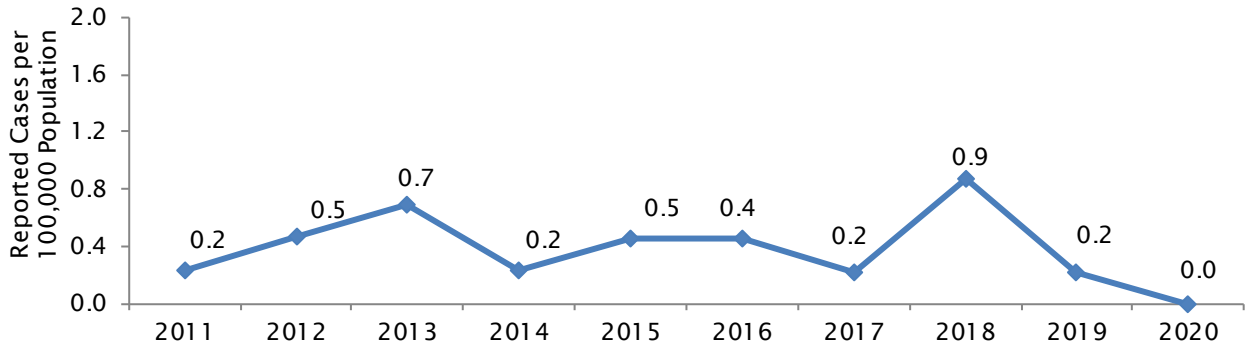
Lyme disease, caused by infection with *Borrelia burgdorferi* and less commonly by *Borrelia mayonii*, is not common in Nevada. Data from 2019 indicate a total of 23,453 confirmed cases were reported in the U.S. for an incidence rate of 7.1 cases per 100,000 population. While most cases are reported from the northeastern, north-central and Pacific coastal regions, occasional cases occur in the interior western U.S. In the northeastern and north-central United States, the blacklegged tick or deer tick *(Ixodes scapularis*) transmits Lyme disease. In the Pacific coastal United States, the disease is spread by the Western blacklegged tick (*Ixodes pacificus*). Other tick species found in the United States have not been shown to transmit *Borrelia burgdorferi*.

The Healthy People 2010 national health objective for Lyme disease is 9.7 new cases per 100,000 population in endemic states; there is no Healthy People 2020 objective for Lyme disease.

a. Reported Incidence

Zero (0) confirmed case of Lyme disease and one (1) probable case reported in Washoe County in 2019. Zero cases were reported in 2020.

Figure 7.2 Annual Rates of Reported Cases of Lyme Disease, Washoe County, 2011 – 2020



b. Population Affected

The 2019 probable case occurred among an elderly male. Disease was acquired outside of Nevada. Case was not hospitalized and received treatment. No deaths were reported in 2019 and 2020.

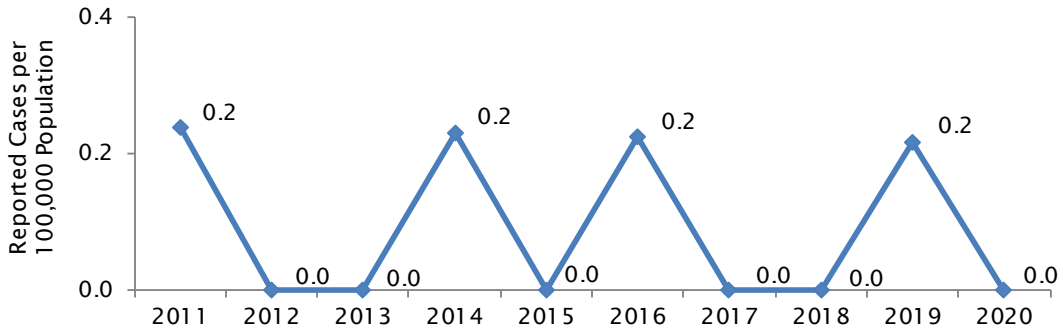
B. Relapsing Fever

Relapsing fever is caused by several species of spirochetes in the genus *Borrelia*. In tick-borne relapsing fever (TBRF) the bacterium is transmitted to humans via ticks in the family *Argasidae*. Rodents are the reservoirs for relapsing fever in North America. Locally, TBRF is caused by *Borrelia hermsii* and is seen occasionally in the Lake Tahoe basin. The tick vector is *Ornithodoros hermsi*. Outbreaks occur occasionally in limited areas of the western U.S. and Canada. Relapsing fever is reportable in Nevada but not nationally.

a. Reported Incidence

One (1) confirmed case of relapsing fever was reported in Washoe County in 2019 and zero (0) cases in 2020.

Figure 7.3 Annual Rates of Reported Cases of Relapsing Fever, Washoe County, 2011 – 2020



b. Population Affected

The 2019 confirmed case was White, non-Hispanic male in 70+ age group. Disease was determined to be likely acquired in California. Case was hospitalized for 9 days.

No deaths were reported in 2019 and 2020.

C. Tick-Borne Disease Surveillance, Prevention and Control

VBDP staff will identify submitted ticks and refer residents to recommended testing resources and defer treatment recommendations to residents' primary care physicians. The program does not test or make determinations of disease transmission of ticks submitted for identification.

In 2019 no ticks were identified or tested for spirochetes.

Five (5) ticks were submitted for identification including 2 *Otubius megnini* and 3 *Ixodes pacificus* in 2020. All *Ixodes pacificus* submitted were from cases traveling from California.

IV. Rabies

A. Human Rabies

Worldwide, an estimated 30,000 to 50,000 deaths are due to rabies each year. Rabies in humans is a rare occurrence in the United States with an average of less than 5 cases per year. In the U.S., rabies in domestic animals such as dogs, cats and cattle has declined dramatically since the 1950s. This decrease is mainly due to rabies vaccination programs and stray animal control by animal control agencies.

a. Reported Incidence

No human cases of rabies were reported in Washoe County in 2019 and 2020.

b. Population Affected

No human cases of rabies were reported in Washoe County in 2019 and 2020.

B. Animal Rabies

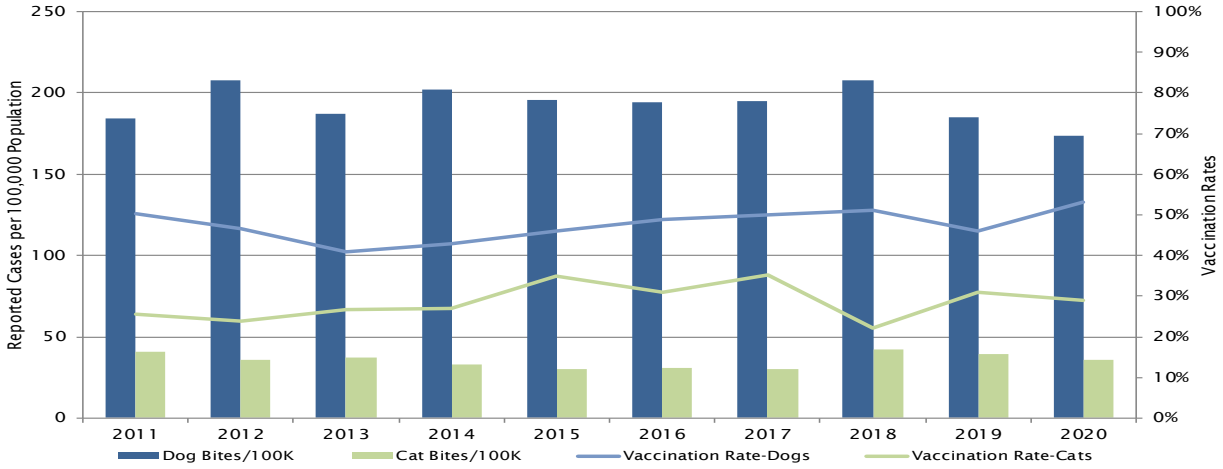
Nine (9) bats tested positive for rabies in Washoe County in 2019 and two (2) in 2020. All rabies testing in Nevada is performed by the Animal Disease Lab using rabies fluorescent antibody.

C. Surveillance, Prevention and Control

Effective in 2008, all animal bite reports received by WCHD are directly entered into the Washoe County Animal Control Authority's (WCACA) database to ensure a timely investigation and appropriate quarantine procedures. The following data were reported

by WCACA.

Figure 7.4 Animal Bite Incidence & Vaccination Status*, Washoe County, 2011-2020



*Vaccination Rates were calculated by: Number of animals with confirmed current rabies vaccination at time of bite incident/Total number of bite incidents

V. Hantavirus

A. Hantavirus Pulmonary Syndrome (HPS)

In 1993, a respiratory illness caused by a previously unknown viral pathogen was described among residents of the southwestern U.S. Hantavirus Pulmonary Syndrome, as it was termed, was subsequently recognized throughout the contiguous U.S. and the Americas. The virus found to cause HPS was later identified and named Sin Nombre Virus (SNV). From 1993 to 2019, 816 cases of hantavirus have been reported in the United State.

Hantavirus Pulmonary Syndrome (HPS)

a. Reported Incidence

Two cases (2) of hantavirus disease were reported in Washoe County in 2019 and one (1) case in 2020.

b. Population Affected

In 2019, one male and one female case were reported. Both cases were White, non-Hispanic. One case was hospitalized for 9 days. One case died.

In 2020, one male case was reported. He was hospitalized for one day and died.

B. Surveillance, Prevention and Control Activities

Hantavirus is endemic in Washoe County. Past surveillance has indicated that about 17% of deer mice (*Peromyscus maniculatus*) are infected with hantavirus in Washoe County. Because of the wide distribution of deer mice and the endemic nature of hantavirus the best means of preventing infection is avoidance of mice and their droppings. Regular testing has been discontinued since 2013 in Washoe County.

TECHNICAL NOTES

I. Data Sources & Data Providers

The following table lists data sources and data providers for this report.

Data Sources & Providers, WCHD Annual Communicable Disease Summary, 2020

Section of Report	Data Sources	Data Provider (Division/Program)
Enteric Diseases	NBS FBI Complaints Outbreak Inventory	Epi Program Epi Program EHS - Outbreak Inventory
Hepatitis	NBS Hepatitis B Surveillance Hepatitis C Surveillance WebIZ	EPHP - Epi Program EPHP - Epi Program EPHP - Epi Program
Other Reportable Diseases	NBS & CD Log	EPHP - Epi Program
Sexually Transmitted Diseas	STD*MIS & NBS eHARS/HIV CTS Data STIS & Patagonia	CCHS - STD Program CCHS - HIV/AIDS Program EPHP - Epi Program & CCHS
Tuberculosis	Patagonia & NBS	CCHS - TB Program
Vaccine Preventable Disease	NBS & CD log WebIZ	EPHP - Epi Program CCHS - Immunization Program
Vector-Borne Diseases	NBS Vector Surveillance Data Chameleon	EPHP - Epi Program EHS - Vector Program Washoe County Regional Animal Services

NBS=NEDSS (National Electronic Disease Surveillance System) Base System; FBI=Foodborne Illness; STD*MIS = Sexually Transmitted Diseases Management Information System; eHARS=Enhanced HIV/AIDS Reporting System; CTS=Counseling, Testing, and Services; STIS=Sexually Transmitted Infections Surveillance; EPHP=Division of Epidemiology & Public Health Preparedness; EHS=Division of Environmental Health Services; CCHS=Division of Clinical and Community Health Services; CD=Communicable Disease; ORT=Outbreak Response Team

II. Washoe County Population Data for 2020

The total population estimate for Washoe County was 464,898 for 2019 and 470,557 for 2020. Population breakdown by demographic characteristics is described in the following table.

Population Estimates by Demographics, WCHD Annual Communicable Disease Summary, 2020

Gender	Male	236,302		**Age group**	<1	5,828
	Female	234,255			1-4	23,250
	Total	**470,557**			5-14	59,526
Race/Ethnicity	White, non-Hispanic	294,716			15-24	65,140
	Black, non-Hispanic	12,055			25-34	65,529
	Native American, non-Hispanic	7,419			35-44	61,180
	Asian, non-Hispanic	33,539			45-54	55,309
	Hispanic	122,828			55-64	59,183
	Total	**470,557**			65-74	47,272
					75-84	21,873
					85+	6,466
					Total	470,557

Denominators used in this report for the time period 2008-2017 were adjusted based on population estimates data for 2008-2017 provided by NDPBH in June 2018. Therefore, there were slight changes in the respective historical incidence rates in this report compared to those published previously.