



District Health Department
Washoe County, Nevada



2004 Annual Communicable Disease Summary



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INTRODUCTION

Communicable diseases are a continuing threat to all people, regardless of age, gender, lifestyle, ethnic background or socioeconomic status. They cause illness, suffering and even death, and place an enormous financial burden on society. Although some communicable diseases have been controlled by modern advances, new ones are constantly emerging. The Washoe County District Health Department relies on healthcare providers, laboratories, and others to report the occurrence of notifiable diseases. Without such data, trends cannot be accurately monitored, unusual occurrences of diseases (such as outbreaks) might not be detected or appropriately responded to, and the effectiveness of control and prevention activities cannot be easily evaluated.

Under the direction of the District Health Officer, staff of the Washoe County District Health Department (WCDHD) Communicable Disease Control Program coordinates the countywide disease surveillance and reporting system. They work in conjunction with the following prevention and control programs: tuberculosis (TB), foodborne illness, sexually transmitted disease (STD), HIV/AIDS, vaccine preventable diseases and vector-borne diseases.

Nevada Administrative Code Chapter 441A* identifies diseases of public health significance that must be reported to the Washoe County District Health Department. Persons required to report include health care providers and directors of hospitals, diagnostic laboratories, schools, child care 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 transmission. Data are collected, maintained and analyzed at the program level. The 2004 Annual Communicable Disease Summary is a compilation of communicable disease surveillance data in Washoe County. It is recognized these data have some limitations:

- 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. Also, the health care provider may fail to report the case as required by law. For example, it has been estimated that the number of reported cases of salmonellosis is only 1-5% of the true number.**
- Cases that are reported are 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 like TB than vector-borne diseases like Lyme disease. Also, 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. They help to identify demographic groups at higher risk of illness for which programs can target interventions. Further, analysis of surveillance data allows for identification of disease trends and may help to detect disease outbreaks or epidemics.

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 WCDHD Epi Center at (775)-328-2447 for additional information or comments.

* NAC 441 A <http://www.leg.state.nv.us/nac/NAC-441A.html>

** Chalker RB, Blaser MJ, A review of human salmonellosis: III. Magnitude of Salmonella infection in the United States. Rev Infect Dis 1988; 10:111-24.

SUMMARY

Table A. Total Reported Cases of Selected Communicable Diseases by Year, Washoe County, 1999 – 2004.

Disease	1999	2000	2001	2002	2003	2004
AIDS	33	30	30	30	29	33
Campylobacteriosis	37	70	38	37	29	38
Chlamydia trachomatis, genital	803	951	1057	984*	991	1158
<i>E. coli</i> 0157:H7	8	3	3	6	5	2
Giardiasis	57	36	42	21	22	50
Gonorrhea	182	189	204	182*	202	352
<i>Hemophilus influenzae</i> type b	0	0	1	1	0	0
Hepatitis A	30	17	12	18	29	6
Hepatitis B (Acute)	19	10	11	10	9	8
Hepatitis B (Chronic)	86	59	66	65	55	69
Hepatitis C (Acute)	4	4	2	6	3	3
Hepatitis C (past or present)	NC**	NC**	NC**	580***	1070	968
HIV infection	41	57	64	47	43	52
Listeriosis	0	0	2	0	0	1
Malaria	0	4	4	1	1	1
Measles	1	0	0	0	0	0
Meningococcal invasive disease	1	0	1	5	1	3
Mumps	2	0	0	0	1	1
Pertussis	0	4	14	3	5	12
Rotavirus	225	247	202	141	110	120
RSV	188	409	279	382	450	389
Rubella	0	0	0	0	0	0
Salmonellosis	39	38	24	17	36	31
Shigellosis	28	17	12	15	11	1
Syphilis (primary and secondary)	0	1	1	4	4	2
Tuberculosis	20	14	25	13	30	19
Typhoid Fever	1	0	4	2	0	1

* Total number of diseases in this table may vary slightly from the total used for data analysis in the disease specific section. This variation is due to the time frame selected for analysis.

** Not counted.

*** HCV surveillance began May 1, 2002.

Table B. Cases per 100,000 Persons of Selected Communicable Diseases by Year, Washoe County, 2000-2004.

Disease	2000	2001	2002	2003	2004	Healthy People 2010 Target
Campylobacteriosis	21.0	10.9	10.0	10.2	9.9	12.3
Salmonellosis	11.4	6.8	5.0	8.3	8.1	6.8
<i>E. coli</i> 0157:H7	0.9	0.8	1.7	0.5	0.5	1.0
Meningococcal invasive disease	0.0	0.3	1.4	0.8	0.8	1.0
Listeriosis	0.0	0.6	0.0	0.3	0.3	0.25
Gonorrhea	56.7	57.9	50.4	94.3	91.8	19.0
Syphilis (primary and secondary)	0.29	0.28	1.1	0.5	0.5	0.2
Tuberculosis	4.2	7.1	3.6	5.1	5.0	1.0

ENTERIC DISEASES

I. Bacterial Enteric Diseases

A. Campylobacteriosis

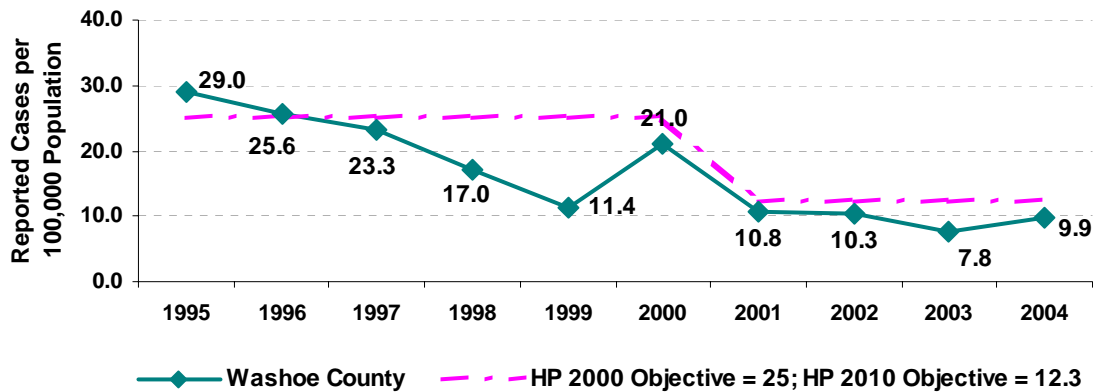
Campylobacter is the most common bacterial cause of diarrheal illness in the United States. Campylobacteriosis usually occurs in single, sporadic cases, but it can also occur in outbreaks. Campylobacteriosis is most commonly associated with handling raw poultry or eating raw or undercooked poultry meat.

1. Reported Incidence

Preliminary FoodNet Data on the Incidence of Infection with Pathogens Transmitted Commonly Through Food – Selected Sites, United States, 2004 describes surveillance data for 2004 and compares them with 1996-1998 baseline data. In 2004, the estimated national incidence of campylobacteriosis was 12.9 cases per 100,000 population. This is a 31% decline from the baseline estimated incidence of campylobacteriosis -- indicating progress toward meeting the Healthy People 2010 national health objective of 12.3 cases per 100,000 population.

Thirty-eight (38) laboratory-confirmed cases of campylobacteriosis were reported in Washoe County in 2004 for a reported incidence of 9.9 cases per 100,000 population.

Figure 1.1 Rates of Reported Cases of Campylobacteriosis, Washoe County, 1995 – 2004.



2. Population Affected

The median age of cases in Washoe County was 42.5 (range = 1 to 80 years); 19 (50%) of the reported cases were male. No deaths were reported.

Table 1.1 Reported Campylobacteriosis Cases by Race/Ethnicity, Washoe County, 2004.

Race/Ethnicity	Number of Cases	Percent of Cases	# Cases Per 100,000
White	26	68	9.5
Black	0	0	0.0
Hispanic	8	21	11.1
Native American	1	3	13.8
Asian	3	8	14.0

Figure 1.2 Campylobacteriosis Cases by Age and Gender, Washoe County, 2004.

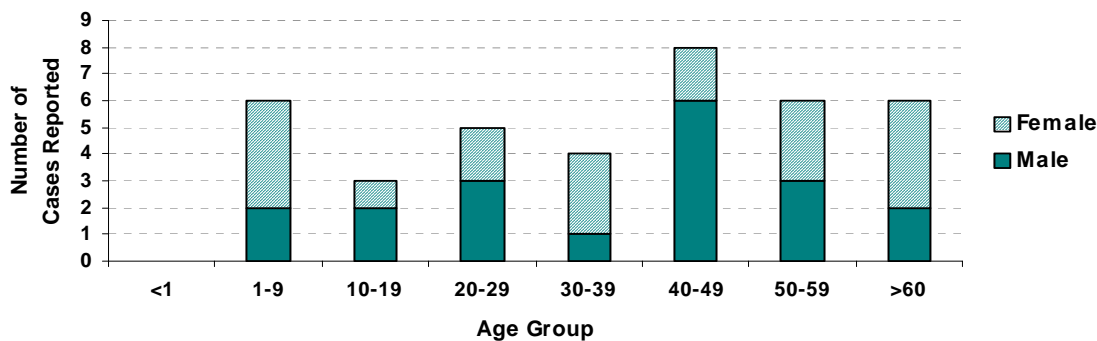


Table 1.2 Reported Risk Factors Among Campylobacteriosis Cases, Washoe County, 2004.

Risk Factor	Number of Cases	%
Foodborne Illness	12	33
Contact with animals	2	6
Travel	6	17
Unknown/Other/Missing	18	44

B. *Escherichia coli* O157:H7, ETEC & STEC

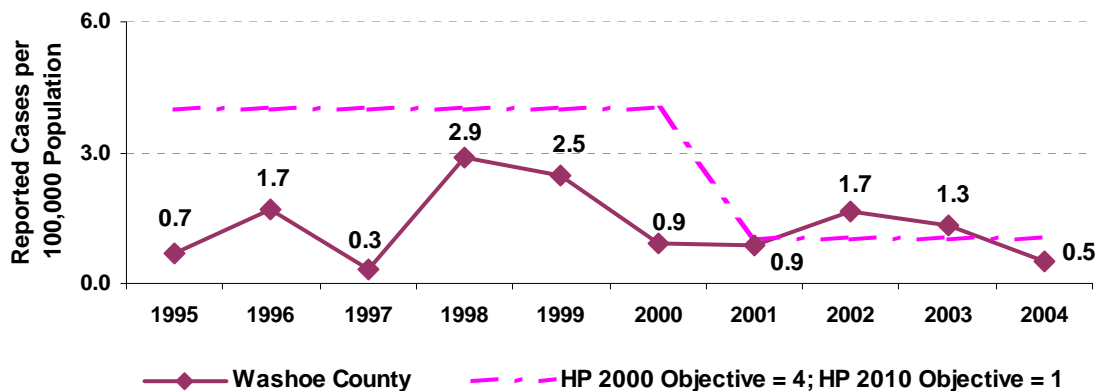
Escherichia coli O157:H7 infection is an emerging cause of foodborne illness. Infection often leads to bloody diarrhea. Hemolytic uremic syndrome (HUS) is a serious, sometimes fatal complication often associated with *E. coli* O157:H7 and other shiga toxin-producing *E. coli* (STEC). Most illness has been associated with eating undercooked, contaminated ground beef. 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 child care centers is also an important mode of transmission.

1. Reported Incidence

Preliminary FoodNet Data on the Incidence of Infection with Pathogens Transmitted Commonly Through Food – Selected Sites, United States, 2004 describes surveillance data for 2004 and compares them with 1996-1998 baseline data. In 2004, the estimated national incidence of *E. coli* O157:H7 infection was 0.9 cases per 100,000 population. This is a 42% decline from the baseline estimated incidence of *E. coli* O157:H7 infection -- indicating we have met the Healthy People 2010 national health objective of 1.0 case per 100,000 population.

Two (2) laboratory-confirmed cases of *E. coli* O157:H7 infection were reported in Washoe County in 2004 for a reported incidence of 0.5 cases per 100,000 population. No cases of HUS were reported in Washoe County in 2004.

Figure 1.3 Rates of Reported Cases of *E. coli* 0157:H7 Infection, Washoe County, 1995 – 2004.



2. Population Affected

One case was a 17-year-old, White/non-Hispanic male. The second case was a 40-year-old, Black/non-Hispanic female. Potential risk factors in these two cases included employment as a foodhandler, contact with a child who attends a child care facility and employment in a health care facility.

3. Restaurant-Associated Outbreaks of ETEC

In 2004, there were five clusters of diarrhea cases of unknown etiology among patrons of two affiliated sushi restaurants (SR-A and SR-B) in Reno, Nevada. The Health Department thoroughly investigated all five clusters. Stool specimens from patrons and employees tested at the Nevada Public Health Laboratory were negative for routine bacteria and norovirus. Due to the persistent reporting of diarrhea cases associated with the restaurants, stool specimens were sent to CDC for further studies.

In August 2004, CDC detected enterotoxigenic *Escherichia coli* (ETEC) in a stool sample from an ill SR-A patron. In December 2004, the fifth cluster of diarrhea cases occurred among SR-B patrons. Epidemic Intelligence Officers from the CDC came to assist the Health Department in investigating these baffling case clusters.

A case-control study found illness associated with consuming shrimp, yellowtail fish and soda. Implicated foods were distributed to multiple area restaurants, but only SR-B patrons reported illness.

ETEC was identified as the etiologic agent of two outbreaks of diarrhea -- and suspected in three other outbreaks of diarrhea -- linked to SR-A and SR-B. Staff observed inappropriate food handling practices at SR-B -- including poor hand hygiene and improper cooling of cooked foods -- that most likely contributed to repeated ETEC outbreaks at these restaurants.

The full report on the investigation of these outbreaks is available from the WCDHD Epi Center.

C. Listeriosis

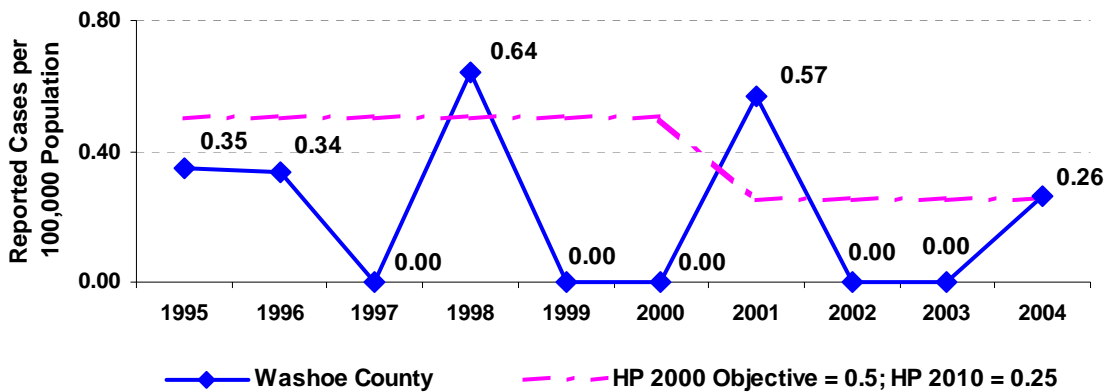
Listeriosis is a serious infection caused by eating food contaminated with the bacterium *Listeria monocytogenes*. In the United States, an estimated 2500 persons become seriously ill with listeriosis each year. Approximately 20% of these infections are fatal.

1. Reported Incidence

Preliminary FoodNet Data on the Incidence of Infection with Pathogens Transmitted Commonly Through Food – Selected Sites, United States, 2004 describes surveillance data for 2004 and compares them with 1996-1998 baseline data. In 2004, the estimated national incidence of listeriosis was 0.27 cases per 100,000 population. This is a 40% decline from the baseline estimated incidence of listeriosis -- indicating we are very close to meeting the Healthy People 2010 national health objective of 0.25 cases per 100,000 population.

One (1) laboratory-confirmed case of listeriosis was reported in Washoe County in 2004 for an incidence of 0.3 cases per 100,000 population.

Figure 1.4 Rates of Reported Cases of Listeriosis, Washoe County, 1995 – 2004.



2. Population Affected

One (1) case of listeriosis was reported in Washoe County in 2004. The case was a 71-year-old White/non-Hispanic female with no identified risk factors.

D. Salmonellosis

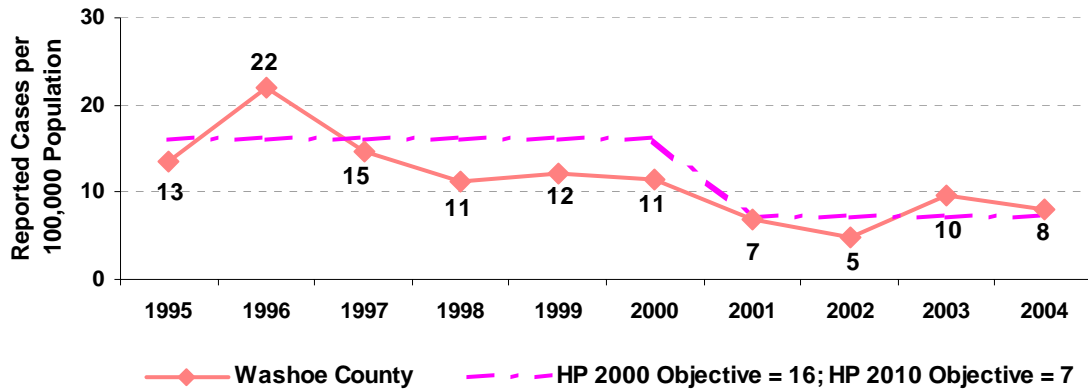
Salmonellosis is a bacterial infection that is transmitted among people and/or animals via the fecal-oral route. Although foods of animal origin are one source of *Salmonella*, transmission through fresh produce and direct contact has been increasingly recognized. Salmonellosis is one of the most frequently reported foodborne illnesses in the United States. Approximately 40,000 cases of salmonellosis are reported nationally every year.

1. Reported Incidence

Preliminary FoodNet Data on the Incidence of Infection with Pathogens Transmitted Commonly Through Food – Selected Sites, United States, 2004 describes surveillance data for 2004 and compares them with 1996-1998 baseline data. In 2004, the estimated national incidence of salmonellosis was 14.7 cases per 100,000 population. This is an 8% decline from the baseline estimated incidence of salmonellosis -- indicating modest progress toward meeting the Healthy People 2010 national health objective of 6.8 cases per 100,000 population.

Thirty-one (31) laboratory-confirmed cases of salmonellosis were reported in Washoe County in 2004 for a reported incidence of 8.1 cases per 100,000 population.

Figure 1.5 Rates of Reported Cases of Salmonellosis, Washoe County, 1995 – 2004.



Preliminary FoodNet Data on the Incidence of Infection with Pathogens Transmitted Commonly Through Foods – Selected Sites, United States, 2004 states that of the 92% of *Salmonella* isolates serotyped in 2004, five serotypes accounted for 56% of infections: 20% *S. typhimurium*, 15% *S. enteritidis*, 10% *S. newport*, 5% *S. heidelberg*, and 7% *S. javiana*. The Nevada State Public Health Laboratory or the Centers for Disease Control and Prevention (CDC) serotyped all *Salmonella* isolates reported in Washoe County in 2004.

Table 1.3 *Salmonella* Isolates, Washoe County, 2004.

Group	Salmonella Isolate Serotype	Number of Cases	Percent of Cases
A	paratyphi A	1	3
B	chester	1	3
B	typhimurium	4	13
B	typhimurium var copenhagen	1	3
C2	newport	1	3
D	enteritidis	5	16
D	dublin	1	3
D	berta	15	49
	subspecies 1, serotype I 45:Hs	1	3
	undetermined	1	3
	subspecies 1, serotype 4,5,12:i:-	1	3
Total		31	100

2. Population Affected

The elderly, infants and those with impaired immune systems are more likely to have severe symptoms of salmonellosis. In 2004, the median age of cases in Washoe County was 32 years with a range of 1 to 87 years of age.

Nine (9) food handlers with salmonellosis were identified in 2004. All were excluded from performing sensitive duties at work. All were allowed to return to work when stool specimens were laboratory-confirmed negative for *Salmonella*.

Table 1.4 Reported Salmonellosis Cases by Race and Ethnicity, Washoe County, 2004.

Race/Ethnicity	Number of Cases	Percent of Cases	Cases per 100,000 Persons
White/non-Hispanic	19	61	6.9
Hispanic	6	19	8.3
Other	6	19	16.2

Figure 1.6 Salmonellosis Cases by Age and Gender, Washoe County, 2004.

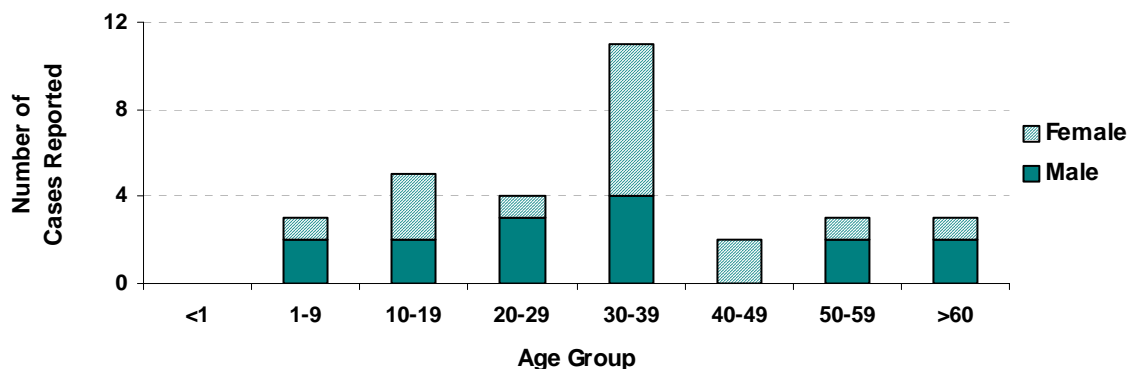


Table 1.5 Reported Risk Factors Among Salmonellosis Cases, Washoe County, 2004.

Risk Factors	Number of Cases	%
Contact with high risk animal (reptile)	1	3
Contact with symptomatic person	5	16
Travel	3	10
Egg consumption	1	3
Epi-linked to outbreak	7	23
Foodborne illness, unspecified	4	13
Unknown	10	32

3. Outbreak of *Salmonella berta* Associated with a Restaurant

An outbreak of gastrointestinal (GI) illness began January 30, 2004, among employees and customers of a restaurant in Reno, NV. Thirteen individuals reported becoming ill with vomiting and/or diarrhea. Of these 13 individuals, 9 were patrons and 4 were employees. Stool samples submitted by fifteen individuals tested positive for *Salmonella berta* – including 7 of the 9 patrons who reported illness, 4 symptomatic employees and 4 asymptomatic employees. Two symptomatic patrons and 4 symptomatic contacts to employees with laboratory-confirmed *S. berta* were also counted as epi-linked cases for a total of 21 cases associated with this outbreak.

Asymptomatic employees who tested positive for *S. berta* and all symptomatic employees were excluded from work until stool specimens proved negative for *S. berta* and the employees were no longer symptomatic. Food specimens and environmental swabs were negative for *Salmonella* species. There was no specific meal or food item implicated. The most likely cause of this outbreak was employees working while ill or while shedding *S. berta* asymptotically. Person-to-person transmission and sporadic contamination of multiple foods or environmental surfaces are the most likely explanations for this prolonged outbreak. The full report on the investigation of this outbreak is available from the WCDHD Epi Center.

E. Shigellosis

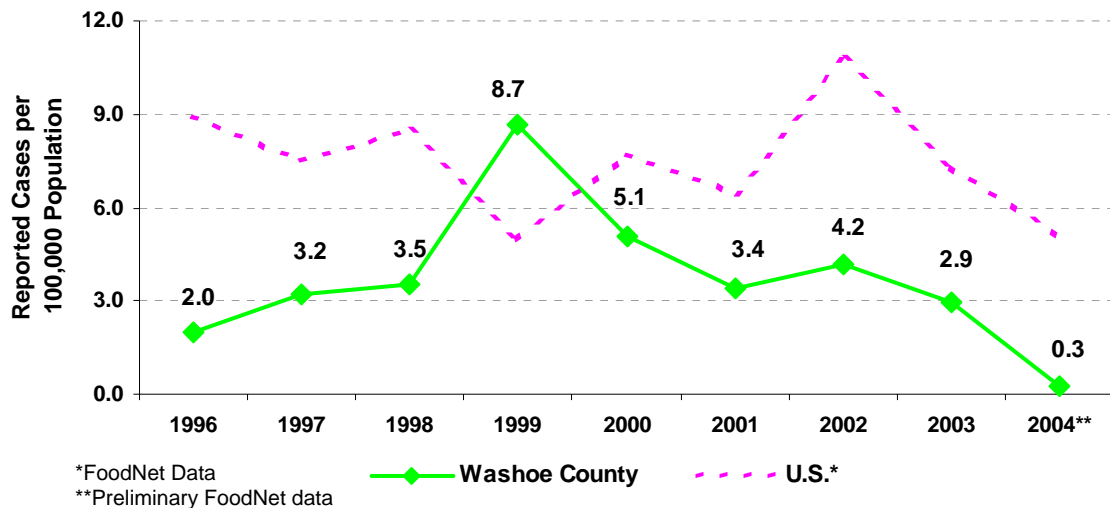
Shigellosis is a bacterial infection that is transmitted from person-to-person through the fecal/oral route. Approximately 18,000 cases of shigellosis are reported in the United States every year. Children, especially toddlers aged 2 to 4, are the most likely to get shigellosis. Many cases are related to the spread of illness in child care settings or in families with small children.

1. Reported Incidence

Preliminary FoodNet Data on the Incidence of Infection with Pathogens Transmitted Commonly Through Food – Selected Sites, United States, 2004 describes surveillance data for 2004 and compares them with 1996-1998 baseline data. In 2004, the estimated national incidence of shigellosis was 5.1 cases per 100,000 population. The estimated incidence of shigellosis did not change significantly from the 1996 – 1998 baseline incidence rate. A Healthy People 2010 national health objective has not been established for shigellosis.

One (1) laboratory-confirmed case of shigellosis was reported in 2004 for a reported incidence of 0.3 cases per 100,000 population.

Figure 1.7 Rates of Reported Cases of Shigellosis, 1996 – 2004.



2. Population Affected

One (1) laboratory-confirmed case of shigellosis was reported in 2004. The case was a 7-year-old white male with unknown risk factors. Worldwide, two-thirds of shigellosis cases are usually less than 10 years old.

F. Typhoid Fever

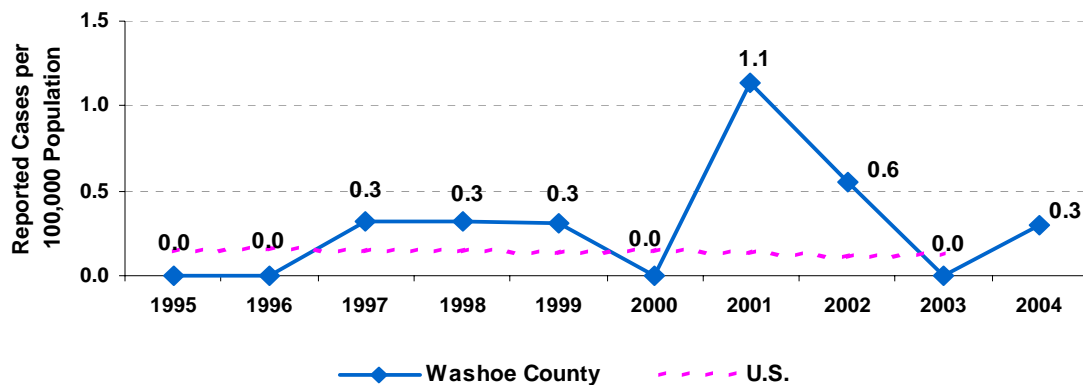
Typhoid fever is caused by *Salmonella typhi* and is transmitted from person-to-person through the fecal/oral route. Typhoid fever is a life-threatening illness. Two typhoid vaccines are currently available and are recommended for travelers to endemic countries.

1. Reported Incidence

The national incidence of reported typhoid fever cases in 2003 was 0.12 cases per 100,000 population. A Healthy People 2010 national health objective for typhoid fever has not been established.

One (1) laboratory-confirmed case of typhoid fever was reported in Washoe County in 2004 for an incidence of 0.3 cases per 100,000 population.

Figure 1.8 Rates of Reported Cases of Typhoid Fever, Washoe County, 1995 – 2004.



2. Population Affected

One case of laboratory-confirmed typhoid fever was reported in Washoe County in 2004. The case was a 43-year-old Asian male with a recent history of foreign travel. In the United States, about 400 cases occur each year; 70% of these are contracted during international travel. Travelers from the United States to Asia, Africa and Latin America are most at risk for infection.

G. *Vibrio vulnificus* and *Vibrio parahaemolyticus*

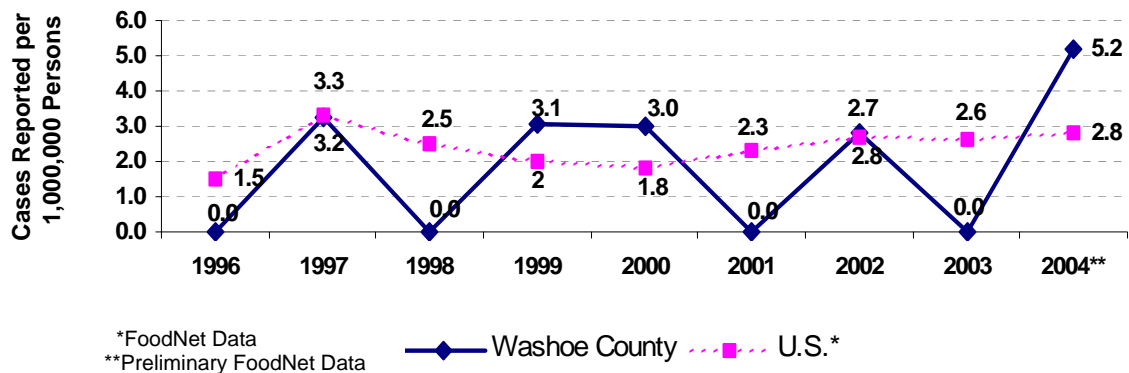
Vibrio vulnificus and *Vibrio parahaemolyticus* are bacteria in the same family as those that cause cholera. Both bacteria can cause disease in persons who eat contaminated seafood or have an open wound exposed to seawater. There is no evidence of person-to-person transmission. Both *V. vulnificus* and *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. Neither *V. vulnificus* nor *V. parahaemolyticus* infection is reportable in Nevada.

1. Reported Incidence

Preliminary FoodNet Data on the Incidence of Infection with Pathogens Transmitted Commonly Through Food – Selected Sites, United States, 2004 describes surveillance data for 2004 and compares them with 1996-1998 baseline data. In 2004, the estimated national combined incidence of *V. vulnificus* and *V. parahaemolyticus* infection was 2.8 cases per 1,000,000 persons. This is a 47% decrease from the 1996 – 1998 baseline incidence rate. A Healthy People 2010 national health objective has not been established for *V. vulnificus* and *V. parahaemolyticus* infection.

Although reporting is not mandatory in Nevada, two cases of laboratory-confirmed *V. parahaemolyticus* infection were reported in Washoe County in 2004 for an incidence of 5.2 cases per 1,000,000 persons.

Figure 1.9 Rates of Reported Cases of *V. vulnificus* and *V. parahaemolyticus* Infection, 1996 – 2004.



2. Population Affected

Two (2) laboratory-confirmed cases of *Vibrio parahaemolyticus* infection were reported in Washoe County in 2004. The cases were a 25-year-old, White/non-Hispanic female and a 39-year-old, White/non-Hispanic male. These unrelated cases both reported risk factors of eating a variety of fish and seafood within the incubation period, including sushi consisting of raw tuna and raw salmon.

H. Yersiniosis

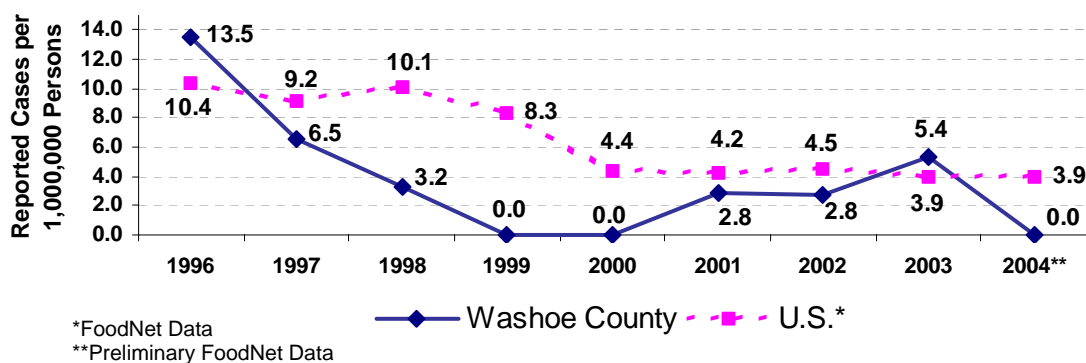
Yersiniosis is a relatively infrequent gastrointestinal disease. Symptoms of diarrhea and abdominal pain are caused by infection with *Yersinia enterocolitica*.

1. Reported Incidence

Preliminary FoodNet Data on the Incidence of Infection with Pathogens Transmitted Commonly Through Food – Selected Sites, United States, 2004 describes surveillance data for 2004 and compares them with 1996-1998 baseline data. In 2004, the estimated national incidence of yersiniosis was 3.9 cases per 1,000,000 population. This is a 45% decline from the baseline estimated incidence of yersiniosis. A Healthy People 2010 national health objective for yersiniosis has not been established.

No laboratory-confirmed cases of yersiniosis were reported in Washoe County in 2004.

Figure 1.10 Rates of Reported Cases of Yersiniosis, 1996 – 2004.



2. Population Affected

No laboratory-confirmed cases of yersiniosis were reported in Washoe County in 2004. Infection is most often acquired by eating contaminated food, especially raw or undercooked pork products. Children are infected more often than adults.

II. Parasitic Enteric Diseases

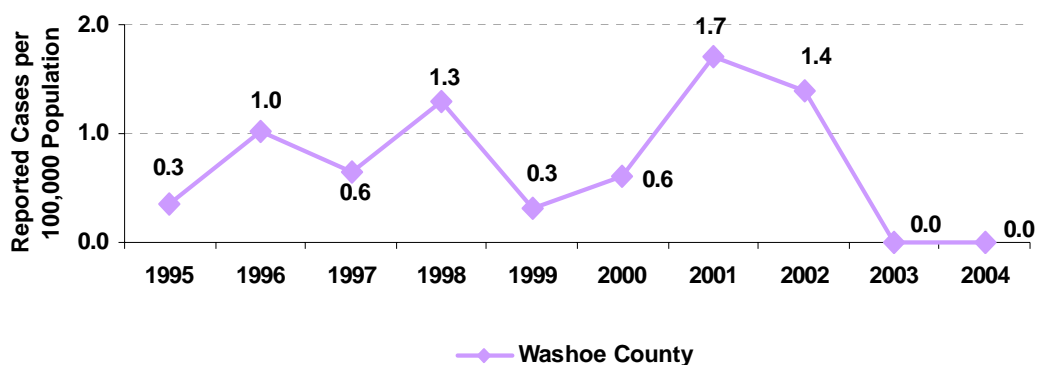
A. Amebiasis (*Entamoeba histolytica*)

Amebiasis is a diarrheal illness caused by a one-celled parasite - *Entamoeba histolytica*. Amebiasis is not a nationally notifiable disease in the U.S. therefore, national case data are not available.

1. Reported Incidence

No laboratory-confirmed cases of amebiasis were reported in Washoe County in 2004.

Figure 2.1 Rates of Reported Cases of Amebiasis, Washoe County, 1995 – 2004.



2. Population Affected

No laboratory-confirmed cases of amebiasis were reported in Washoe County in 2004. Amebiasis is most common in people who live in developing countries with poor sanitary conditions. In the United States, amebiasis is most often found in immigrants from developing countries. It also is found in people who have traveled to developing countries and in people who live in institutions that have poor sanitary conditions. Men who have sex with men (MSM) are also at risk for amebiasis.

B. Cryptosporidiosis

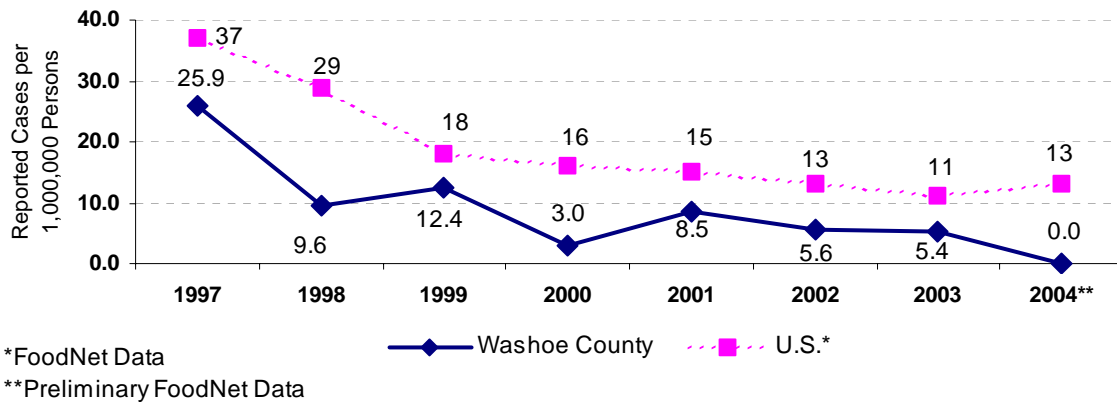
Cryptosporidiosis is a diarrheal disease transmitted via the fecal/oral route and caused by the parasite, *Cryptosporidium parvum*. It is found in the intestines of humans and animals and is passed in the stool into the environment. The parasite is protected by an outer shell and survives outside the body for long periods of time. It is very resistant to chlorine disinfection. *Cryptosporidium* is found in every region of the United States and throughout the world.

1. Reported Incidence

Preliminary FoodNet Data on the Incidence of Infection with Pathogens Transmitted Commonly Through Food – Selected Sites, United States, 2004 describes surveillance data for 2004 and compares them with 1996-1998 baseline data. In 2004, the estimated national incidence of cryptosporidiosis was 13.2 cases per 1,000,000 persons. This is a 40% decline from the baseline estimated incidence. A Healthy People 2010 national health objective has not been established for cryptosporidiosis.

No laboratory-confirmed cases of cryptosporidiosis were reported in Washoe County in 2004.

Figure 2.2 Rates of Reported Cases of Cryptosporidiosis, 1997 – 2004.



2. Population Affected

Men having sex with men is an identified risk factor for cryptosporidiosis. During the past two decades, *Cryptosporidium* has also become recognized as one of the most common causes of waterborne disease (drinking and recreational) in humans in the United States.

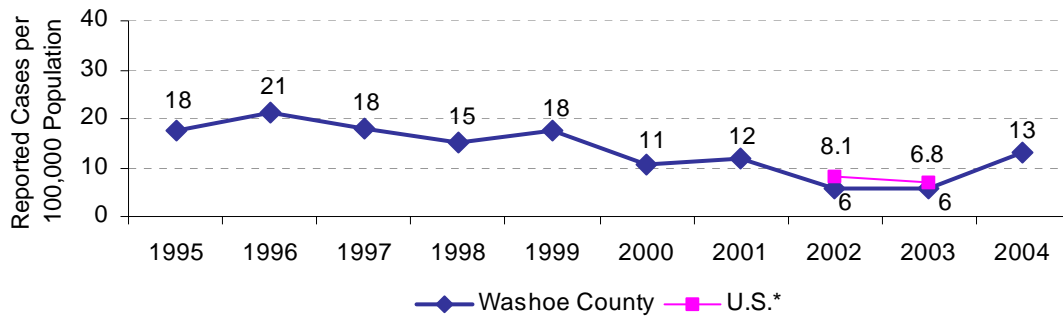
C. Giardiasis

Giardiasis is a diarrheal illness transmitted via the fecal/oral route and caused by a one-celled parasite - *Giardia lamblia*. *Giardia* live 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* are found in every region of the United States and throughout the world.

1. Reported Incidence

The national reported incidence of giardiasis in 2003 was 6.8 cases per 100,000 population. Fifty (50) laboratory-confirmed cases of giardiasis were reported in Washoe County in 2004 for a reported incidence rate of 13 cases per 100,000 population.

Figure 2.3 Rates of Reported Cases of Giardiasis, 1995 – 2004.



*Giardiasis was not nationally notifiable until 2002.

2. Population Affected

The median age of cases in Washoe County was 27 years with a range of 1 to 76 years. Twenty-eight (28) cases (56%) were male. 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 person-to-person and is a common cause of diarrhea in child care settings.

Figure 2.4 Giardiasis Cases by Age and Gender, Washoe County, 2004.

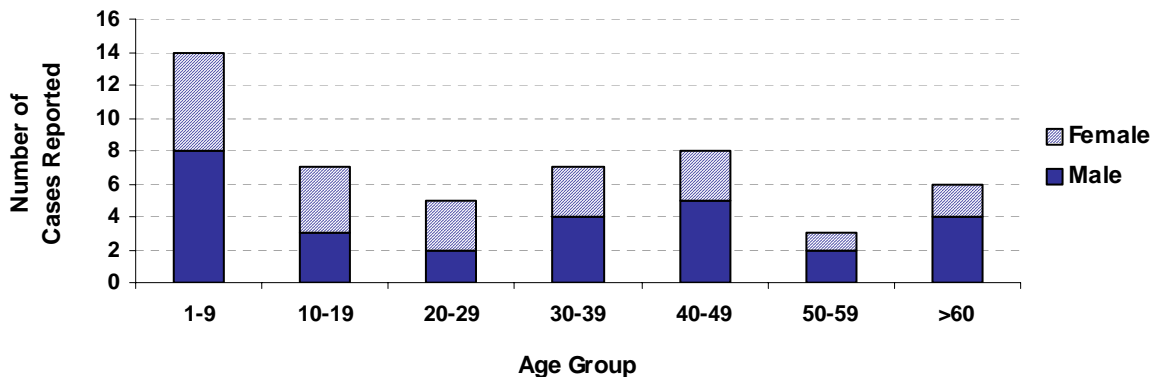


Table 2.1 Giardiasis Cases by Race and Ethnicity, Washoe County, 2004.

Race/Ethnicity	Number of Cases	Percent of Cases	Cases per 100,000 Persons
White/non-Hispanic	38	76	14
Hispanic	11	22	15
Other	1	2	3

Table 2.2 Reported Risk Factors Among Giardiasis Cases, Washoe County, 2004.

Risk Factor	Number of Cases	%
Contact with animals	10	23
Travel (Foreign Travel – 2)	7	16
Outdoor activities (hiking, swimming, camping, etc.)	13	30
Contact with symptomatic person (confirmed giardia)	1	2
Contact with children or employees in child care	5	12
Drank untreated water from outdoor source	4	9
GI medical procedure	2	5
Plumbing repairs	1	2

III. Viral Enteric Diseases

A. Norovirus

“Norovirus” was recently approved as the official genus name for the group of viruses provisionally called “Norwalk-like viruses” (NLV). 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 fecally 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.

In 2004, 239 foodborne disease outbreaks were reported to CDC. An etiology was reported in 152 (64%) of the outbreaks. The most common etiology was norovirus (57%). Most foodborne outbreaks of norovirus illness are the result of direct contamination of food by a food handler immediately before its consumption. Norovirus outbreaks in group living facilities are usually due to person-to-person, fomite and aerosol transmission. A public vomiting incident carries high risk for transmission to other nearby persons. Contaminated raw oysters, fruits, vegetables and water have also caused outbreaks.

Norovirus cases are not reportable in Nevada unless they are part of an outbreak. In Washoe County during 2004, norovirus was confirmed as the cause of outbreaks in six (6) group living facilities and one (1) restaurant; and was suspected in an outbreak at another group living facility. The final reports on the investigations of these outbreaks are available from the WCDHD Epi Center.

Table 3.1 Summary of Norovirus Outbreaks, Washoe County, 2004.

Facility	Etiology	Ill Persons	Symptoms	# of Cases	Mode of Transmission
Extended Care Facilities (4)	Norovirus	Data not collected	V D F Cr H Bd	Confirmed: 7 Probable: 127 Total ill: 134	PTP PSP
Independent Living Facility	Norovirus Suspected	Residents: 22 Employees: 5	V D F Cr	Confirmed: 0 Probable: 30 Total ill: 30	PTP
Independent & Assisted Living Facility	Norovirus	Residents: 14 Employees: 2	V D F Cr	Confirmed: 2 Probable: 14 Total ill: 16	PTP CES PVI
Assisted Living Facility	Norovirus	Residents: 21 Employees: 14	V D F Cr H	Confirmed: 3 Probable: 32 Total ill: 35	PTP CES
Restaurant	Norovirus	Patrons: 4	V D F Cr H	Confirmed: 1 Probable: 3 Total ill: 4	PTP

Mode of Transmission:

PTP – Person to person
PVI – Public vomiting incident
ICT – Improper cooling techniques
IF – Infected foodhandler
CES – Contamination of environmental surfaces
PSP – Poor sanitation practices

Symptoms:

V – vomiting
D – diarrhea
F – fever
Cr – abdominal cramps
H – headache
Bd – bloody diarrhea

IV. Surveillance, Prevention and Control

A. Investigation of Consumer Complaints

In 2004, the Division of Environmental Health Services (EHS) Food Safety Program received 302 complaints involving 902 individuals with reported foodborne illness. Fifteen (15) outbreaks were investigated during 2004.

Food borne 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 surveillance and investigation of foodborne illness complaints in the Washoe Health District. The purpose of these investigations is not to diagnose individuals but to identify and halt potential epidemics of foodborne illness.

The number of complaints averaged 25 per month and ranged from 19 in September to 33 in June. In 2001 – 2004, the number of complaints received per month averaged 17, 19, 20 and 25, respectively. In 2004, 233 (77%) of the foodborne illness complaints were investigated. The remaining 69 (23%) were not investigated due to incomplete information or because the reported symptoms were inconsistent with a foodborne illness.

All foodborne illness or food product complaints that involved a product regulated by the FDA or USDA were forwarded to the respective agency.

Figure 4.1 Foodborne Illness and Food Product Complaints Received by Month, WCDHD, 2001 – 2004.

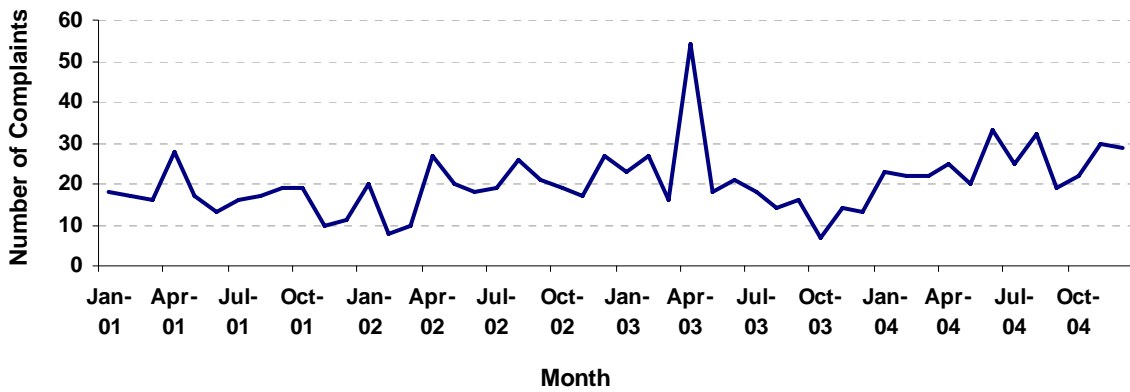
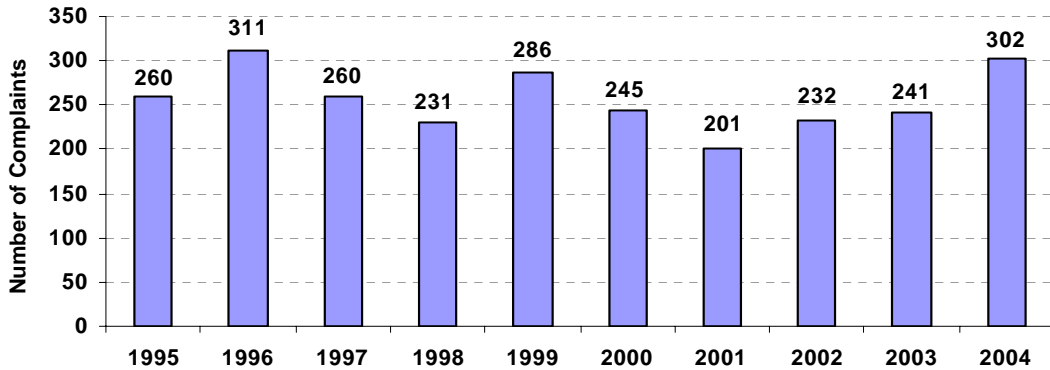


Figure 4.2 Foodborne Illness Complaints, WCDHD, 1995 – 2004.



B. Exclusion of Ill Food Handlers

Forty-two (42) food service workers were excluded from work in 2004 to prevent transmission of confirmed or suspected diseases through handling food. Of the 42 food service workers excluded, 38 were associated with outbreak investigations. All workers were allowed to return to work after District Health Department staff determined they were no longer contagious.

C. Consumer Alerts and Recalls

The Food Safety Program also monitored consumer alert and recall notices on the internet. Most of the recalls and alerts did not affect Washoe County residents, as the products were not distributed in 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.

HEPATITIS

“Hepatitis” is a general term for inflammation of the liver. It is characterized by jaundice, hepatomegaly, anorexia, abdominal and gastric discomfort, abnormal liver function, clay-colored stools and dark urine. Hepatitis may be caused by bacterial or viral infection, parasitic infestation, alcohol, drugs, toxins or transfusion of incompatible blood. It may be mild and brief, or severe, fulminant and life threatening.

I. Hepatitis A Virus (HAV) Infection

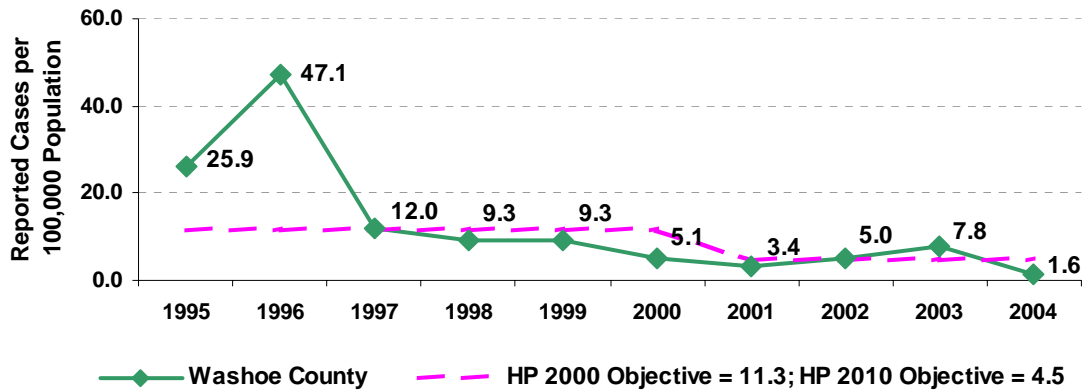
A. Epidemiology

HAV is transmitted from person-to-person via the fecal/oral route. Children have the highest rates of HAV infection, are often asymptomatic, and are a primary source of acute infection to household members and contacts in child care facilities. 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.

1. Reported Incidence

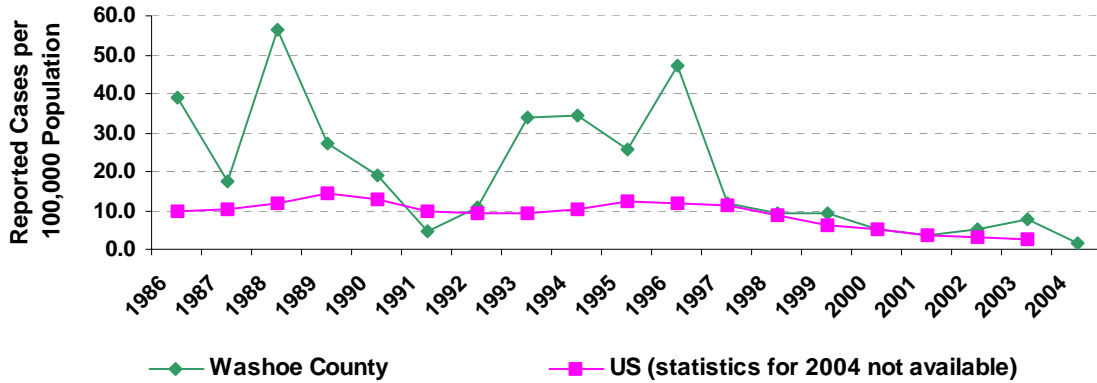
Six laboratory-confirmed cases of acute hepatitis A were reported in 2004 for a reported incidence of 1.6 cases per 100,000 population. *This is the lowest number of recorded cases of acute hepatitis A in Washoe County since 1971 when one case was reported.* The Healthy People 2010 national health objective for acute HAV is 4.5 cases per 100,000 population. In 2003, the national incidence of acute hepatitis A was 2.7 cases per 100,000 population.

Figure 1.1 Rates of Reported Acute Hepatitis A Cases, Washoe County, 1995 – 2004.



HAV infection follows a cyclic pattern. In the United States, epidemics of HAV infection have been observed with peaks in 1961, 1971 and 1989. Washoe County has observed peaks in 1985, 1988 and 1996.

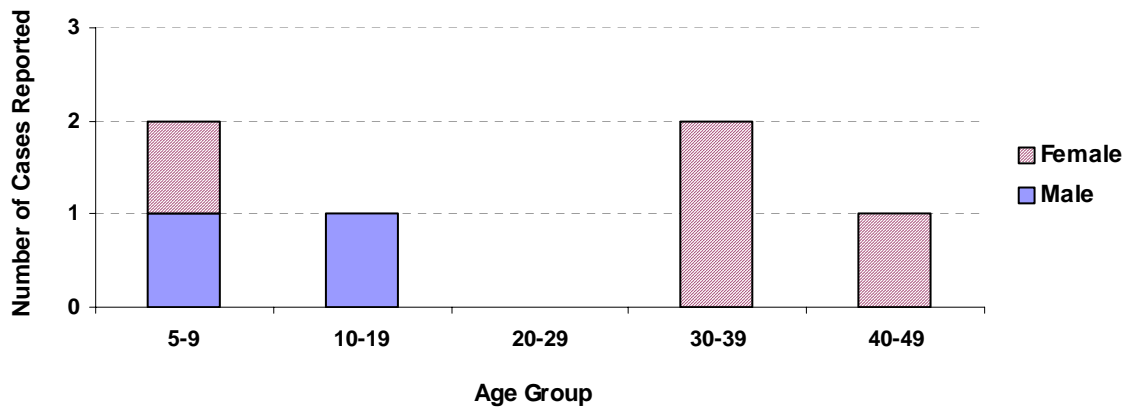
Figure 1.2 Rates of Reported Acute Hepatitis A Cases, Washoe County, 1986 – 2004.



2. Population Affected

In 2004, the median age of acute hepatitis A cases was 22.5 years with a range of 8 to 47 years. Three cases (50%) were white and 3 (50%) were Hispanic.

Figure 1.3 Reported Hepatitis A Cases by Age and Gender, Washoe County, 2004.



Three persons (50%) with acute hepatitis A reported history of travel outside of the U.S. or Canada in the two to six weeks prior to symptom onset.

Table 1.1 Reported Risk Factors Among Acute Hepatitis A Cases, Washoe County, 2004 (n=6).

Risk Factor (not mutually exclusive)	Number of Cases	%
Travel outside of U.S. or Canada	3	50
Female with one male sex partner	3	50
Illicit drug use	1	17
Contact of a suspected or confirmed case of hepatitis A	1	17

B. Prevention and Control

1. Postexposure Prophylaxis

An attempt was made to contact all acute HAV cases to identify exposed contacts. A total of 34 contacts were identified.

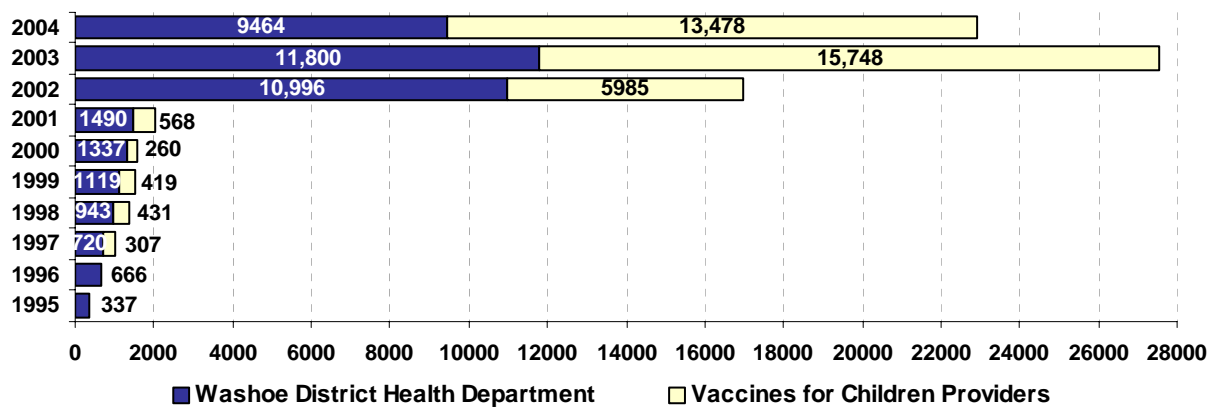
Table 1.2 Disposition of HAV Contacts, Washoe District Health Department, 2004.

Disposition	Total	Percent
IG recommended and received	29	85
IG recommended but contact non-compliant	3	9
History of at least one dose HAV vaccine	2	6
Total	34	100
Contact Index (number of contacts per case) = 5.7		

2. Routine Hepatitis A Vaccination

HAV vaccine first became available in 1995. Since 2002, HAV vaccination has been required for all students entering the Washoe County School District or any private educational setting in Washoe County.

Figure 1.4 Total Doses of HAV Vaccine Administered, Stratified by Provider, 1995 – 2004.



II. Hepatitis B Virus (HBV) Infection

A. Surveillance Case Definitions

1. Acute HBV infection

A case must have an acute illness with

- discrete onset of symptoms, and
- jaundice or elevated serum alanine aminotransferase (ALT or SGPT) levels.

A case must also meet the following laboratory criteria:

- IgM anti-HBc (IgM antibody to hepatitis B core antigen) positive, or HBsAg (hepatitis B surface antigen) positive
- IgM anti-HAV negative (if done).

2. Chronic HBV Infection

A case must meet the following laboratory criteria:

- HBsAg positive, total anti-HBc positive (if done), and IgM anti-HBc negative, or
- HBsAg positive two times at least 6 months apart.

B. Epidemiology

Hepatitis B virus (HBV) is transmitted from person-to-person via blood and sexual contact. Five percent (5%) of persons with acute HBV infection will develop chronic HBV infection. An estimated 1.25 million persons in the U.S. have chronic HBV infection, and are a reservoir for transmission of HBV. Household, sexual and needle-sharing contacts of persons with chronic HBV infection should be vaccinated. Chronic HBV infection may be asymptomatic. There may be no evidence of liver disease or there may be a spectrum of disease ranging from chronic hepatitis to cirrhosis or liver cancer.

1. Acute Hepatitis B

a. Reported Incidence

Eight (8) laboratory-confirmed cases of acute hepatitis B were reported in 2004 for a reported incidence of 2.1 cases per 100,000 population. The Healthy People 2010 national health objective for acute HBV infection is divided into specific age groups (see Figure 2.1). In 2003, the national incidence of acute hepatitis B was 2.6 cases per 100,000 population.

Figure 2.1 Rate of Reported Cases of Acute Hepatitis B vs. Healthy People 2010 National Health Objective, Washoe County, 2004.

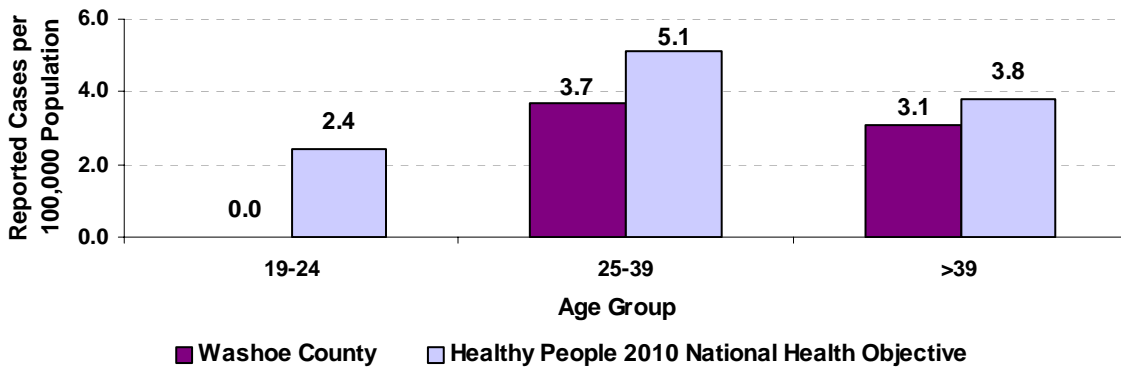
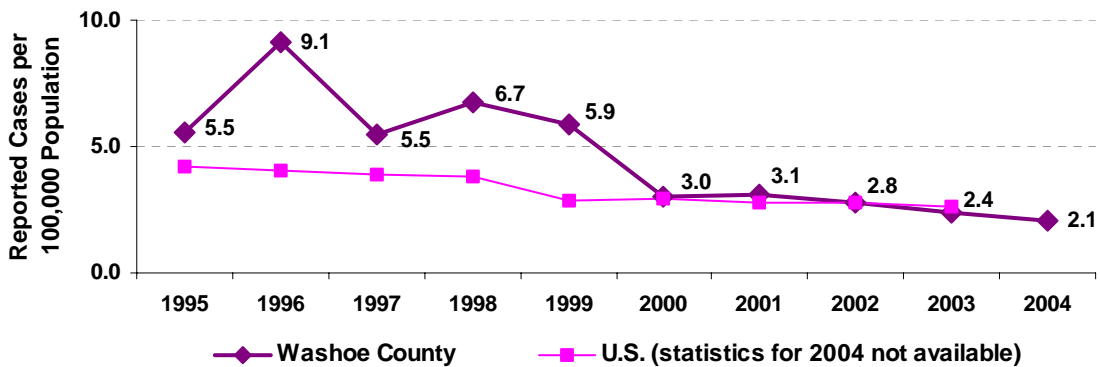


Figure 2.2 Rates of Reported Cases of Acute Hepatitis B, Washoe County, 1995 – 2004.



b. Population Affected

In 2004, the median age of acute hepatitis B cases was 40.5 years with a range of 32 to 74 years. Five (5) cases (62.5%) were male; 7 (87.5%) were white.

Figure 2.3 Reported Cases of Acute Hepatitis B by Age and Gender, Washoe County, 2004.

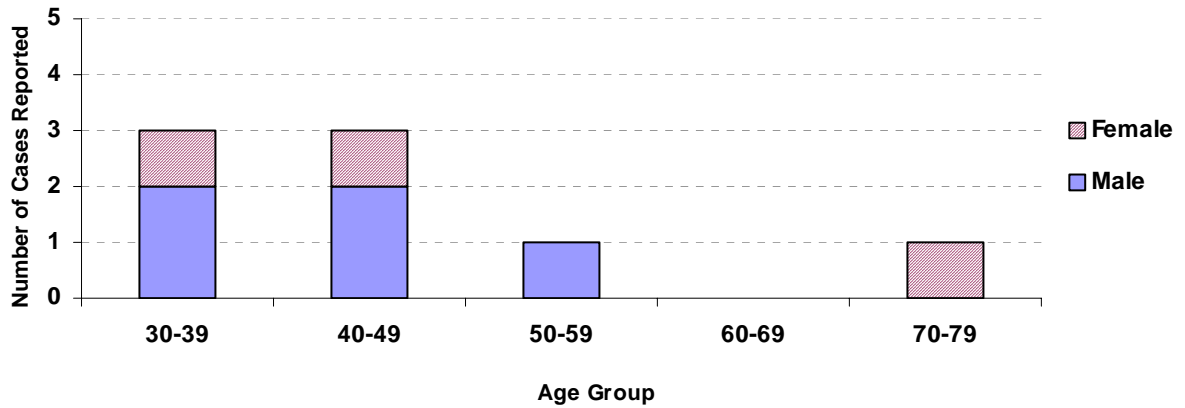


Figure 2.4 Reported Cases of Acute Hepatitis B by Race/Ethnicity, Washoe County, 2004.

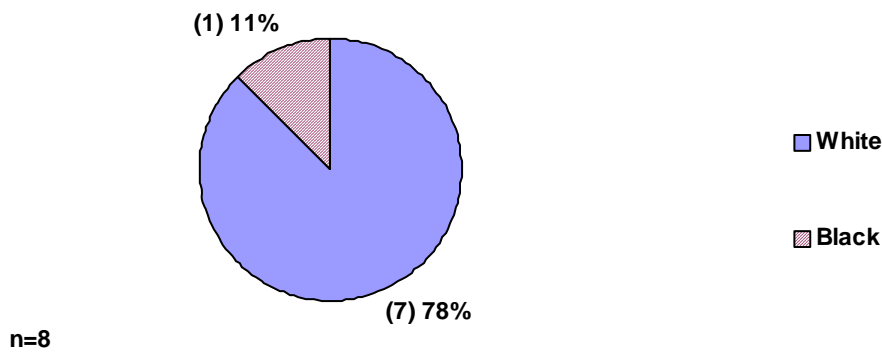


Table 2.1 Reported Risk Factors Among Acute Hepatitis B Cases, Washoe County, 2004.

Risk Factor (not mutually exclusive)	Number of Cases	%
Used street drugs but did not inject	5	63
Injected drugs not prescribed by a doctor	3	38
Incarcerated for longer than 24 hours	3	38
Blood exposure (not health care related, includes sharing needles)	3	38
Male with sexual contact with 1 female partner	3	38
Male with sexual contact with 2-5 female partners	2	25
Dental work or oral surgery	2	25
Female with sexual contact with 2-5 male partners	1	13
Female with sexual contact with 1 male partner	1	13
Body piercing other than ear	1	13
Hospitalized	1	13
Incarcerated for longer than 6 months	1	13
Tattoo	1	13
Ever treated for a sexually transmitted disease	1	13
Denied any risk factors	1	13

2. Chronic Hepatitis B Infection

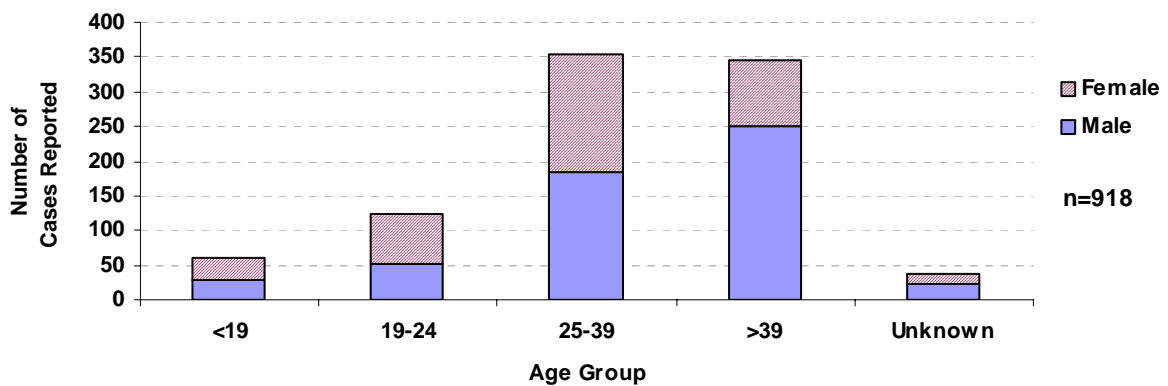
a. Reported Incidence

From 1990-2004, 918 cases of chronic HBV infection have been reported in Washoe County. Of the 125 cases reported in 2004, 69 cases had not previously been reported in Washoe County. Thirty (30) of the 69 newly reported chronic HBV cases (43.5%) in 2004 were female.

Nineteen pregnant women with chronic HBV infection were reported in 2004. Ten cases (53%) were newly reported. Fourteen (14) of the 19 women (74%) gave birth in 2004. Five (5) women (26%) had not given birth as of December 31, 2004.

b. Population Affected

Figure 2.5 Chronic HBV Cases by Age at Time of Diagnosis and Gender, Washoe County, 1990-2004.



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. Up to 90% of infants infected at birth will develop chronic HBV infection.

Figure 2.6 Chronic HBV Cases by Race/Ethnicity, Washoe County, 1990-2004.

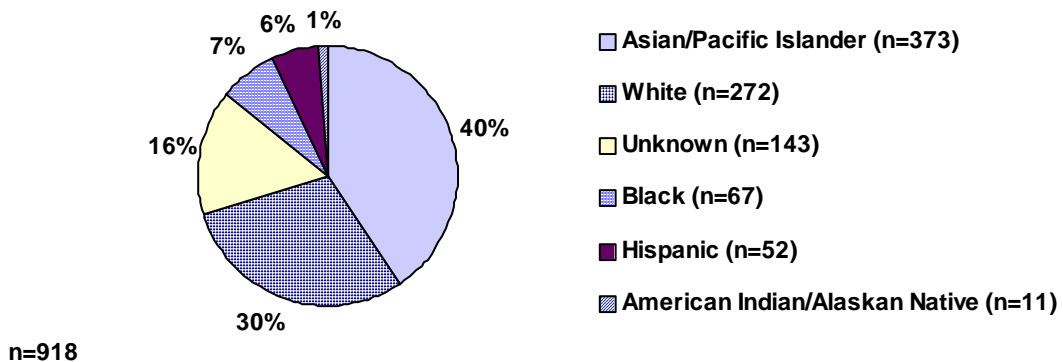


Figure 2.7 Newly Reported Chronic HBV Cases by Age and Gender, Washoe County, 2004.

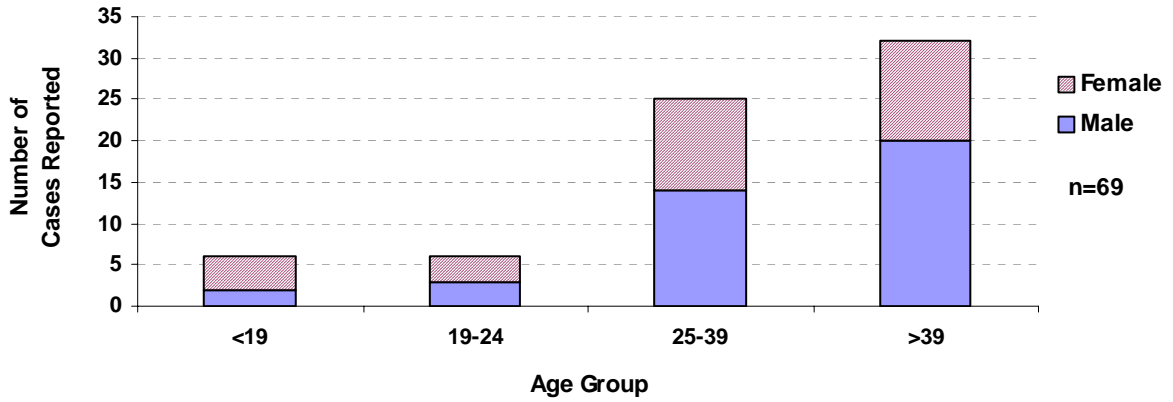
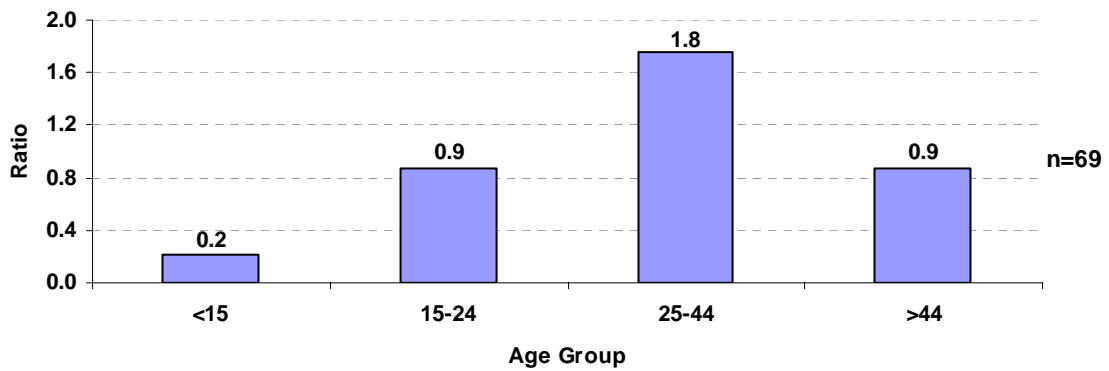


Figure 2.8 Age-Specific Ratio* of Newly Reported Chronic HBV Cases, Washoe County, 2004.



*Ratios were calculated by:
$$\frac{\% \text{ of demographic group with condition}}{\% \text{ of overall population comprised by this demographic group}}$$

Figure 2.9 Newly Reported Chronic HBV Cases by Race/Ethnicity, Washoe County, 2004.

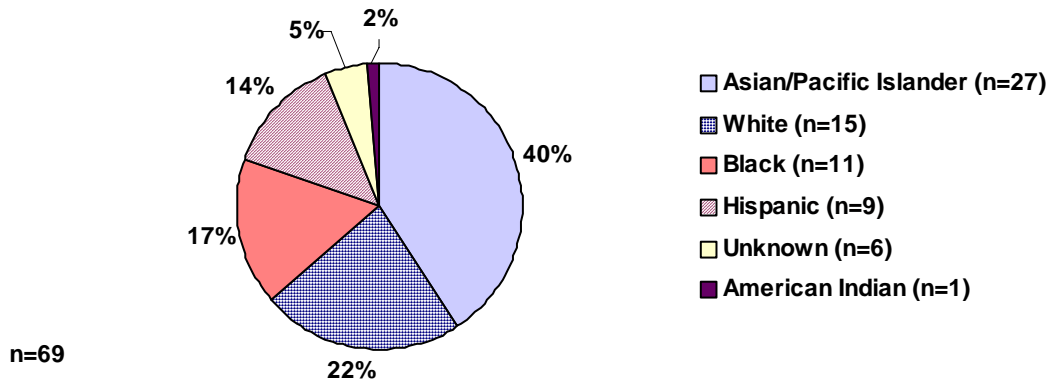
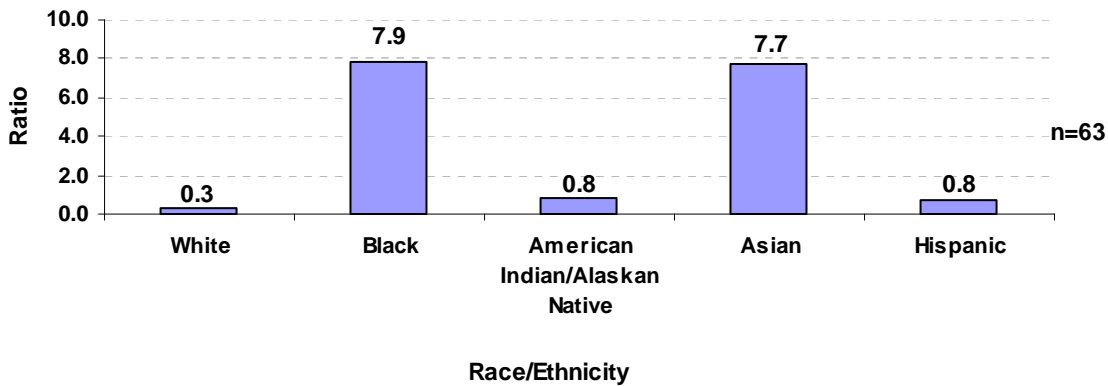


Figure 2.10 Race/Ethnicity-Specific Ratio* of Newly Reported Chronic HBV Cases, Washoe County, 2004.



*Ratios were calculated by:
$$\frac{\% \text{ of demographic group with condition}}{\% \text{ of overall population comprised by this demographic group}}$$

Figure 2.11 Pregnant Women with Chronic HBV by Race/Ethnicity, Washoe County, 2004.

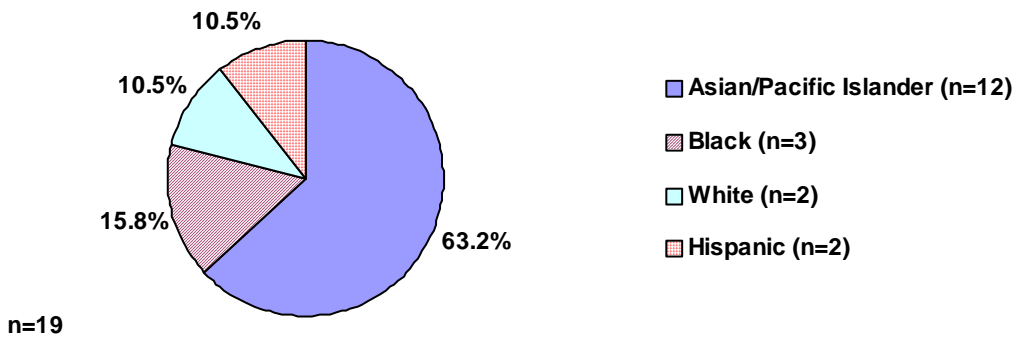
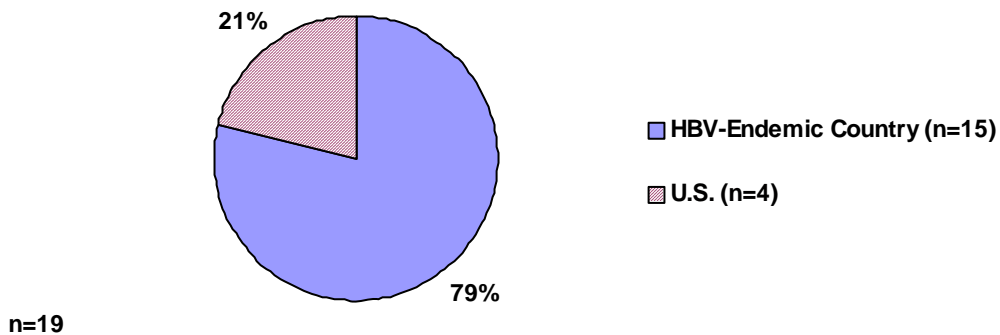


Figure 2.12 Pregnant Women with Chronic HBV by Birth Country, Washoe County, 2004.



C. Prevention and Control

The household and sexual contacts of all persons with acute or chronic HBV infection are eligible for testing and/or vaccination by the Perinatal Hepatitis B Prevention Program.

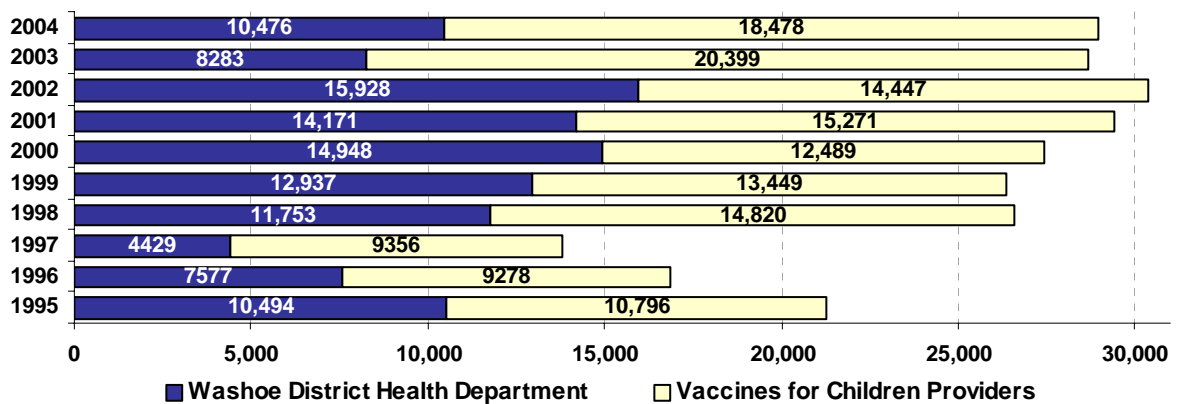
1. Hepatitis B Immune Globulin (HBIG) for Postexposure Prophylaxis

No household or sexual contacts of acute hepatitis B cases received HBIG in 2004.

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. On July 1, 2002, all students entering a public or private school for the first time in Washoe County were required to have proof of immunity to HBV.

Figure 2.13 Doses of HBV Vaccine Given, Stratified by Provider, 1995 – 2004.



3. Screening and Vaccination of Contacts to Chronic HBV Infection

The Perinatal Hepatitis B Prevention Program (PHBPP) identifies pregnant women with HBV infection and offers HBIG, HBV vaccine and seroscreening tests to their newborns, household and sexual contacts. In 1992, the program expanded to include the household and sexual contacts of *all* persons with HBV infection.

Between 1990-2004, the PHBPP identified 726 household and sexual contacts of persons with chronic HBV infection. Of the 726 contacts, 419 (58%) completed seroscreening. Thirty-one (7.4%) already had chronic HBV infection; 187 (44.6%) were already immune; and 201 (48%) were susceptible. The PHBPP referred all susceptible contacts to the WCDHD Immunization Program or to their health care provider to complete the three-dose series of HBV vaccine. One-hundred seven (107) susceptible contacts (53%) completed the hepatitis B vaccine series between 1990 and 2004.

Table 2.2 Immune Status of Household and Sexual Contacts of Chronic HBV Cases, Washoe County, 1990-2004.

# Seroscreened	Results				Susceptible Contacts Who Completed 3-dose HBV Vaccine Series
	Chronic HBV	Immune	Susceptible	Total	
419	31	187	201	419	107
% of total	7.4	44.6	48.0	100	53

In 2004, 140 household and sexual contacts to cases of chronic HBV infection were identified; 61 (44%) were seroscreened. Eight (8) susceptible contacts (23%) completed the HBV vaccine series.

Table 2.3 Household and Sexual Contacts (Identified in 2004) of Chronic HBV Cases, Washoe County, 2004.

Total Identified	# Seroscreened	Results			
		Chronic HBV	Immune	Susceptible	Total
140	61	6	21	34	61
% of Total	44	10	34	56	100

4. Infants Born to HBsAg-Positive Women

Nineteen (19) infants were born to women with chronic HBV infection in 2004. All 19 infants (100%) received HBIG and HBV vaccine within 12 hours of birth, as recommended. In 2004, births to women with chronic HBV infection accounted for 0.3% of the 6362 births that occurred in Washoe County.

Twelve (12) infants completed post-vaccination seroscreening in 2004. Ten of these infants were born in 2003. One infant was born in 2000 and one was born in 2001, but neither had completed post-vaccination seroscreening previously.

Perinatal intervention with HBIG and HBV vaccine successfully protected all 12 infants, who were seroscreened in 2004, from HBV infection. They all tested positive for anti-HBs and negative for HbsAg. All had received HBIG and hepatitis B vaccine within 12 hours of birth.

Table 2.4 Post-Vaccination Testing of Infants Born to HBsAg-Positive Women, Washoe County, 2004.

Total Sero-screened	Test Results		Hep B		Age at Completion of		
			HBIG	Dose 1	3-Dose Hepatitis B		
			Within	Within	Vaccine Series		
	HBsAg negative	anti-HBs positive	12 Hrs. of Birth	12 Hrs. of Birth	6 months	7 months	8 months
12	12	12	12	12	10	1	1
% of total	100	100	100	100	83.3	8.3	8.3

III. Hepatitis C Virus (HCV) Infection

A. Surveillance

1. Surveillance Case Definitions

a. Acute Hepatitis C

Clinical case definition:

- An acute illness with a) discrete onset of symptoms (such as nausea, vomiting, abdominal pain and diarrhea); and b) jaundice or abnormal serum alanine aminotransferase (ALT or SGPT) levels.

Laboratory criteria for diagnosis:

- Serum alanine aminotransferase levels greater than 7 times the upper limit of normal, and IgM anti-HAV negative (if done), **and**
- IgM anti-HBc negative, or if not done, HBsAg negative, **and**
- Anti-HCV positive (repeat reactive) by EIA verified by an additional, more specific assay (e.g., RIBA for anti-HCV or RT-PCR for HCV RNA), **or**
- Anti-HCV positive (repeat reactive) by EIA with average signal to cut-off ratio ≥ 3.8 .

Case classification:

- Confirmed: a case that meets the clinical case definition and is laboratory confirmed.

b. Hepatitis C Virus Infection – Past or Present

Clinical description

- Most HCV-infected persons are asymptomatic. However, many have chronic liver disease, which can range from mild to severe including cirrhosis, and/or liver cancer.

Laboratory criteria

- Anti-HCV positive (repeat reactive) by EIA, verified by an additional, more specific assay (e.g., RIBA for anti-HCV or RT-PCR for HCV RNA), or
- Anti-HCV positive (repeat reactive) by EIA with average signal to cut-off ratio ≥ 3.8 , or
- Anti-HCV positive by RIBA alone, or
- HCV RNA positive.

Case Classification

- Confirmed: A case that is laboratory confirmed.
- Probable: A case that is anti-HCV positive (repeat reactive) by EIA and has alanine aminotransferase (ALT or SGPT) values above the upper limit of normal, but the anti-HCV EIA result has not been verified by an additional more specific assay or the signal to cut-off ratio is unknown.

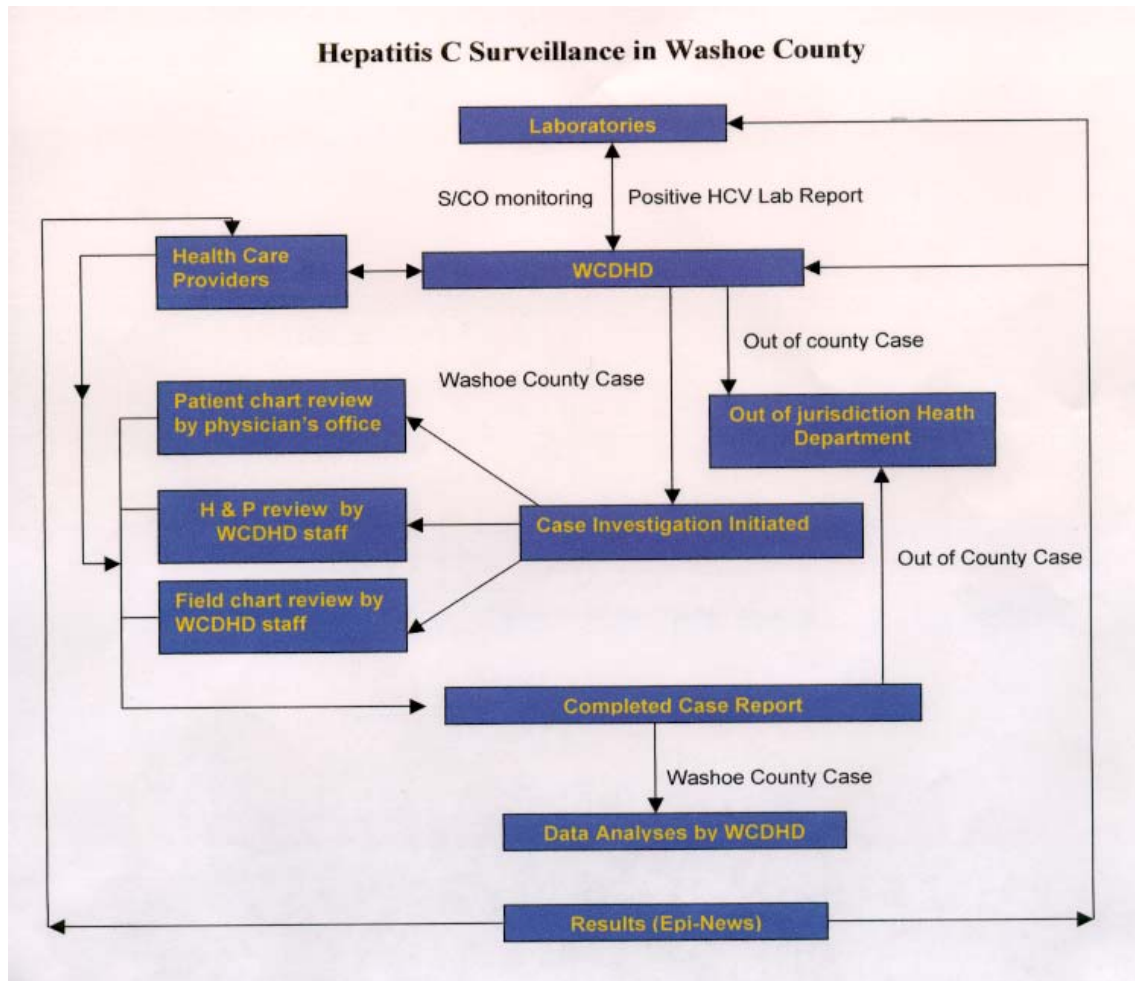
2. Methods

On May 1, 2002, the Communicable Disease Control Program began conducting enhanced surveillance for HCV infection in order to characterize the infected population in Washoe County. The objectives of the surveillance are to:

- Identify newly reported cases,
- Estimate the burden of HCV infection in the community,
- Characterize the risk factors of infected persons, and
- Identify infected persons who can be counseled and referred for medical follow-up and immunization against HAV and HBV.

Figure 3.1 illustrates the process of enhanced HCV surveillance in Washoe County.

Figure 3.1 Enhanced Hepatitis C Surveillance in Washoe County.



*Signal to Cut-Off ratio.

B. Epidemiology of HCV

Chronic liver disease was the 7th leading cause of death in Washoe County and in the state of Nevada in 2004. Population-based studies indicate that 40% of chronic liver disease is HCV-related.

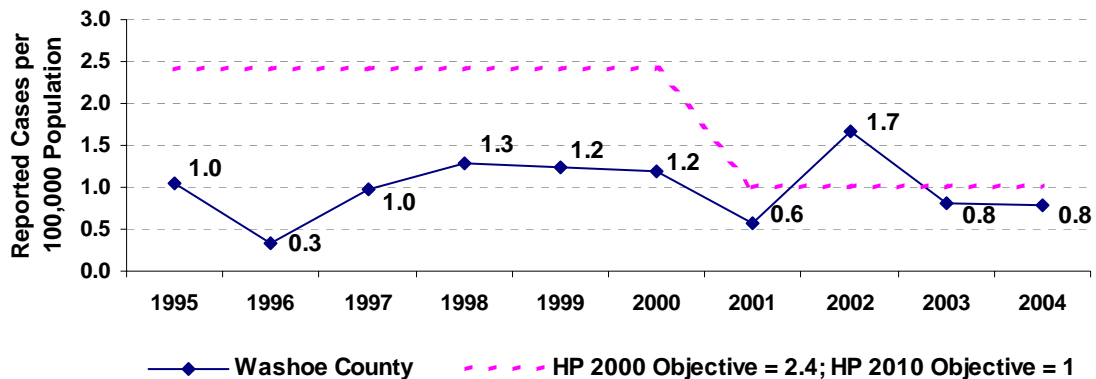
Hepatitis C virus (HCV) infection is the most common chronic blood-borne infection in the United States. This virus usually is transmitted through large or repeated percutaneous exposures to blood – for example, through sharing of equipment between injection drug users. Most HCV-infected people (75-85%) 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.

1. Acute Hepatitis C Infection

a. Reported Annual Incidence

In 2004, 3 cases of laboratory-confirmed acute HCV infection were reported in Washoe County for a rate of 0.8 reported cases per 100,000 population. The Healthy People 2010 national health objective is 1 reported acute case per 100,000 population. In 2003, the national incidence rate of acute hepatitis C was 0.38 cases per 100,000 population.

Figure 3.2 Rate of Reported Cases of Acute Hepatitis C, Washoe County, 1995 – 2004.



b. Population Affected

The three cases of acute hepatitis C reported in Washoe County in 2004 were females between the ages of 25 and 53 years. Nationally, HCV affects persons of all ages, but most new infections are among young adults ages 20-39 years.

The three cases in Washoe County in 2004 were white, non-Hispanic. Nationally, the highest proportion of new cases is among whites, however, the highest rates of new cases are among nonwhite racial and ethnic groups.

2. Hepatitis C Infection – Past or Present

a. Case Reports

WCDHD received a total of 3118 positive HCV test results from laboratories between May 1, 2002, and December 31, 2004. Of the 3118 lab reports, 2282 (73%) represented Washoe County residents. For 1833 (80%) of the 2282 lab results on Washoe County residents, the patient's health care provider submitted a completed case report. Of the 1833 case reports received, 263 (14%) could not be confirmed. Of the remaining 1570 confirmed HCV cases, 12 (0.7%) were acute cases, and 1558 (85%) met the surveillance case definition for "past or present HCV infection."

Table 3.1 Hepatitis C Cases by Diagnosis, Washoe County, May 1, 2002 – December 31, 2004.

Diagnosis Characteristics	No. Cases	%
Case Classification		
Confirmed Acute HCV Infection	12	1
Confirmed HCV Infection, Past or present	1558	85
Unconfirmed HCV Infection	263	14
Total	1833	100
Year of Diagnosis by Physician		
In 2002, 2003 or 2004	297	16
Before 2002	305	17
Missing & unconfirmed	1231	67
Total	1833	100

b. Case Identification

Of 2282 positive anti-HCV lab reports for Washoe County residents, 2038 (89%) were detected by HCV EIA. However, out of the 2038 HCV cases identified by EIA, 1487 cases (73%) were not verified by an additional, more specific assay (e.g., RIBA for anti-HCV or RT-PCR for HCV RNA).

In order to satisfy the surveillance case definition, the signal to cut-off (S/CO) ratios were requested for 1487 cases. LabCorp provided the S/CO ratio for 1202 (81%) of the cases. Eighty-nine percent (89%) of the 1202 cases (1072) had a S/CO ratio ≥ 3.8 .

c. Reported Reasons for HCV Testing

Fifty percent (50%) of cases were identified through follow-up testing on a previous marker of hepatitis or evaluation of elevated liver enzymes. Twenty-four percent (24%) of cases were identified through screening, including asymptomatic persons with or without risk factors, blood or organ donors, and pregnant women.

Table 3.2 Reported Hepatitis C Cases by Reasons for Testing, Washoe County, May 1, 2002 – December 31, 2004.

Reasons for Testing	No. Cases	%
Follow-up testing for previous marker of hepatitis	605	33.0
Evaluation of elevated liver enzyme	320	17.5
Screening of asymptomatic patient with risk factors	288	15.7
Unknown	183	10.0
Other reasons	146	8.0
Missing	96	5.2
Prenatal screening	72	3.9
Blood/organ donor screening	51	2.8
Symptoms of acute hepatitis	42	2.3
Screening of asymptomatic patient without risk factors	30	1.6
Total	1833	100.0

d. Clinical Conditions Among Reported Cases

Over 8 percent of the cases were found to have cirrhosis or liver cancer, and 4.5% of cases were pregnant women. A significant proportion of cases had unknown status for cirrhosis and liver cancer. Better reporting from health care providers is needed to identify cases with these complications of HCV infection.

Table 3.3 Reported Hepatitis C Cases by Clinical Data, Washoe County, May 1, 2002 – December 31, 2004.

Clinical Data	Yes		No		Unknown	
	No.	%	No.	%	No.	%
Cirrhosis	137	7.5	616	33.6	1080	58.9
Liver Cancer	17	0.9	651	35.5	1165	63.6
Pregnancy	82	4.5	1427	77.9	324	17.7

e. Reported Hepatitis C Cases by Behavioral Risk Factors

Nearly 40% of cases acknowledged they had injected drugs not prescribed by a physician, and 8% received a blood transfusion prior to 1992. Thirty percent (30%) of cases reported current alcohol use – indicating a need for better education of HCV patients by health care providers. Overall, 63% of cases had one or more risk factors, 19% of cases denied risk factors and 18% had unknown risks. Forty-eight percent (48%) of cases had no health insurance.

Table 3.4 Reported Hepatitis C Cases by Patient Risk Behaviors, Washoe County, May 1, 2002 – December 31, 2004.

Risk Behavior (not mutually exclusive)	Number of Cases	%
IDU	705	38.5
Other risks	186	10.1
Blood transfusion	138	7.5
Multiple sex partners	130	7.1
Contact to person with hepatitis	111	6.1
Occupational	60	3.3
Hemodialysis	8	0.4
Clotting factor	3	0.2

f. Reported Hepatitis C Cases by Hepatitis A and B Markers

If persons with chronic HCV infection contract HAV or HBV, they are at increased risk for life-threatening fulminant hepatitis. To protect susceptible HCV-infected patients, HAV and HBV vaccinations are strongly recommended.

A significant proportion of cases had unknown status for immunity to HAV and HBV.

Table 3.5 Reported Hepatitis C Cases by Hepatitis A and B Markers, Washoe County, May 1, 2002 – December 31, 2004.

Marker	Positive		Negative		Unknown	
	No.	%	No.	%	No.	%
Antibody to HAV, total (anti-HAV)	120	6.5	158	8.6	1555	84.8
Hepatitis B Surface Antibody (anti-HBs)	124	6.8	253	13.8	1449	79.1
Hepatitis B Surface Antigen (HBsAg)	29	1.6	1149	62.7	655	35.7
Hepatitis B Core Antibody, total (anti-HBc)	94	5.1	153	8.3	1585	86.5

g. Reported Hepatitis C Cases by Genotype

Genotype refers to the genetic make-up of an organism or a virus. There are at least 6 distinct HCV genotypes that have been identified, with genotype 1 being the most common in the United States. Patients with genotypes 2 and 3 are almost 3 times more likely than patients with genotype 1 to respond to therapy with alpha interferon or the combination of alpha interferon and ribavirin. When using combination therapy, the recommended duration of treatment depends on the genotype.

Of 1833 case reports, 444 (24%) contained documented genotypes. Of 444 cases with documented genotype, 280 (63%) had genotype 1; 66 (15%) had genotype 2 and 62 (14%) had genotype 3.

h. Population Affected

Surveillance data indicate:

- ◆ 85% of reported cases have past or present HCV infection.
- ◆ 71% of cases are in the 40-59 year age group.
- ◆ 63% of cases are male.
- ◆ 25% of the case reports were missing information on race/ethnicity.
- ◆ 82% of cases are White, non-Hispanic (among cases with known race/ethnicity).
- ◆ African Americans are disproportionately affected by chronic HCV infection. They have the highest ratio of proportion of cases to proportion of the population.

Table 3.6 Reported Cases of HCV Infection by Age, Gender, Race and Ethnicity, Washoe County, May 1, 2002 – December 31, 2004.

Demographic Characteristics		No. Cases	%	% population	Ratio*
Age Group	<20	16	0.9		
	20-29	92	5.0		
	30-39	239	13.1		
	40-49	728	39.8		
	50-59	581	31.8		
	>=60	171	9.4		
	Total	1827	100.0		
Gender	Male	1163	63.8	50.7	1.3
	Female	659	36.2	49.3	0.7
	Total	1822	100.0	100.0	
Race/Ethnicity	American Indian/Alaska Native, non-Hispanic	38	2.7	1.9	1.4
	Asian/Pacific Islander, non-Hispanic	19	1.4	5.6	0.2
	African American, non-Hispanic	81	5.8	2.2	2.6
	White, non-Hispanic	1155	82.6	71.4	1.2
	Hispanic	106	7.6	18.9	0.4
	Total	1399	100.0	100.0	

*Ratios were calculated by:
$$\frac{\% \text{ of demographic group with condition}}{\% \text{ of overall population comprised by this demographic group}}$$

3. Prevention and Control

There is no vaccine against HCV, no funding for screening high-risk persons, and no funding for vaccinating persons with chronic HCV against HAV and HBV. Prevention and control of HCV are limited to education and the collection, analysis and dissemination of data:

- HCV surveillance was conducted from May 1, 2002 – December 31, 2004. One-hundred-thirty (130) health care provider offices and laboratories participated.
- 6 issues of *Epi News* were written and distributed to local health care providers. These issues of *Epi News* covered general information on HCV and reviewed the HCV surveillance project and results.
- 73 surveys were sent to 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 is useful; 6 of the 25 did not receive the *Epi News* and all 6 requested to be added to the distribution list.
- 1500 CDC brochures on HCV prevention and HCV testing were distributed through the Washoe Medical Center Clinic. Washoe Medical Center Clinic accounted for 7% of reported HCV cases.
- An HCV section was added to the District Health Department's website.

OTHER REPORTABLE COMMUNICABLE DISEASES

I. Rotavirus

A. Epidemiology

1. Population Affected

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 2 years of age. Adults can also be infected, though disease tends to be mild. In the United States, the annual epidemic peak characteristically starts during autumn in the southwest, and moves sequentially to reach the northeast by spring.

2. Reported Incidence

One-hundred-twenty (120) laboratory-confirmed cases of rotavirus were reported in Washoe County in 2004. Age, sex, race and ethnicity data were not collected. Based on the known epidemiology of rotavirus, it is assumed the cases were ≤ 2 years old. Therefore, the 2004 estimated incidence of reported rotavirus infection was 727 cases per 100,000 population of children ≤ 2 years old (16,503 in 2004).

Figure 1.1 Rate of Reported Cases of Rotavirus in Children ≤ 2 Years of Age, Washoe County, 1994-2004.

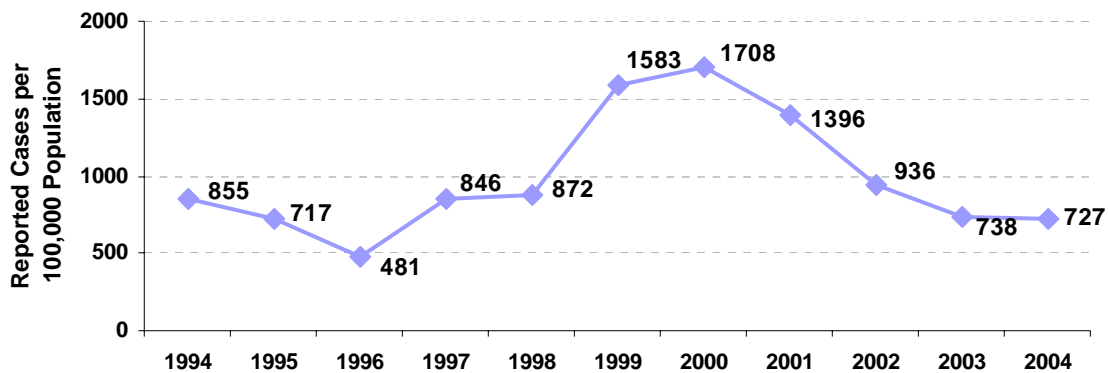
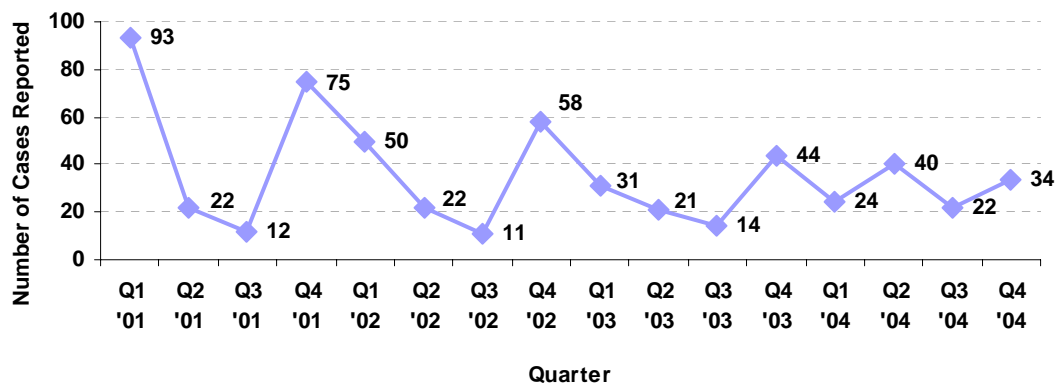


Figure 1.2 Rotavirus Cases By Quarter, Washoe County, 2001- 2004.



B. Prevention And Control

No vaccine is currently available for rotavirus. Proper hygiene and environmental cleaning, especially in child care settings, can be effective in controlling transmission.

II. Respiratory Syncytial Virus (RSV)

A. Epidemiology

1. Population Affected

Respiratory syncytial virus (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 4 to 6 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

Three-hundred-eighty-nine (389) laboratory-confirmed cases of RSV were reported in Washoe County in 2004. Age, sex, race and ethnicity data for RSV cases were not collected. Based on the known epidemiology of RSV, it is assumed the cases were ≤ 2 years old. Therefore, the 2004 estimated incidence of reported RSV was 2357 cases per 100,000 population of children ≤ 2 years old (16,503 in 2004).

Figure 2.1 Rate of Reported Cases of RSV in Children ≤ 2 Years of Age, Washoe County, 1995-2004.

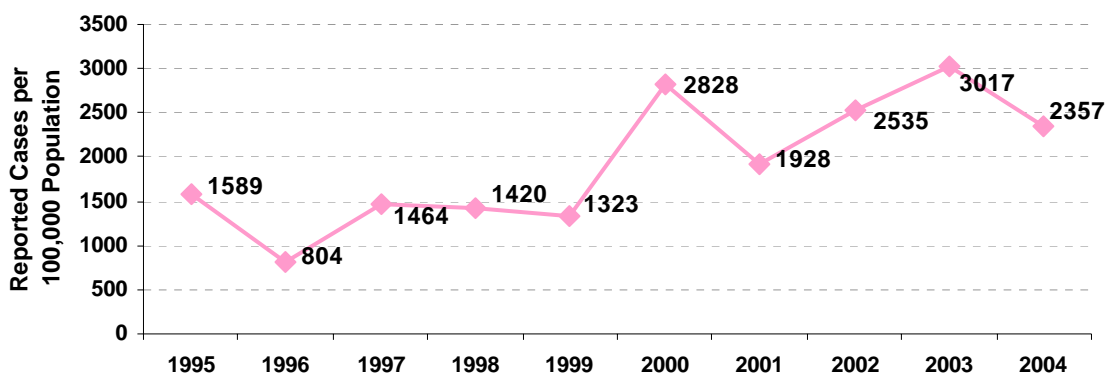
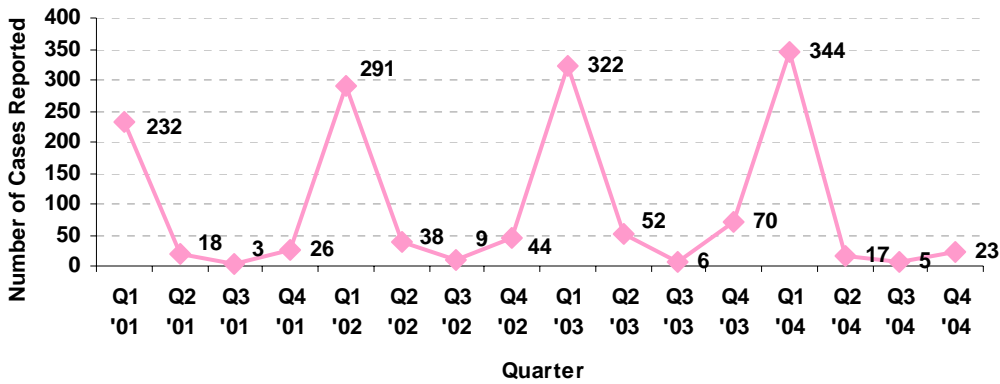


Figure 2.2 RSV Cases By Quarter, Washoe County, 2001 – 2004.



B. Prevention And Control

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

III. Viral Meningitis

A. Epidemiology

Viral or “aseptic” meningitis is caused by an infection with one of several types of viruses. About 90% of cases are caused by enteroviruses, e.g., coxsackievirus and echovirus. Enteroviruses are typically spread person-to-person through the fecal-oral route and through 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 probably under-reported.

The increased number of cases reported in 2002 through 2004 may be an artifact caused by the highly publicized arrival of West Nile Virus in Nevada. The diagnosis of viral meningitis in all cases was supported by a compatible clinical illness and laboratory tests that ruled out possible bacterial etiologies.

1. Reported Incidence

Forty-seven (47) laboratory-confirmed cases of viral meningitis were reported in Washoe County in 2004 for a reported incidence of 12.3 cases per 100,000 population.

Figure 3.1 Rate of Reported Cases of Viral Meningitis, Washoe County, 1995-2004.

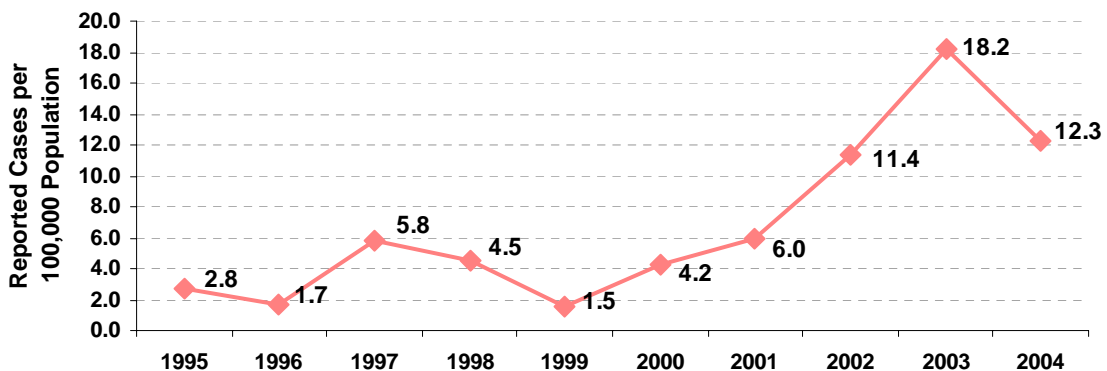
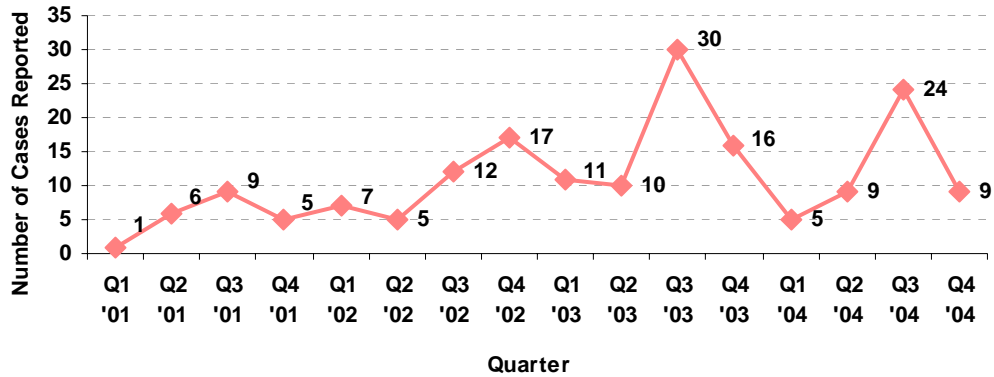


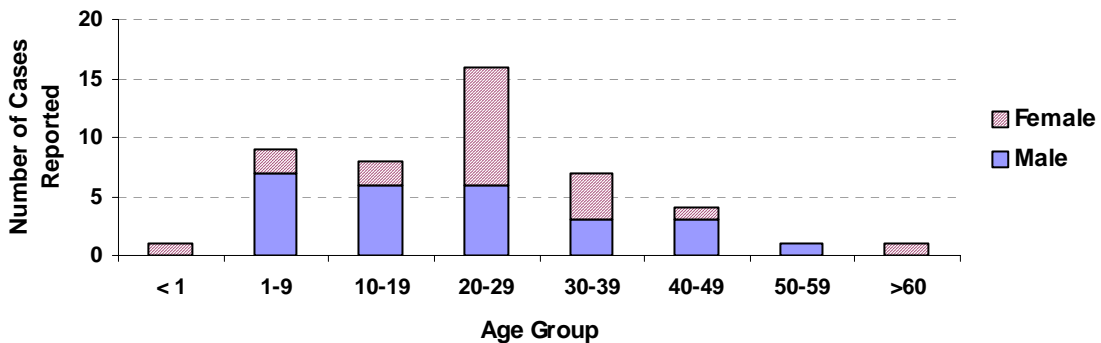
Figure 3.2 Viral Meningitis Cases Reported By Quarter, Washoe County, 2001-2004.



2. Population Affected

The median age of cases in Washoe County was 24 years with a range of 2 months to 61 years. Twenty-six cases (55%) were male.

Figure 3.3 Viral Meningitis Cases by Age and Gender, Washoe County, 2004.



Thirty-four (34) cases (72%) were white, non-Hispanic; 10 cases (21%) were Hispanic; 1 case (2%) was black, non-Hispanic; 1 case (2%) was Native American; and 1 case (2%) was Asian/Pacific Islander.

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.

SEXUALLY TRANSMITTED DISEASES (STDs)

I. *Chlamydia*

A. Epidemiology

Chlamydia trachomatis is the most frequently reported infectious disease in the United States. Pelvic inflammatory disease (PID) caused by *Chlamydia* is a major cause of infertility, ectopic pregnancy, and chronic pelvic pain. Pregnant women with *Chlamydia* can transmit it to their infants during delivery, causing neonatal ophthalmia and pneumonia.

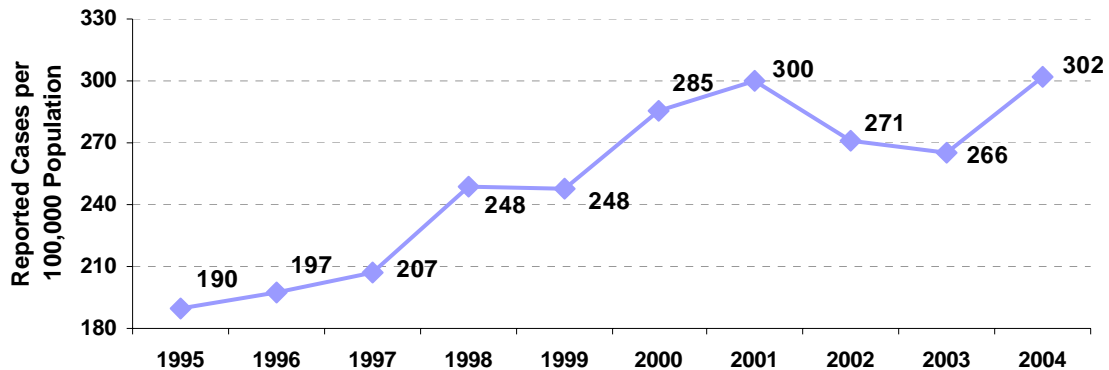
1. Reported Incidence

In 2004, *Chlamydia* infection was the most commonly reported STD in Washoe County with an incidence of 302 cases per 100,000 population. The 2004 national reported incidence was 320 cases per 100,000 population. The Healthy People 2010 national health objective for proportion of positive tests is as follows:

- ◆ Females aged 15-24 years attending family planning clinics 3.0 %
- ◆ Females aged 15-24 years attending STD clinics 3.0 %
- ◆ Males aged 15-24 years attending STD clinics 3.0 %

An overall steady increase of reported *Chlamydia* infections has been observed since 1996. This increase may have resulted from an expansion of *Chlamydia* screening, the use of increasingly sensitive diagnostic tests, improvement in case reporting from providers and laboratories, and/or a real increase in the incidence of chlamydial infection.

Figure 1.1 Rate of Reported *Chlamydia* Cases, Washoe County, 1995 – 2004.



In the years 1998-2004, less than 2% of *Chlamydia* cases in Washoe County resulted in PID.

Table 1.1 Cases of *Chlamydia*, Washoe County, 1995 – 2004.

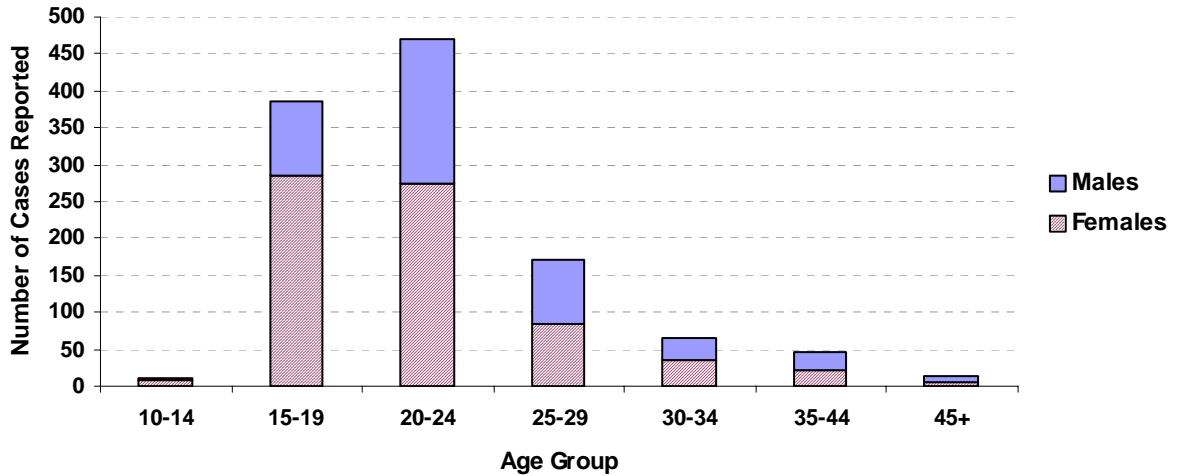
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chlamydia	550	585	638	761	796	942	1044	971	990	1150
Chlamydia PID ¹				12	7	9	13	2	1	8
Total				773	803	951	1057	973	991	1158

¹ *Chlamydia* PID reported separately by the District Health Department beginning 1998.

2. Population Affected

Of the 1158 cases reported in 2004, 854 (74%) occurred in persons 15-24 years of age; and 717 (62%) occurred in females.

Figure 1.2 Reported *Chlamydia* Cases by Age and Gender, Washoe County, 2004.



Black and Hispanic cases disproportionately accounted for 11% and 31% of all *Chlamydia* cases, respectively. Blacks comprised 2.0 % and Hispanics 19% of Washoe County's population in 2004.

Figure 1.3 *Chlamydia* Case Rates by Race/Ethnicity, Washoe County, 2004.

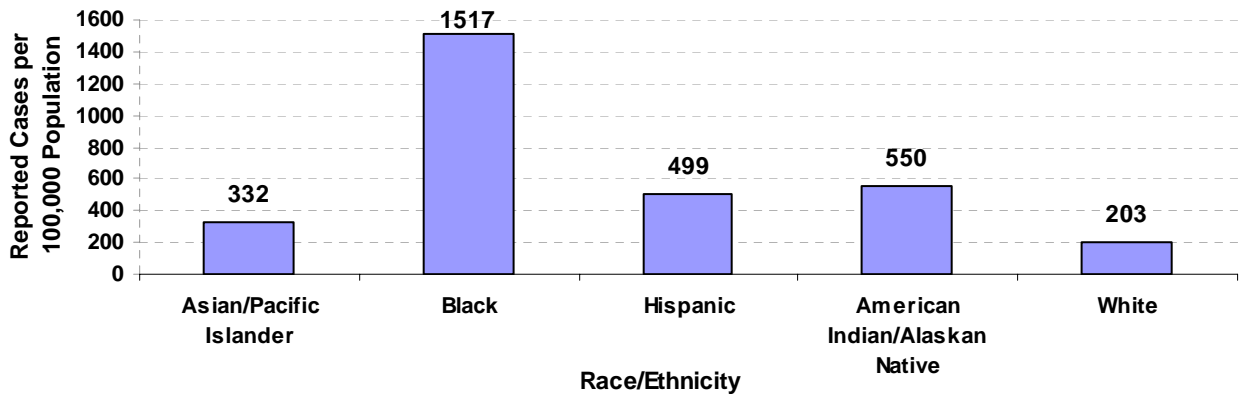
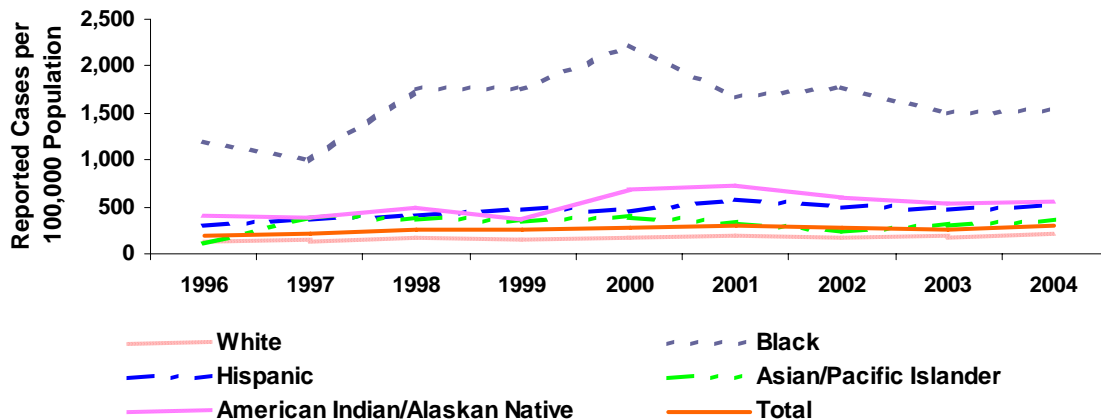
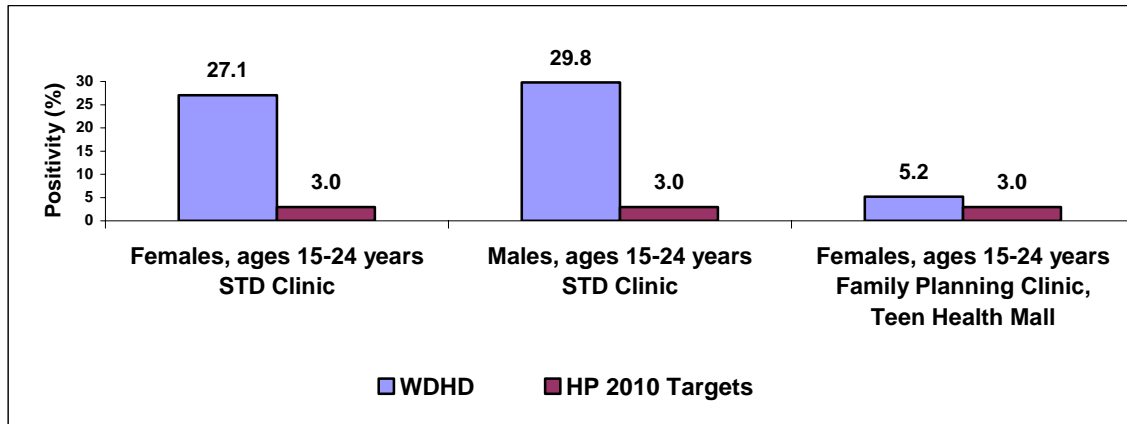


Figure 1.4 *Chlamydia* Case Rates by Race/Ethnicity, Washoe County, 1996-2004.



Since July 2002, the WCDHD has conducted active surveillance for *Chlamydia* in the WCDHD Family Planning Clinic, Teen Health Mall, STD Clinic, Wittenberg Juvenile Detention Center and the Washoe County Detention Facility. Figure 1.5 illustrates we are far from achieving the Healthy People 2010 national health objective of 3.0%.

Figure 1.5 *Chlamydia* Test Positivity vs. HP 2010 Target, WCDHD, 2004.



B. Prevention and Control

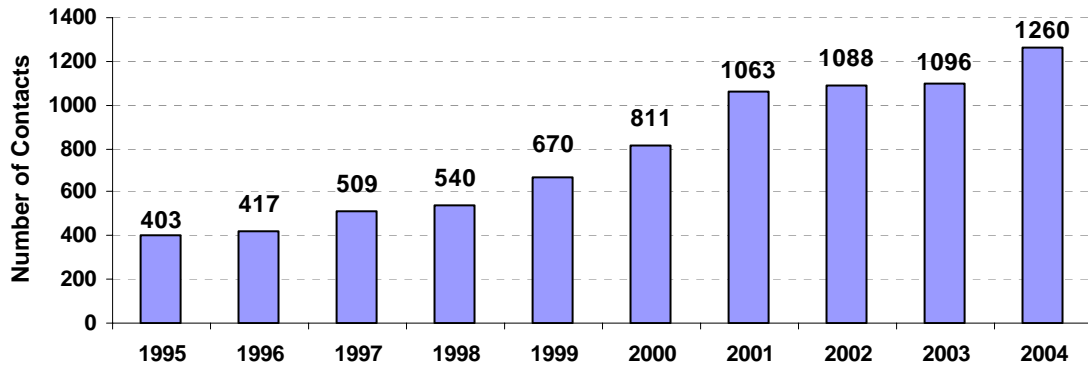
1. Contact Follow-Up

The Disease Intervention Specialists interviewed *Chlamydia* cases to identify sexual contacts for treatment. A total of 1260 sexual contacts were identified of whom 282 (22%) were given preventive treatment, 278 (22%) had confirmed infection and 290 (23%) reported previous treatment for *Chlamydia*. For 16% of sexual contacts there was insufficient information to conduct an investigation.

Table 1.2 Disposition of *Chlamydia* Contacts, Washoe County, 2004.

Disposition	Total	Percent
Preventive Epi. Treatment	282	22
Refused Preventive Treatment	0	0
Infected - Brought to Treatment	278	22
Infected - Not Treated	0	0
Previous Treatment for this Infection	290	23
Not Infected	18	1
Insufficient Information to Begin Investigation	203	16
Unable to Locate	19	2
Located -Refused Examination	54	4
Out of Jurisdiction	79	6
Other	37	3
Total	1260	100
Contact Index* = 1.09		
*Number of contacts per case		

Figure 1.6 Number of *Chlamydia* Contacts Identified, Washoe County, 1995 – 2004.



II. Gonorrhea

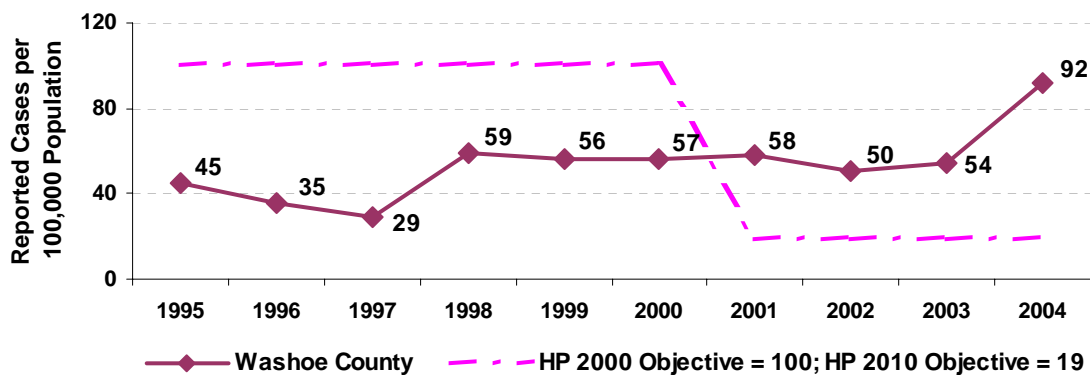
A. Epidemiology

Gonorrhea, caused by *Neisseria gonorrhoeae*, is second only to chlamydial infections in the number of 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.

1. Reported Incidence

In Washoe County, 352 laboratory-confirmed cases of gonorrhea were reported in 2004 for an incidence of 91.8 cases per 100,000 population. The 2004 national reported incidence was 113.5 cases per 100,000 population (the lowest rate ever reported). The Healthy People 2010 national health objective is 19 cases per 100,000 population.

Figure 2.1 Rate of Reported Cases of Gonorrhea, Washoe County, 1995 – 2004.



In the years 1995-2004, less than 5% of the gonorrhea cases in Washoe County resulted in PID.

Table 2.1 Cases of Gonorrhea, Washoe County, 1995 – 2004.

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Gonorrhea	129	105	89	178	178	184	197	174	201	347
Gonococcal PID	2	0	1	7	4	5	7	7	1	5
Total	131	105	90	185	182	189	204	181	202	352

2. Population Affected

The incidence of gonorrhea is highest in high-density urban areas among persons under 24 year of age who have multiple sex partners and engage in unprotected sexual intercourse. Increases in gonorrhea prevalence have been noted recently among men who have sex with men.

Of the 352 cases reported in 2004, 263 (75%) were persons aged 15-29; and 184 (52%) were males. Of the 22 black female cases, 82% were in the 15-24 year age group. Of the 47 black male cases, 87% were in the 15-39 year age group.

Figure 2.2 Reported Gonorrhea Cases by Age and Gender, Washoe County, 2004.

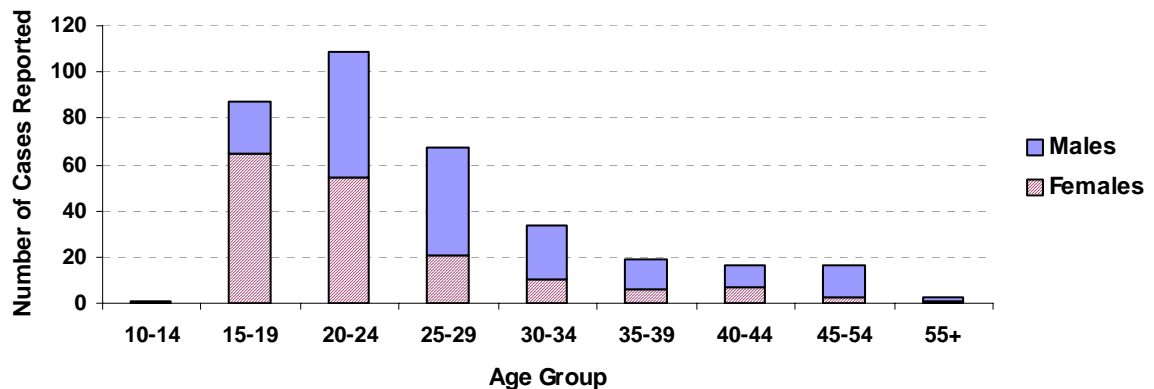


Figure 2.3 Reported Cases of Gonorrhea by Race/Ethnicity, Washoe County, 2004.

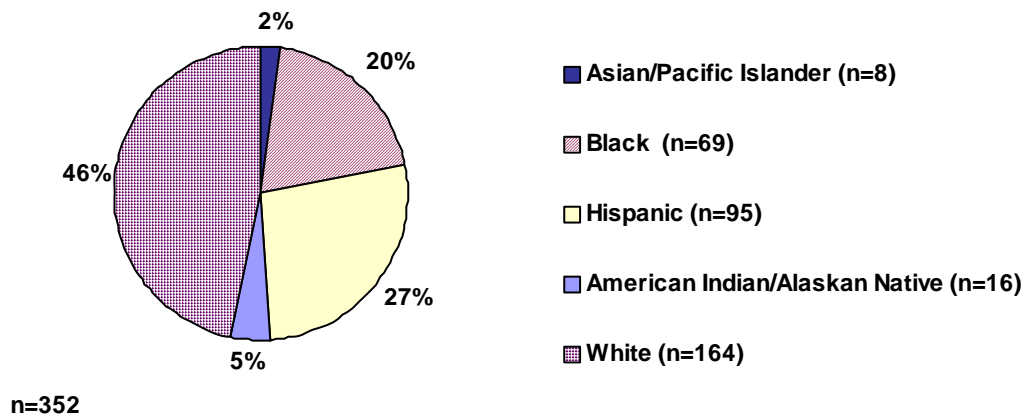


Figure 2.4 Gonorrhea Case Rates by Race/Ethnicity, Washoe County, 2004.

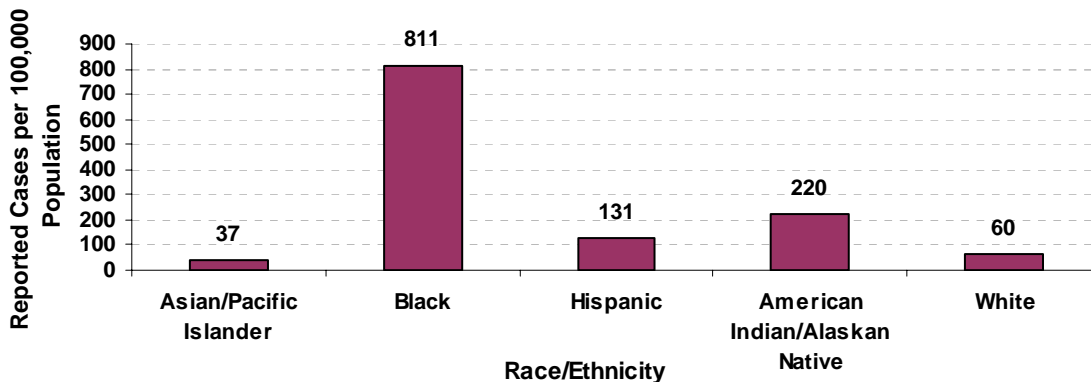
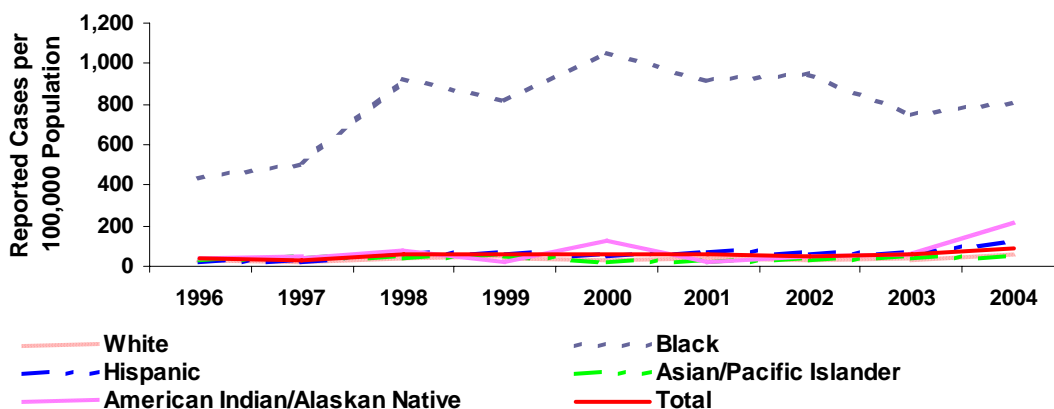


Figure 2.5 Gonorrhea Case Rates by Race/Ethnicity, Washoe County, 1996-2004.



B. Prevention and Control Activities

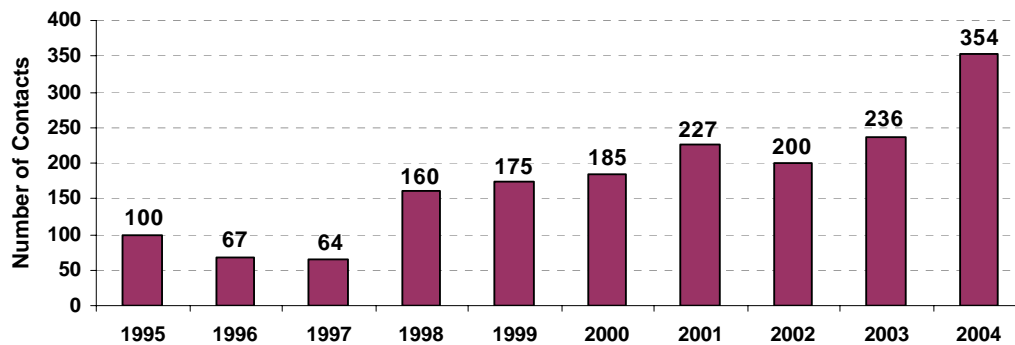
1. Contact Follow-Up

The Disease Intervention Specialists interviewed gonorrhea cases to identify sexual contacts for treatment. A total of 354 sexual contacts were identified of whom 69 (20%) were given preventive treatment, 52 (15%) had confirmed infection and 60 (17%) reported previous treatment for gonorrhea. For 29% of sexual contacts, there was insufficient information to conduct an investigation.

Table 2.2 Disposition of Gonorrhea Contacts, Washoe County, 2004.

Disposition	Total	Percent
Preventive Epi. Treatment	69	19.5
Refused Preventive Treatment	0	0.0
Infected - Brought to Treatment	52	14.7
Infected - Not Treated	0	0.0
Previous Treatment for this Infection	60	16.9
Not Infected	9	2.5
Insufficient Information to Begin Investigation	103	29.1
Unable to Locate	16	4.5
Located -Refused Examination	17	4.8
Out of Jurisdiction	18	5.1
Other	10	2.8
Total	354	100.0
Contact Index = 1.0		

Figure 2.6 Number of Gonorrhea Contacts Identified, Washoe County, 1995 – 2004.



III. Syphilis

A. Epidemiology

Syphilis is a complex STD caused by the bacterium *Treponema pallidum*. The “primary” stage of syphilis is usually marked by the appearance of a single chancre that is usually firm, round, small and painless. The chancre lasts 3-6 weeks, and heals on its own. The presence of a chancre can facilitate 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. 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 is still considered contagious. Late latent syphilis (infection for greater than one year) is not contagious but may progress to tertiary syphilis.

Tertiary syphilis is characterized by gummas -- soft, tumor-like growths that are readily seen on the skin and mucous membranes, but can occur almost anywhere in the body. The more severe manifestations of tertiary syphilis include neurological and cardiovascular 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.

1. Reported Incidence

In 2004, 2 cases of infectious syphilis (1 primary and 1 secondary case) were reported in Washoe County for an incidence of 0.52 cases per 100,000 population. The 2004 national reported incidence was 2.7 cases per 100,000 population. The Healthy People 2010 national health objective is 0.2 cases per 100,000 population.

Figure 3.1 Rate of Reported Cases of Primary and Secondary Syphilis, Washoe County, 1995 – 2004.

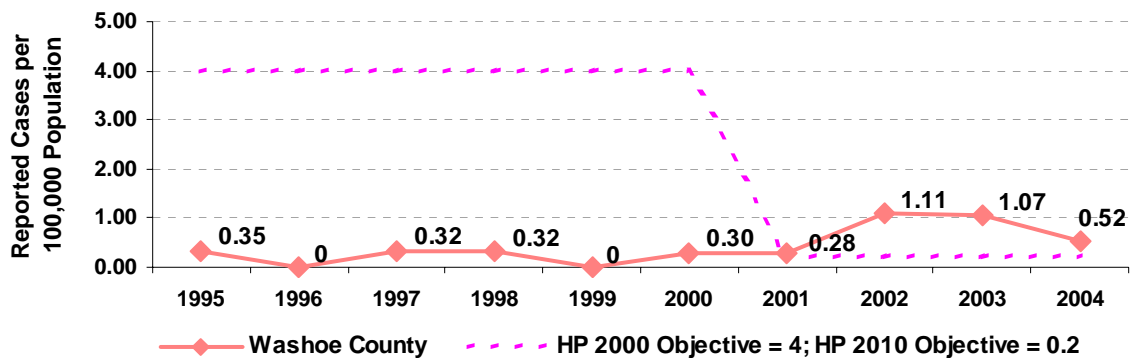


Table 3.1 Reported Cases of Syphilis, Washoe County, 1995 – 2004.

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Syphilis										
Primary	1	0	1	1	0	1	0	2	1	1
Secondary	0	0	0	0	0	0	1	2	3	1
Early Latent	1	0	2	0	0	0	1	4	2	2
Late Latent	33	31	19	10	15	16	23	17	11	19
Neuro	1	0	1	0	0	0	0	1	2	2
Congenital	0	0	0	0	0	0	0	0	0	0
Total	36	31	23	11	15	17	25	26	19	25

2. Population Affected

The two cases of infectious syphilis reported in 2004 were male and 26-50 years of age. One was White, non-Hispanic and one was Hispanic. One case reported having sex with men (MSM). Of two reported neurosyphilis cases, both were heterosexual.

B. Prevention and Control

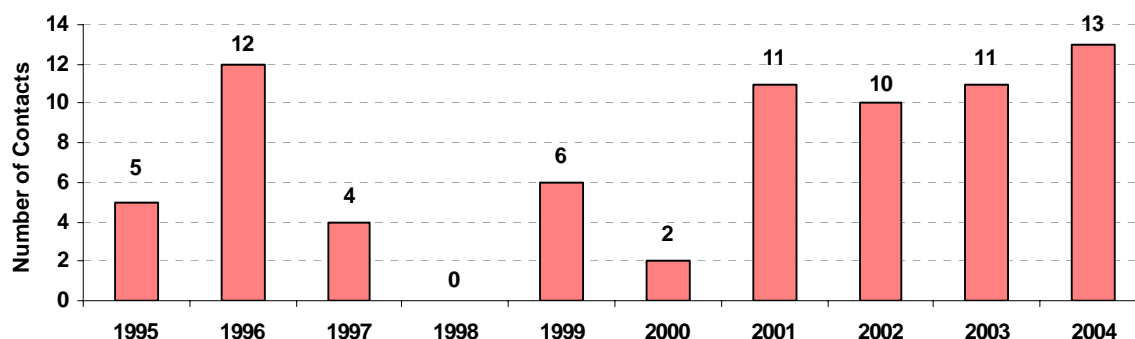
1. Contact Follow-up

The Disease Intervention Specialists interviewed infectious syphilis cases to identify sexual contacts for treatment. A total of 13 contacts were identified. For 3 contacts (23%), there was not enough information to start an investigation. One (1) contact (8%) was infected and brought to treatment. Seven (7) contacts (54%) were tested and found not infected. Two (2) contacts (15%) were out of jurisdiction.

Table 3.2 Disposition of Syphilis Contacts (All Stages), Washoe County, 2004.

Disposition	Total	Percent
Not Infected	7	54
Insufficient Information to Begin Investigation	3	23
Out of Jurisdiction	2	15
Infected - Brought to Treatment	1	8
Total	13	100
Contact Index = 6.5		

Figure 3.2 Number of Contacts to Syphilis Cases (All Stages), Washoe County, 1995 – 2004.



IV. Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS)

A. Epidemiology

HIV infection leads to the development of AIDS. If HIV-infected persons contract an opportunistic infection, or their CD4+ T-lymphocytes count falls below 200 u/L (or a CD4+ T-lymphocyte percentage of total lymphocytes is less than 14), they meet the surveillance case definition for AIDS.

1. HIV Infection

a. Reported “Incidence”

Since 1983, 1144 cases of HIV infection (including AIDS cases) have been reported in Washoe County. In 2004, 52 cases of HIV infection were reported for a reported incidence of 13.6 cases per 100,000 population. National statistics for reported HIV infection rates are not available.

In 2004, the annual rate of reported HIV cases in Washoe County increased by 18% -- compared to the 2003 rate of 11.5 cases per 100,000 population.

Figure 4.1 Rate of Reported HIV Cases, Washoe County and Nevada, 1997 – 2004.

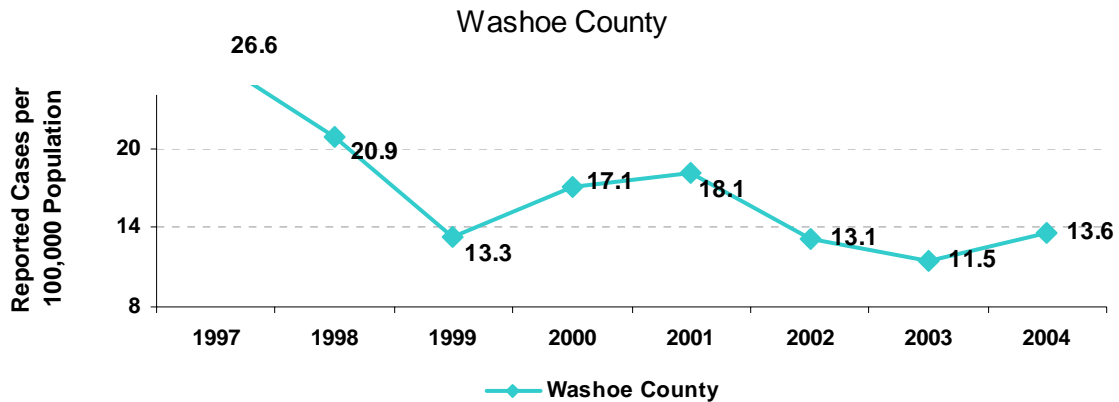
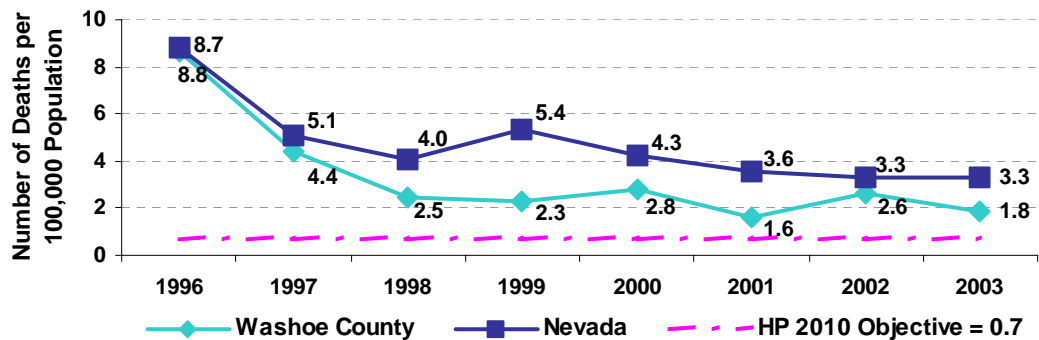


Figure 4.2 Age-adjusted Death Rate Due to HIV Infection, Washoe County, 1996-2003.*



*Source: Nevada Bureau of Health Planning and Statistics. U.S. 2000 standard population.

b. Population Affected

The AIDS epidemic is growing most rapidly among minority populations. AIDS is a leading killer of Black males aged 25 to 44 years. According to the CDC, AIDS affects nearly ten times more Blacks and three times more Hispanics than Whites.

The highest number of reported HIV infections in Washoe County was in white males, but the **rate** of reported infections was highest among Blacks.

Figure 4.3 Reported HIV Cases by Age and Gender, Washoe County, 2004 (n=52).

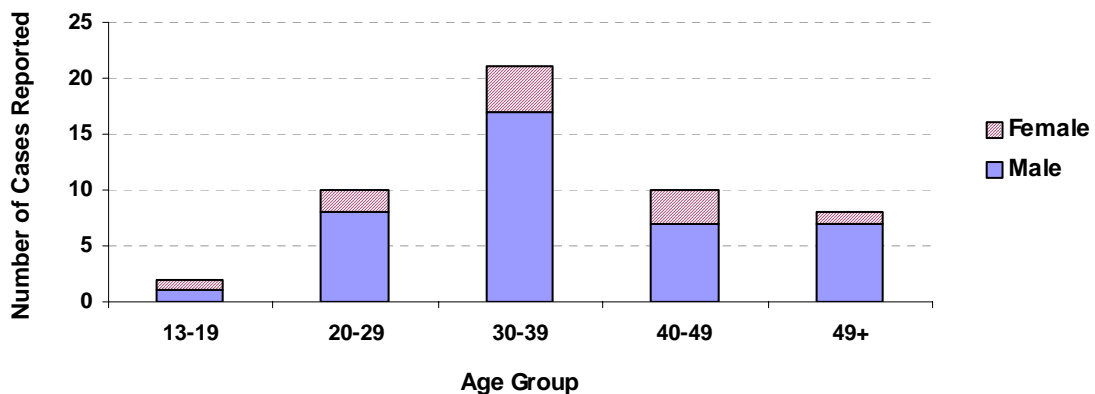


Figure 4.4 Reported HIV Cases by Race/Ethnicity, Washoe County, 2004.

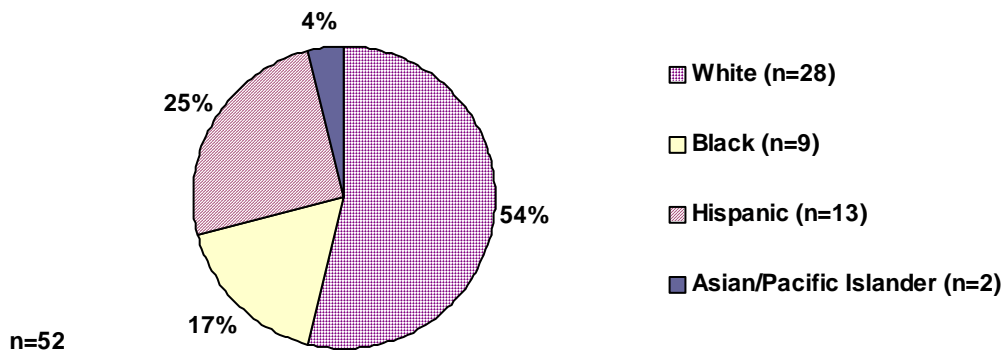


Figure 4.5 Rate of Reported HIV Cases by Race/Ethnicity, Washoe County, 2004 (n=52).

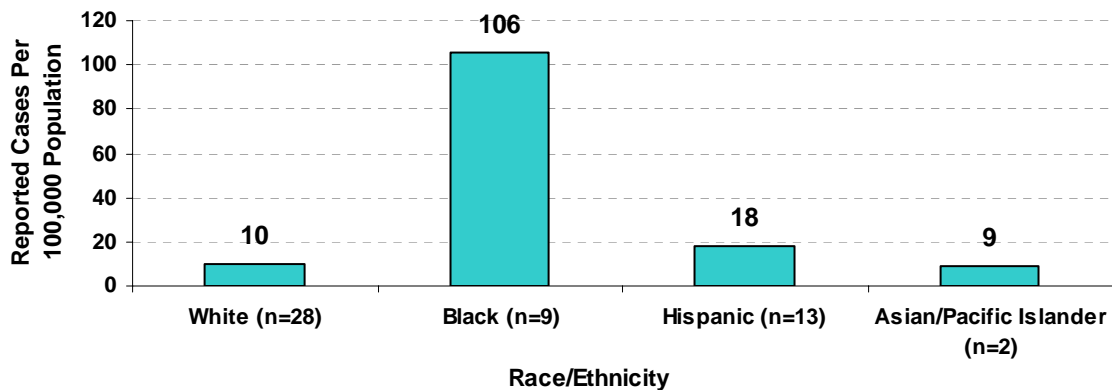


Figure 4.6 Reported Cases of HIV Infection by Age Group Represented as Percent of Total Cases, Washoe County, 1998-2004.

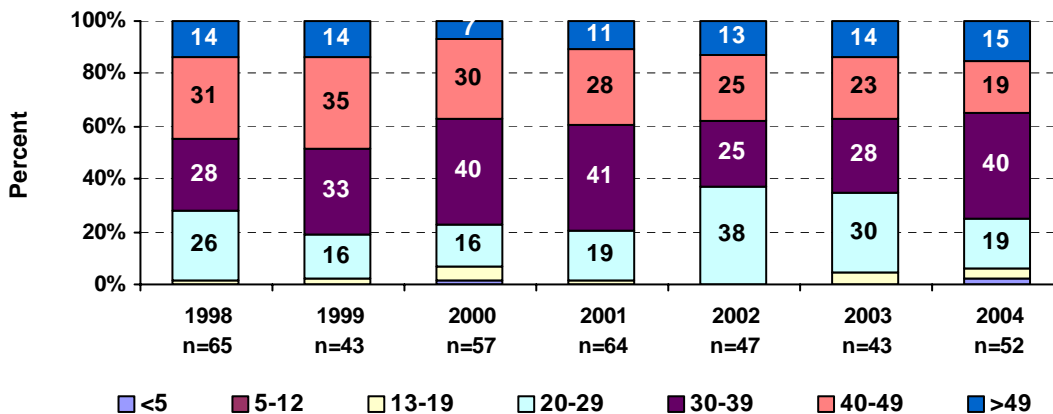
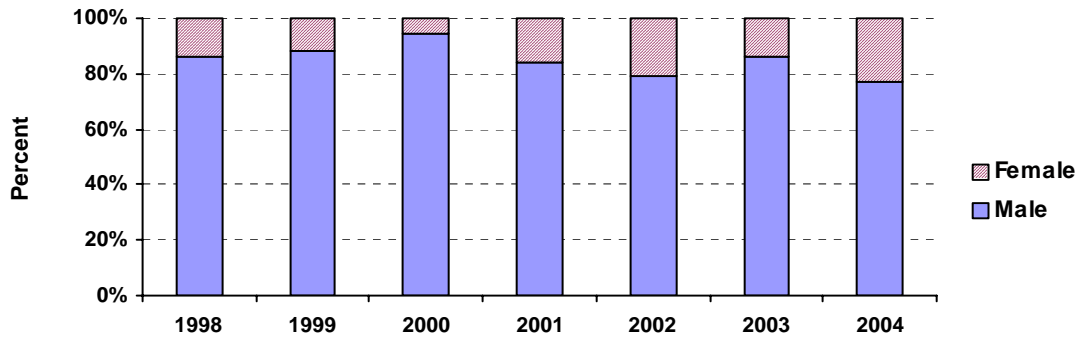
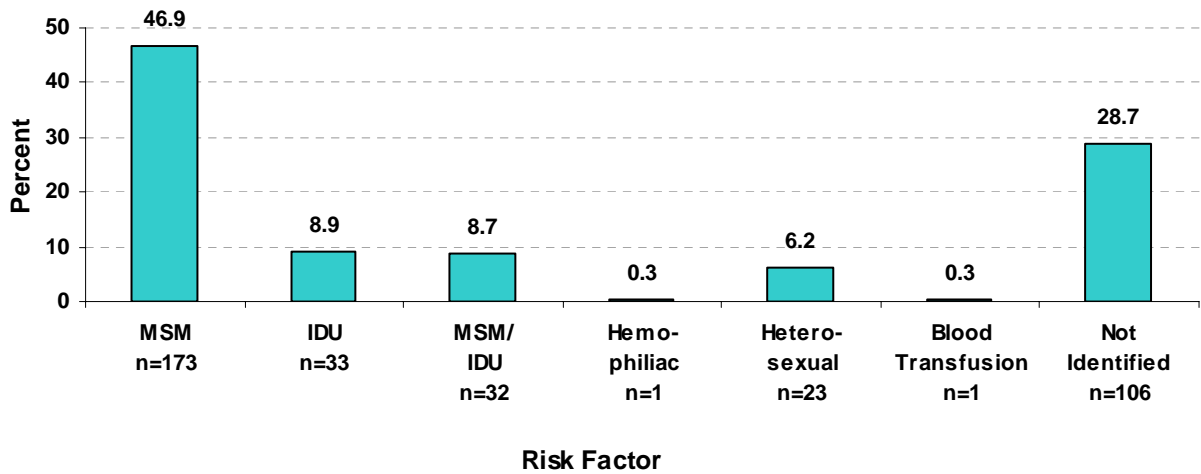


Figure 4.7 Reported Cases of HIV Infection by Gender Represented as Percent of Total Cases, Washoe County, 1998-2004.



The risk factors most commonly reported among those with HIV infection are: men who have sex with men (MSM), intravenous drug users (IDU), and persons who report sexual contact with MSM or IDUs.

Figure 4.8 Reported Cases of HIV Infection by Exposure Category Represented as Percent of Total Cases, Washoe County, 1998-2004 (n=369, 2 missing data).



2. AIDS

a. Reported Incidence

Since 1983, 764 cases of AIDS have been reported in Washoe County. In 2004, 33 new cases of AIDS were reported for a rate of 8.6 cases reported per 100,000 population. The national rate of reported AIDS cases in 2004 was 14.9 cases per 100,000 population.

Figure 4.9 Rate of Reported AIDS Cases, Washoe County, 1995-2004.

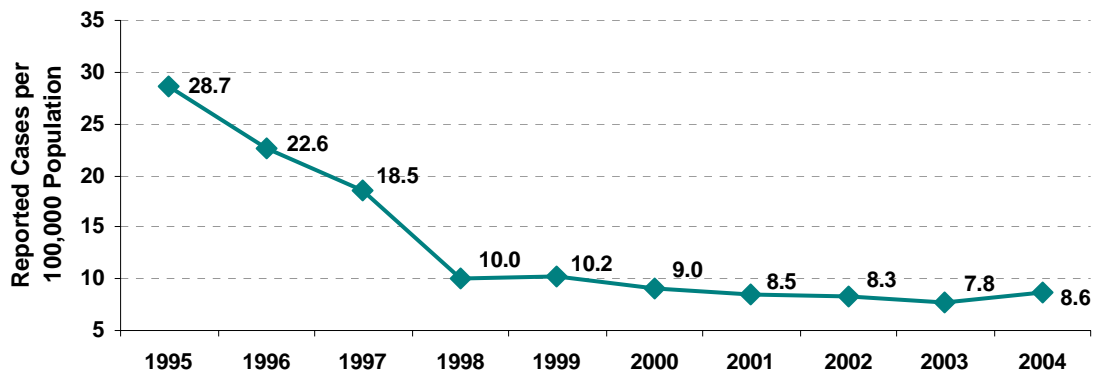
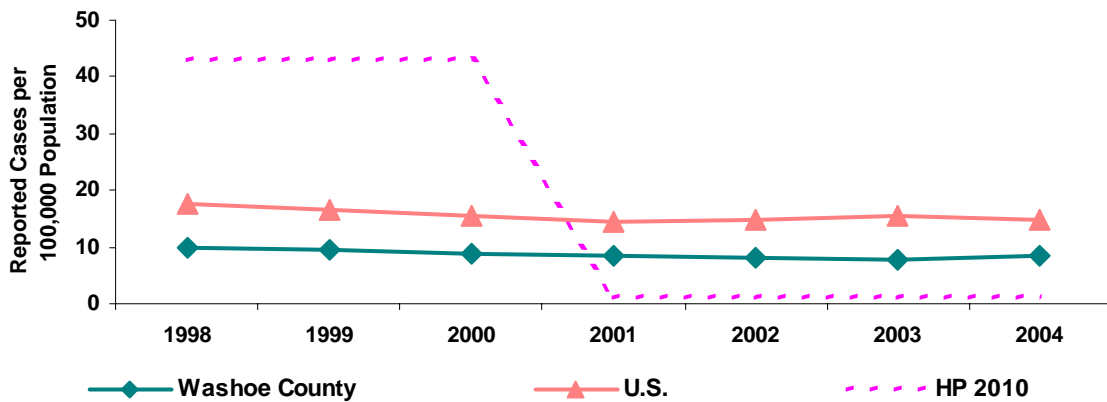


Figure 4.10 Rate of Reported AIDS Cases, Washoe County and U.S., 1998-2004.



b. Population Affected

Whites represent the highest number of reported AIDS cases, but the highest rate of reported AIDS cases was among blacks.

Figure 4.11 Reported AIDS Cases by Age and Gender, Washoe County, 2004.

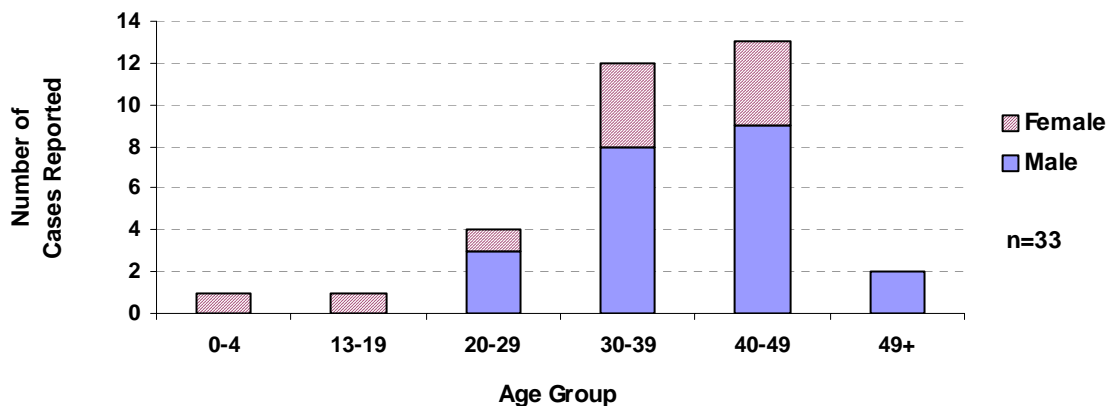


Figure 4.12 Reported AIDS Cases by Race/Ethnicity, Washoe County, 2004.

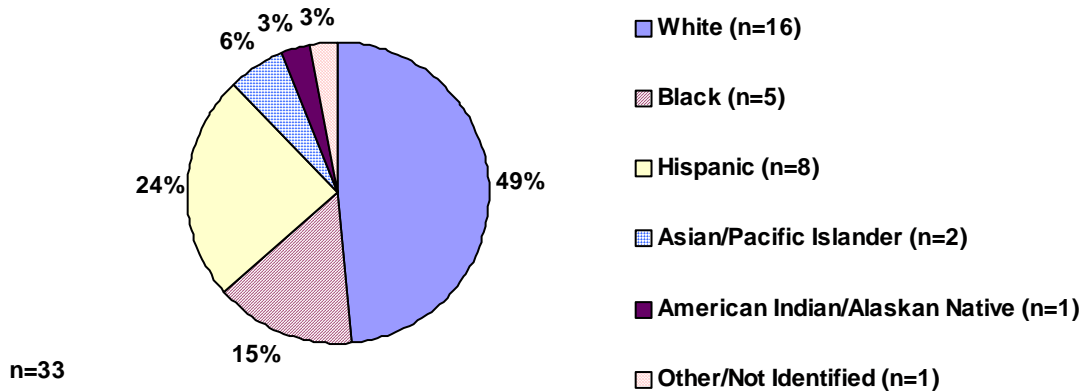


Figure 4.13 Rate of Reported Cases of AIDS by Race/Ethnicity, Washoe County, 2004 (n=32).

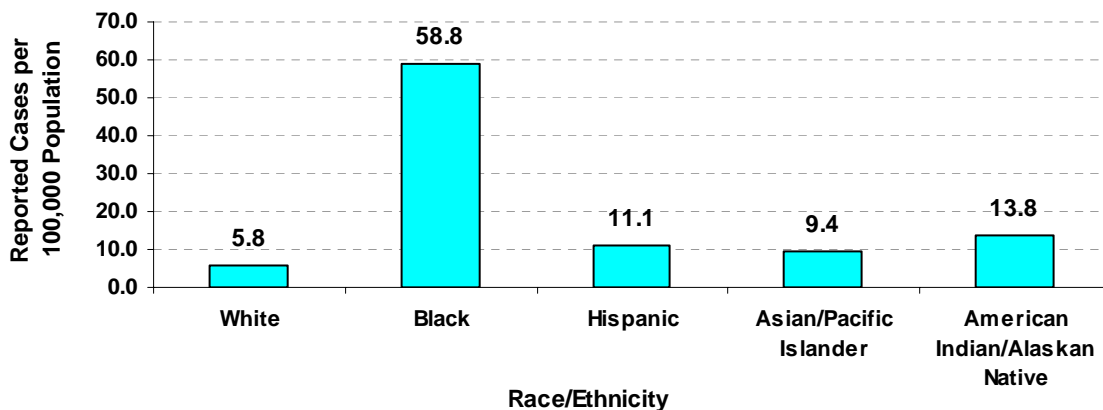


Figure 4.14 Reported AIDS Cases by Age Group Represented as Percent of Total Cases, Washoe County, 1998-2004.

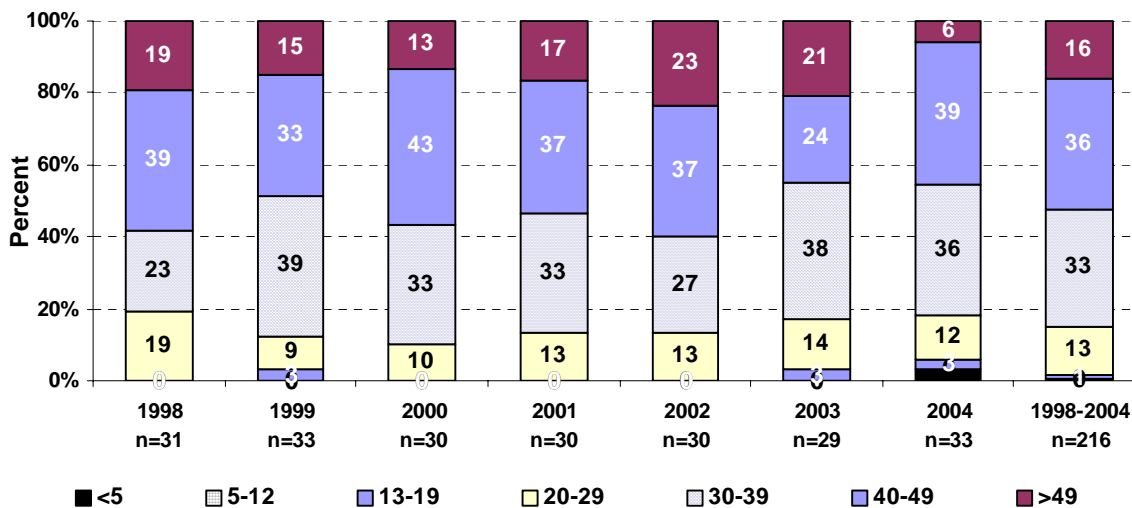


Figure 4.15 Reported AIDS Cases by Gender Represented as Percent of Total Cases, Washoe County, 1998-2004.

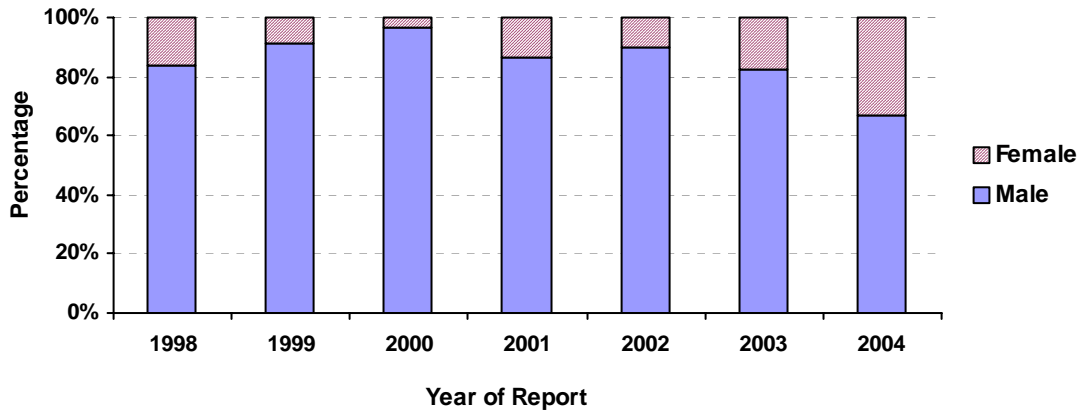
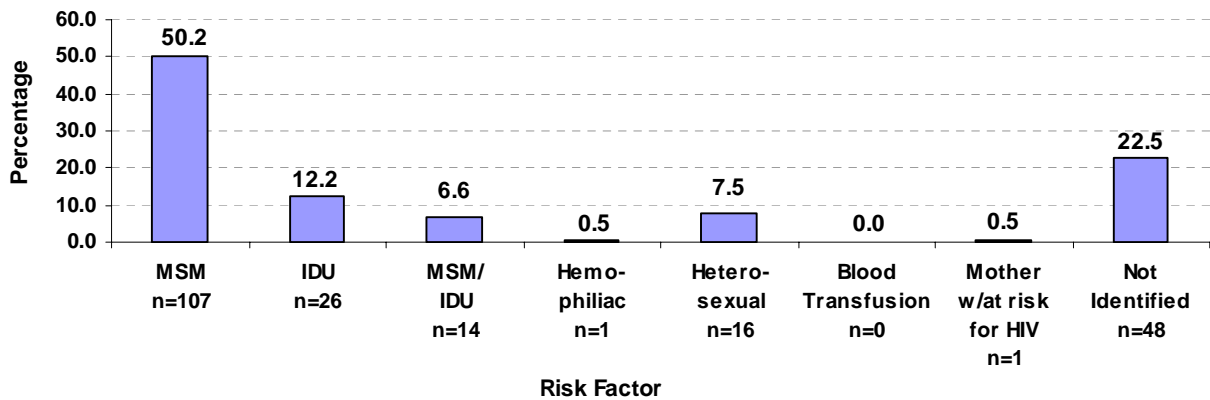


Figure 4.16 Reported AIDS Cases by Exposure Category Represented as Percent of Total Cases, Washoe County, 1998-2004 (n=213, 3 missing data).



B. Prevention and Control

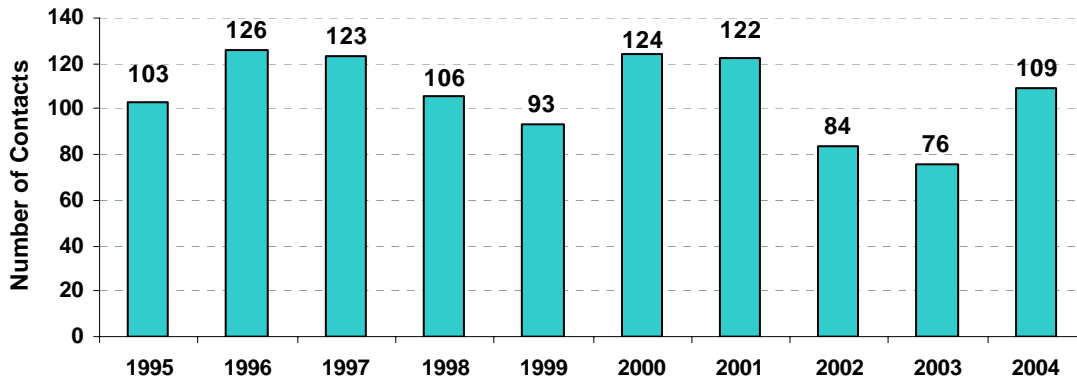
1. Contact Follow-Up

The Disease Intervention Specialists interviewed HIV and AIDS cases to identify sexual and percutaneous contacts for testing and treatment intervention. A total of 109 contacts were identified. The following table shows the results of these investigations.

Table 4.1 Contacts to HIV & AIDS Cases, HIV Test Results, Washoe County, 2004.

Disposition	Number	Percent
HIV-positive	22	20
HIV-negative	85	78
Unable to locate/refused	2	2
Total	109	100

Figure 4.17 Number of Contacts to HIV & AIDS Cases Identified, Washoe County, 1995-2004.



2. HIV Counseling and Testing

The WCDHD offered confidential HIV counseling and testing in its clinics and at various sites in the community. Of the 1338 tests performed in 2004, 16 were positive for a positivity rate of 1.2%. Between 1985 and 2004, the overall HIV positivity rate for testing done by WCDHD has been less than 1%.

In 2003, WCDHD implemented stricter guidelines for clients seeking HIV testing and counseling. The guidelines are based on CDC recommendations, local statistics and current resource limitations.

WCDHD tests only clients with the following risk factors:

- ◆ Men who have sex with men (MSM)
- ◆ Injecting/intravenous drug users (IDU)
- ◆ Partners of MSM
- ◆ Partners of IDU
- ◆ Persons with opportunistic infections
- ◆ Contacts of persons with HIV
- ◆ Victims of sexual assault

As a result of stricter testing criteria, the number of tests performed in 2004 decreased by 67% and 3% compared to 2002 and 2003, respectively. The overall positivity rate increased from 0.5% in 2002 to 1.2% in 2004.

Table 4.2 shows the results of HIV tests reported to the WCDHD Counseling and Testing System (CTS) stratified by the type of testing site. Testing sites include the WCDHD STD, TB and family planning clinics, community-based organizations funded by the WCDHD to provide HIV tests, and the Sexual Assault Response Team.

These data do not include test results from Northern Nevada HOPES -- the Ryan White CARE Act Title II provider for Northern Nevada. Participation in CTS is voluntary; therefore, the positivity rates in Table 4.2 may not be generalizable to the results of all HIV tests performed in Washoe County.

Table 4.2 HIV Positivity by Testing Site, Washoe County, 2004.

Site Type	No. Tested	No. Positive	Positivity (%)
STD	256	3	1.2
TB	26	0	0.0
Prison/Jail	400	2	0.5
Family Planning	1	1	100.0
Other*	655	10	1.5
Total	1338	16	1.2

* Other sites refer to gay and lesbian drop in center, sexual assault response team, special events such as World AIDS Day, and other outreach sites.

Persons who report a combination of MSM and IDU as risk factors have a significantly higher HIV positivity rate.

Table 4.3 HIV Positivity by Risk Behavior, Washoe County, 2004.

Risk Behaviors	No. Tested	No. Positive	Positivity (%)
MSM	207	8	3.9
Heterosexual, no other risk	53	2	3.8
MSM IDU	31	1	3.2
Sex partner at risk	225	2	0.9
No acknowledged risk	115	1	0.9
STD diagnosis	108	1	0.9
Heterosexual IDU	272	1	0.4
Sex while using drugs	163	0	0.0
Victim of sexual assault	132	0	0.0
Sex for drugs or money	14	0	0.0
Health care exposure	7	0	0.0
Other	7	0	0.0
Hemophilia/blood recipient	3	0	0.0
Child of HIV+ woman	1	0	0.0
Total	1338	16	1.2

TUBERCULOSIS

I. Epidemiology

A. Tuberculosis

1. Reported Incidence

Nineteen (19) cases of tuberculosis (TB) were reported in Washoe County in 2004 for an incidence of 5.0 cases per 100,000 population. The national incidence of TB in 2004 was 4.9 cases per 100,000 population. The Healthy People 2010 national health objective for the annual incidence of TB is 1.0 new case per 100,000 population.

Figure 1.1 Rates of Reported Cases of TB, Washoe County, 1994-2004.

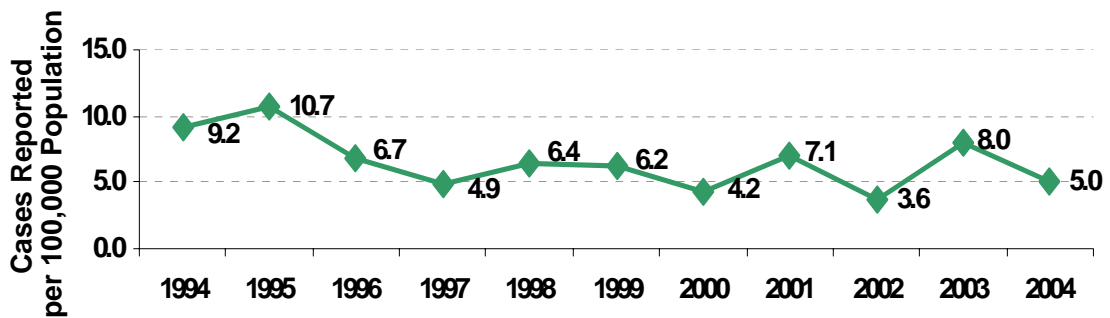
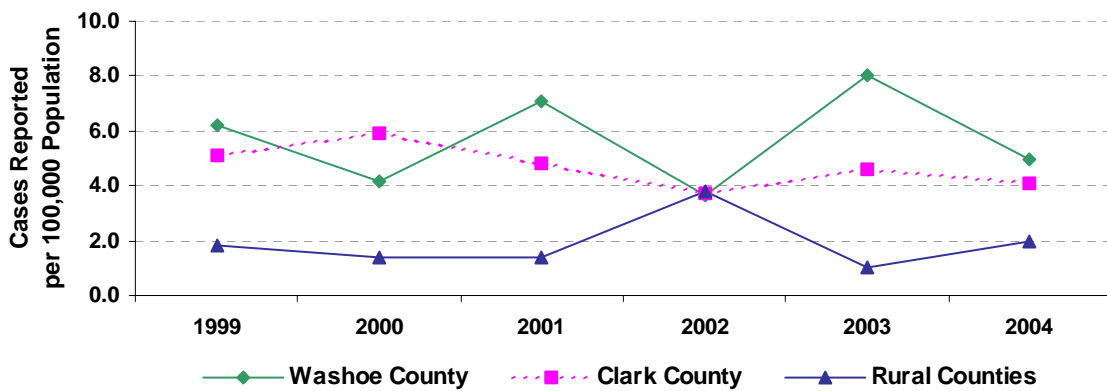


Figure 1.2 Rates of Reported Cases of TB by County, Nevada, 1999-2004.



2. Population Affected

In 2004, no children were diagnosed with TB. The mean age of male cases was 47 years, with a range of 23 to 62 years. The mean age of female cases was 44 years, with a range of 20 to 72 years.

Figure 1.3 Reported Cases of TB by Age and Gender, Washoe County, 2004.

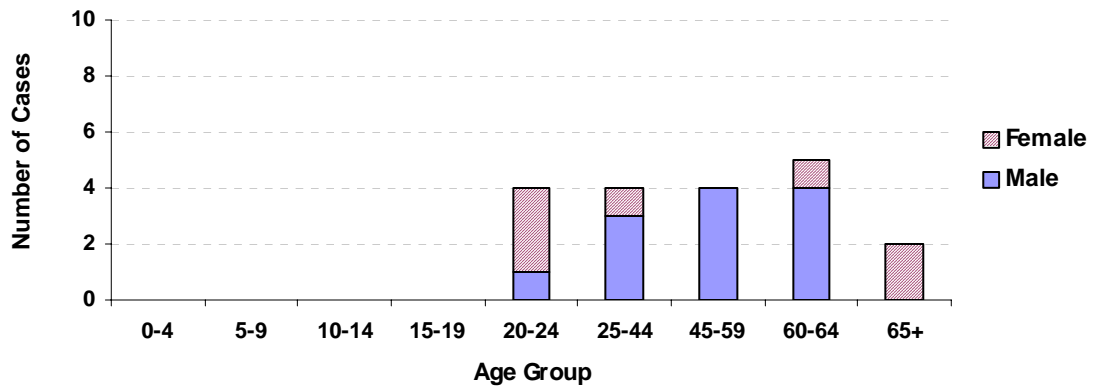


Figure 1.4 Reported Cases of TB by Gender, Washoe County, 1999-2004.

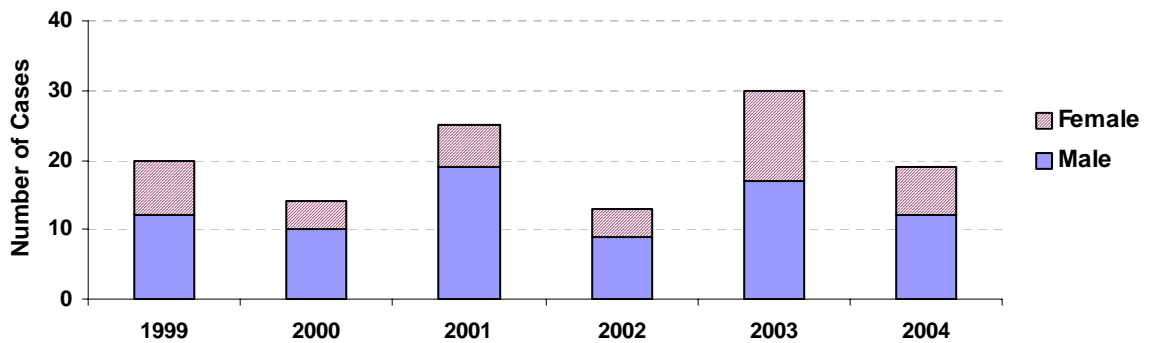
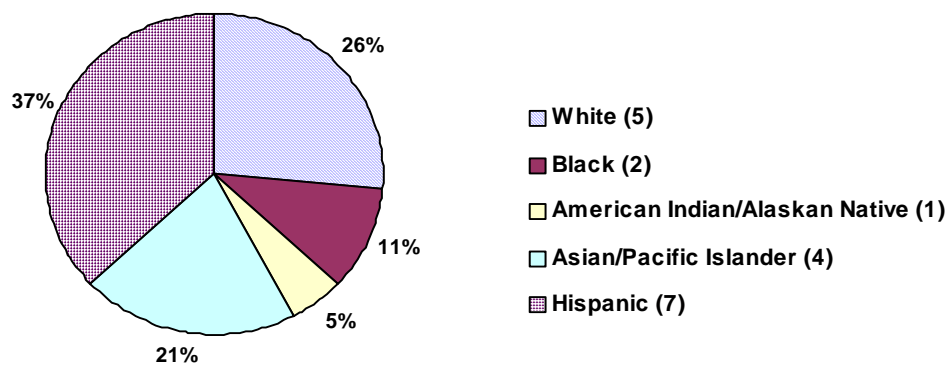


Figure 1.5 Reported Cases of TB by Race/Ethnicity, Washoe County, 2004 (n=19).



In 2004, 12 (62%) of the reported TB cases in Washoe County were born in foreign countries where TB is endemic. There were nine countries of birth represented, including China, India, Mexico, Peru,

Vietnam, Cameroon, Ethiopia, El Salvador and the Philippine Islands. Birth in a Latin American country accounted for 50% of the foreign-born cases and 31% of all cases.

Figure 1.6 Proportion of Reported Cases of TB by Birth Country, Washoe County, 2004.

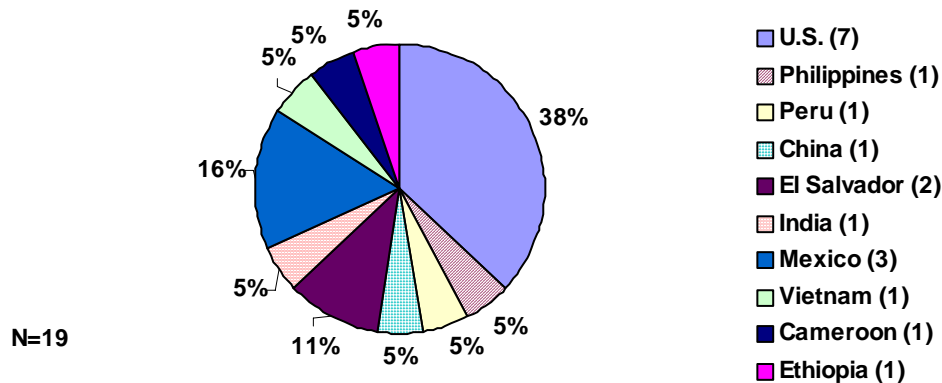
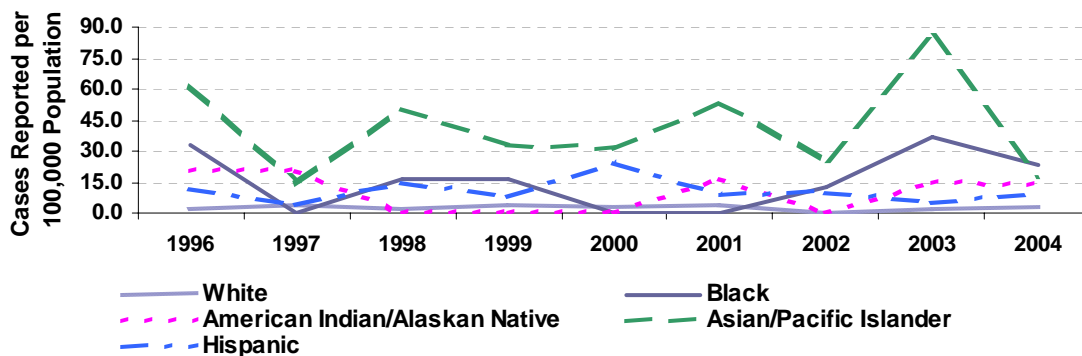


Figure 1.7 Rates of Reported Cases of TB by Race/Ethnicity, Washoe County, 1996-2004.



3. Drug Resistant TB

No cases of multi-drug resistant TB (MDR-TB) were reported or treated in Washoe County in 2004. One (1) case of INH-resistant TB was reported in Washoe County in 2004.

4. TB and HIV Co-infection

All cases of TB diagnosed in 2004 were screened for HIV. There were no co-infections with HIV identified.

B. Latent Tuberculosis Infection (LTBI)

1. Reported Incidence

The definition of “latent tuberculosis infection” is infection with *Mycobacterium tuberculosis* or *M. bovis* -- the bacilli that cause TB, without any disease process due to the infection. It is not possible to determine how many persons become infected with the TB bacilli each year.

2. Population Affected

The WCDHD Tuberculosis Prevention and Control Program (TBPCP) performs or tracks the results of tuberculin skin tests (TSTs) and screening interviews on persons most at risk for TB infection in Washoe County. These high risk groups are the close contacts to TB cases, foreign-born persons from countries where TB is endemic, persons seeking entry to homeless shelters and group homes, and incarcerated persons.

Table 2.2 Prevalence of TST Positivity by Risk Category, 2004.

Status	# Tested	# Positive	% Positive
U.S.-born & not a known contact to a TB case	1227	168	13.0
Persons entering shelters, group homes, other	1588	220	14.0
Contact to a TB case	244	46	18.9
Foreign-born	215	101	47.0
Foreign-born & a contact to a TB case	62	41	66.1

A total of 1788 TSTs were administered by the TBPCP in 2004.

Table 2.3 Tuberculin Skin Test Results, TBPCP, 1994-2004.

Year	Total # of Persons Tested	# Positive	Percent Positive
1994	4599	544	11.8
1995	5715	466	8.2
1996	1798	121	6.7
1997	3351	232	6.9
1998	4490	454	10.1
1999	4268	419	9.8
2000	4020	407	10.1
2001	4566	588	12.9
2002	4276	418	9.8
2003	2252	323	14.3
2004	1788	331	18.5

II. Prevention and Control

A. Tuberculosis

1. Cases

Thirty-four (34) cases of TB were treated by the TB Prevention and Control Program (TBPCP) in 2004. These included 19 cases reported in 2004, 13 cases reported in 2003 and 2 cases reported in Utah who transferred to Washoe County. Three (3) additional cases were treated by private physicians in the community and were monitored by TBPCP staff.

Of the 19 cases of TB diagnosed in 2004, 7 completed a full course of curative treatment; 1 died of non-TB-related causes during treatment; 3 transferred out of Washoe County and continued treatment in their new locations; and 9 remained on treatment in Washoe County into 2005. All cases treated and managed by the TBPCP received directly observed therapy (DOT).

Of the persons diagnosed with TB in Washoe County in **2003**, 87% (26 of 30 cases) completed a course of curative treatment within 12 months, 2 died during treatment and 1 was unable to tolerate treatment. One case who was INH-resistant completed treatment within 13 months. The Healthy People 2010 national health objective for completing a course of curative treatment for TB within 12 months is 90%.

2. Contacts to TB Cases

In 2004, 17 contact investigations were done by the TBPCP. Two investigations were conducted by institutions (VAMC and Job Corps). A total of 685 contacts to TB cases were identified, and 244 contacts received a tuberculin skin test (TST) or were otherwise evaluated for TB infection.

An investigation of a TB case in the jail identified 565 contacts, including 10 family members.

Table 2.1 TST Results, Contacts to TB Cases, Washoe County, 1994-2004.

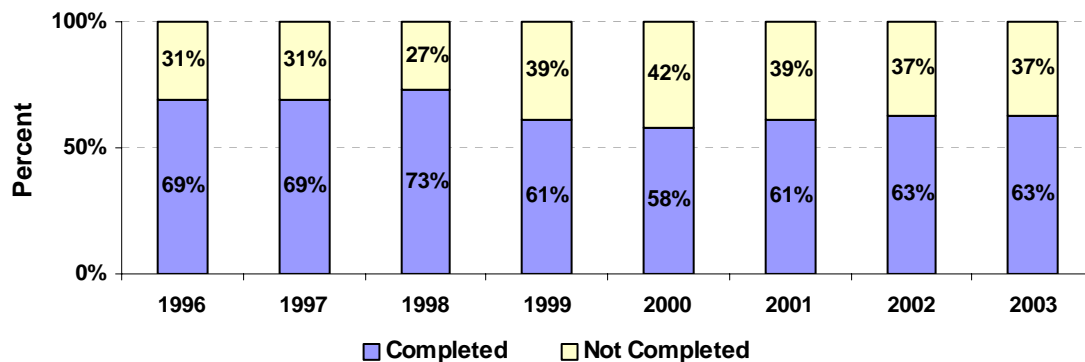
Year	# of Contacts Tested	# Positive	% Positive	# Diagnosed with TB	% Diagnosed with TB
1994	1498	276	18	1	0.1
1995	973	133	14	0	0.0
1996	215	34	16	0	0.0
1997	73	19	26	0	0.0
1998	394	134	34	0	0.0
1999	96	52	54	0	0.0
2000	40	13	33	0	0.0
2001	542	132	24	0	0.0
2002	71	23	32	1	1.4
2003	156	58	37	1	0.6
2004	244	54	22	1	0.1

B. Latent Tuberculosis Infection (LTBI)

1. Treatment of LTBI

In 2004, 125 cases of LTBI were treated by the TBPCP. Of the LTBI cases who started treatment in **2003**, 63% completed treatment. The Healthy People 2010 national health objective for completing treatment of LTBI is 85%.

Figure 2.1 Completion Rate for Treatment of LTBI, TBPCP, 1996-2003.



VACCINE PREVENTABLE DISEASES

In 2004, 82% of Washoe County children aged 24 -35 months were appropriately immunized. The Healthy People 2010 national health objective for vaccine coverage among children aged 19-35 months is 90%.

The WCDHD works closely with the Washoe County School District, the Washoe County Immunization Coalition, private health care providers and child care providers to raise immunization rates and prevent vaccine-preventable diseases. There are highly effective vaccines against measles, mumps, rubella, varicella, diphtheria, tetanus, pertussis, polio, influenza, invasive pneumococcal (*Streptococcus pneumoniae*) disease and invasive *Haemophilus influenzae* type b (Hib) disease.

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

Table A Summary Of Laboratory-Confirmed Cases of Vaccine Preventable Diseases (VPD), Washoe County, 1995 – 2004*

VPD	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Diphtheria	0	0	0	0	0	0	0	0	0	0
Measles	0	0	2	0	1	0	0	0	0	0
Mumps	1	1	0	0	2	0	0	0	0	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	0	0	0	0

*Varicella is not a reportable disease in Nevada.

The WCDHD and the Vaccines For Children (VFC) providers administer the vast majority of childhood vaccines in Washoe County.

Table B Vaccine-Specific Doses Administered, Washoe County, 2005.

Vaccine	WDHD*	VFC Providers**	Total
DTaP, DT	2,772	9,224	11,996
Td	5,269	5,198	10,467
IPV	2,296	10,130	12,426
MMR	4,445	11,332	15,777
Varicella	2,164	3,405	5,569
Pediarix	2,388	6,103	8,491
Total	19,334	45,392	64,726

* Data obtained from Immunization Registry.
 ** Data supplied by Nevada State Health Division.

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

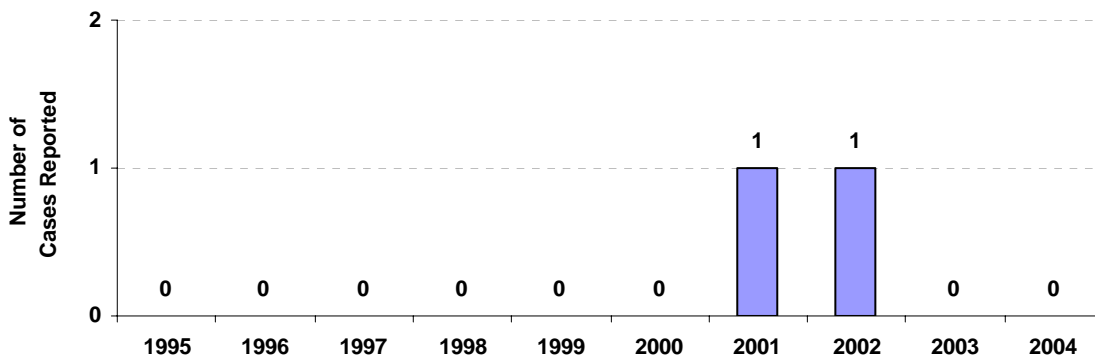
A. Epidemiology

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

1. Reported Incidence

No laboratory-confirmed cases of invasive Hib disease were reported in Washoe County in 2004. The 2003 national incidence was 0.70 cases per 100,000 population. The Healthy People 2010 national health objective is zero cases in children < 5 years of age.

Figure 1.1 Invasive Hib Disease, Washoe County, 1995-2004.



2. Population Affected

No laboratory-confirmed cases of invasive Hib disease were reported in Washoe County in 2004.

B. Prevention and Control

Table 1.1 Doses of Hib-Containing Vaccine Administered, Washoe County, 2004.

Vaccine	<Age 2	Age 2-6	Age 7-18*	Over 18*	Total
DTaP-Hib	0	1	0	0	1
Hib	23,030	992	2	11	24,035
Hib-HBV	434	6	34	0	474
Total	23,464	999	36	11	24,510

*Hib vaccine may be given to persons 5 years of age and older for certain medical conditions.

II. Invasive Meningococcal Disease

A. Epidemiology

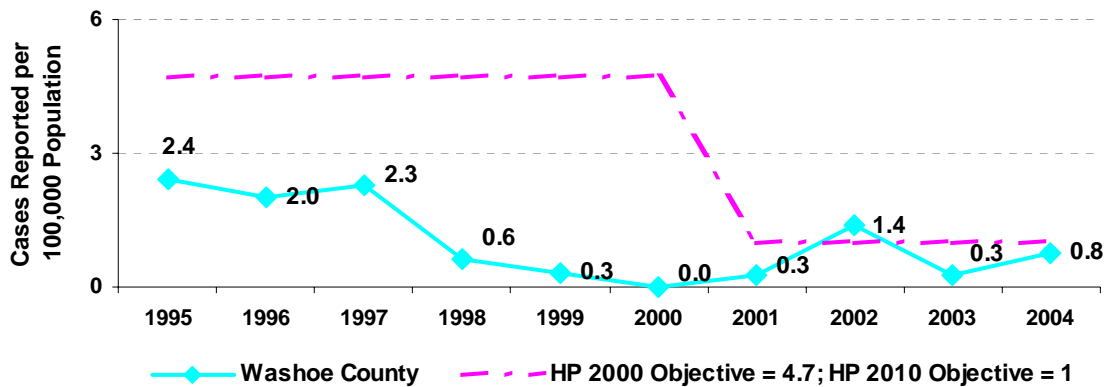
Invasive *Neisseria meningitidis* disease can present as bacteremia and meningitis. Meningococcal vaccine protects against four strains of *N. meningitidis*, but it is not routinely used in the United States. College

freshmen, especially those who live in dormitories, are at higher risk for meningococcal disease and should be educated about the availability of a safe and effective vaccine that can decrease their risk.

1. Reported Incidence

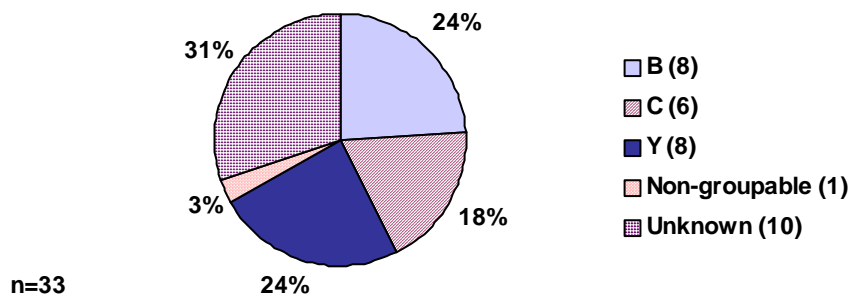
Three (3) laboratory-confirmed cases of invasive meningococcal disease were reported in Washoe County in 2004 for a reported incidence of 0.78 cases per 100,000 population. The 2003 national incidence was 0.61 cases per 100,000 population. The Healthy People 2010 national health objective for meningococcal disease is 1.0 case per 100,000 population. One fatality was reported in 1995 and one in 2002 in Washoe County.

Figure 2.1 Rate of Reported Cases of Invasive Meningococcal Disease, Washoe County, 1995 – 2004.



Most cases of invasive meningococcal disease are sporadic; however, since 1991, the frequency of localized outbreaks has increased. Most of these outbreaks have been caused by serogroup C. Since 1997, localized outbreaks caused by serogroup Y and B organisms have also been reported. The current quadrivalent meningococcal vaccine protects against serogroups A, C, Y and W-135.

Figure 2.2 Meningococcal Serogroups, Washoe County, 1995 – 2004.



2. Population Affected

Figure 2.3 Invasive Meningococcal Disease Cases by Age and Gender, Washoe County, 2004.

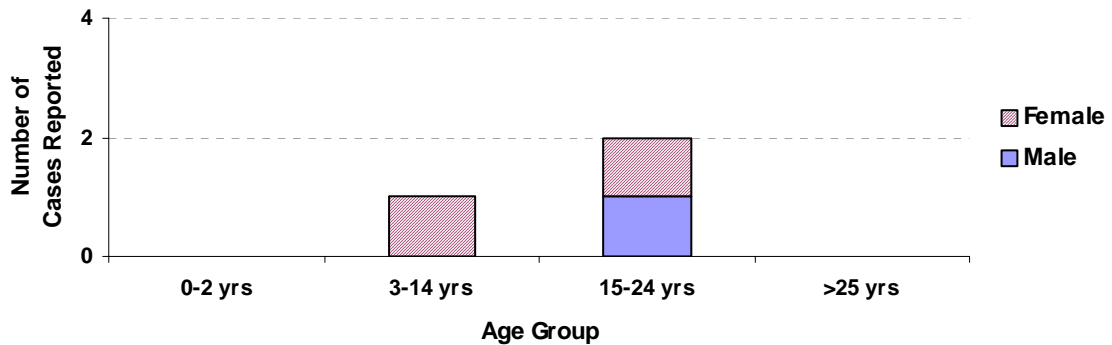
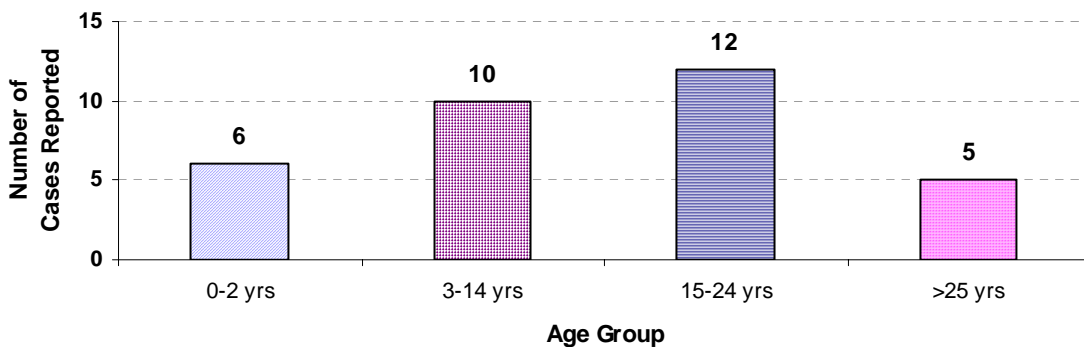


Figure 2.4 Invasive Meningococcal Disease Cases by Age, Washoe County, 1995 – 2004. (n=33)



Of the three invasive meningococcal cases in 2004, two were white non-Hispanic and one was Asian.

B. Prevention and Control

Table 2.1 Doses of Meningococcal Vaccine Administered, Washoe County, 2004.

Vaccine	<Age 2	Age 2-6	Age 7-18	Over 18	Total
Meningococcal	0	0	100	19	119

III. Invasive Pneumococcal Disease

A. Epidemiology

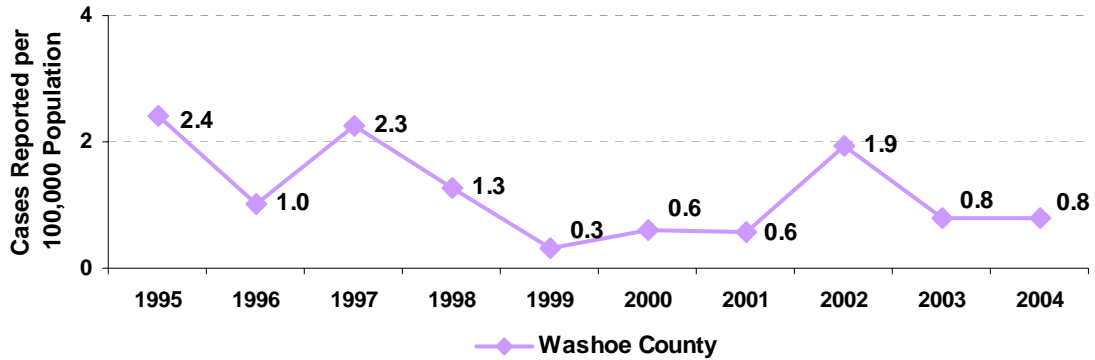
Streptococcus pneumoniae (pneumococcus) is a leading cause of illness in young children, and causes illness and death among the elderly and persons with certain underlying medical conditions. *S. pneumoniae* causes meningitis, bacteremia, pneumonia and otitis media.

Eighty-eight percent (88%) of all serotypes that are known to cause invasive disease are included in the 23-valent polysaccharide vaccine. Before the pneumococcal conjugate vaccine was introduced in 2001, over 80% of invasive isolates in children < 5 years of age were included in a 7-valent vaccine.

1. Reported Incidence

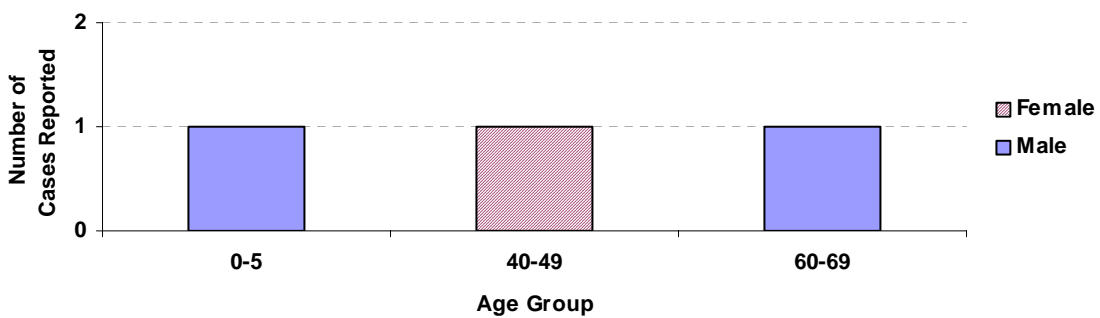
Three (3) laboratory-confirmed cases of invasive pneumococcal disease were reported in Washoe County in 2004 for a reported incidence of 0.78 cases per 100,000 population. The 2003 national incidence for children < 5 years old was 8.9 cases per 100,000 population.

Figure 3.1 Rate of Reported Cases of Invasive Pneumococcal Disease, Washoe County, 1995 – 2004.



2. Population Affected

Figure 3.2 Invasive Pneumococcal Disease Cases By Age And Gender, Washoe County, 2004.



All three 2004 cases were white, non-Hispanic.

B. Prevention and Control

Table 3.1 Doses of Pneumococcal-Containing Vaccine Administered, Washoe County, 2004.

Vaccine	<Age 2	Age 2-6	Age 7-18	Over 18	Total
PNUcon*	7,328	477	1	0	7,806
PNUps**	0	0	4	575	579
Total	7,328	477	5	575	8,385

* conjugated vaccine

** polysaccharide vaccine

IV. Pertussis

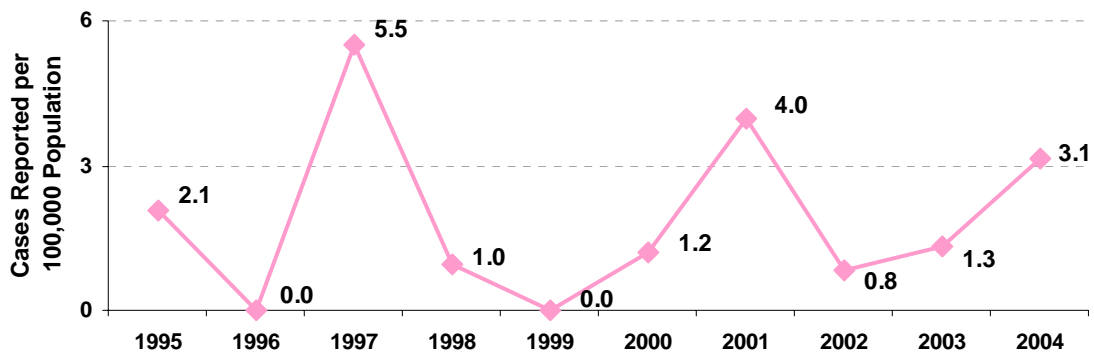
A. Epidemiology

Pertussis, or “whooping cough,” is caused by *Bordetella pertussis*. A vaccine has been available since the 1940s. The most severe cases are in children under 1 year old.

1. Reported Incidence

In 2004, 11 laboratory-confirmed cases and one (1) probable case of pertussis were reported in Washoe County for an incidence of 3.1 cases per 100,000 population. The 2003 national incidence was 4.0 cases per 100,000 population. The Healthy People 2010 national health objective for pertussis is to reduce the incidence by 41% from the 1998 baseline incidence of 1.0 case per 100,000 population.

Figure 4.1 Rate of Reported Cases of Pertussis, Washoe County, 1995 – 2004.



2. Population Affected

Table 4.1 Pertussis Case Summary, Washoe County, 2004.

Age	Gender	Race	Ethnicity	Hospitalized	Number of Doses of Pertussis-Containing Vaccine Received	Number of Contacts for Whom Prophylaxis was Recommended	Number of lab test Positive Contacts
34 days	Female	White	Non-Hispanic	Yes	N/A*	6	0
14 months	Male	American Indian	Non-Hispanic	No	1	12	0
4 months	Female	White	Hispanic	Yes	1	5	2
6 years	Female	White	Non-Hispanic	No	0	18	0
6 years	Female	White	Non-Hispanic	No	5	39	0
15 years	Female	White	Non-Hispanic	No	4	15	0
23 years	Female	White	Non-Hispanic	No	unk	2	2
25 years	Female	White	Non-Hispanic	No	5	0	0
42 years	Female	White	Non-Hispanic	No	unk	5	0
50 years	Male	White	Non-Hispanic	No	unk	1	1
52 years	Female	White	Non-Hispanic	No	unk	0	0
62 years	Female	White	Non-Hispanic	No	unk	12	0

*Pertussis vaccine is not given to persons < 2 months of age or > 6 years of age

3. Prevention and Control

Table 4.2 Doses of Pertussis-Containing Vaccine Administered, Washoe County, 2004.

Vaccine	<Age 2	Age 2-6	Age 7-18	Over 18	Total
DTaP, DT	7,181	4,792	14	8	11,995
DTaP-Hib	0	1	0	0	1
DTaP-HepB-IPV	8,188	285	16	2	8,491
Total	15,369	5,078	30	10	20,487

V. Influenza

A. Surveillance, 2003 - 2004

The District Health Department has participated in the CDC national influenza surveillance program since 1984. The WCDHD conducts year-round influenza surveillance. Emergency departments, private providers and UNR Student Health Services participate. They report the number of patients seen with influenza-like illness (ILI) on a weekly basis and collect specimens for culture. ILI is defined as a fever $\geq 100^{\circ}$ F **AND** a cough and/or sore throat -- in the absence of a known cause other than influenza.

1. United States

The 2003-2004 influenza surveillance program was conducted between September 28, 2003 and May 22, 2004. Local health departments reported weekly to CDC where statistics were compiled on a national basis.

The 2003-2004 U.S. influenza season began earlier than most seasons and was moderately severe; influenza A (H1), A (H3N2), and B viruses co-circulated, and the predominant strain was influenza A (H3N2). Influenza morbidity in the U.S. peaked during early-to-mid December 2003. The percentage of patient visits for ILI peaked at 9.4% during the week ending December 27, 2003 (week 52). (See Figure 5.3)

Early outbreaks of influenza were associated with several deaths occurring among children in Texas and Colorado, and the Centers for Disease Control and Prevention (CDC) requested that states report influenza-associated pediatric deaths. In June 2004, the Council of State and Territorial Epidemiologists (CSTE) approved an initiative to add pediatric influenza-associated deaths to the list of nationally notifiable conditions.

Mortality due to pneumonia and influenza peaked during early January 2004. The percentage of pneumonia and influenza (P & I) deaths in the United States peaked at 10.3% during the week ending January 17 (week 2), and exceeded the epidemic threshold for nine consecutive weeks during the 2003-2004 season. (See Figure 5.4) During the previous four seasons, the number of consecutive weeks during which the percentage of deaths attributed to P & I was above the epidemic threshold ranged from 0 to 17 weeks.

Nationally, during the 2003-2004 season, 99.1% of influenza isolates were influenza type A viruses and 0.9% were influenza type B viruses. The percentage of respiratory specimens testing positive for influenza, a key indicator of the level of influenza activity, peaked at 32.5% during the week ending November 29, 2003 (week 48); however, the largest number of isolates was reported during the week ending December 13, 2003 (week 50). The peak percentage of specimens testing positive for influenza

during the previous four seasons (1999-2000, 2000-2001, 2001-2002 and 2002-2003) ranged from 23% to 31%.

The CDC reported that between September 28, 2003, and May 22, 2004, the World Health Organization (WHO) and the National Respiratory and Enteric Virus Surveillance System (NREVSS) laboratories tested 130,577 specimens for influenza viruses.

Figure 5.1 Influenza Testing Results, U.S. World Health Organization (WHO) and the National Respiratory and Enteric Virus Surveillance System (NREVSS) Collaborating Laboratories, September 28, 2003 – May 22, 2004.

Total # Specimens Tested	Total # Yielding Influenza Isolates	% of Specimens Yielding Influenza Isolates												
130,577	24,649	18.9%												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Influenza Type A</th> <th style="width: 50%;">Influenza Type B</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">24,400 (99.1%)</td> <td style="text-align: center;">249 (1.0%)</td> </tr> <tr> <td colspan="2" style="text-align: center;">7191 (29.5%) subtyped</td> </tr> <tr> <td colspan="2" style="text-align: center;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">A (H3N2)</th> <th style="width: 50%;">A (H1)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">7189 (99.9%)</td> <td style="text-align: center;">2 (0.1%)</td> </tr> </tbody> </table> </td> </tr> </tbody> </table>			Influenza Type A	Influenza Type B	24,400 (99.1%)	249 (1.0%)	7191 (29.5%) subtyped		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">A (H3N2)</th> <th style="width: 50%;">A (H1)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">7189 (99.9%)</td> <td style="text-align: center;">2 (0.1%)</td> </tr> </tbody> </table>		A (H3N2)	A (H1)	7189 (99.9%)	2 (0.1%)
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7189 (99.9%)	2 (0.1%)													

CDC antigenically characterized 991 influenza virus isolates received from U.S. laboratories between October 1, 2003 and May 22, 2004:

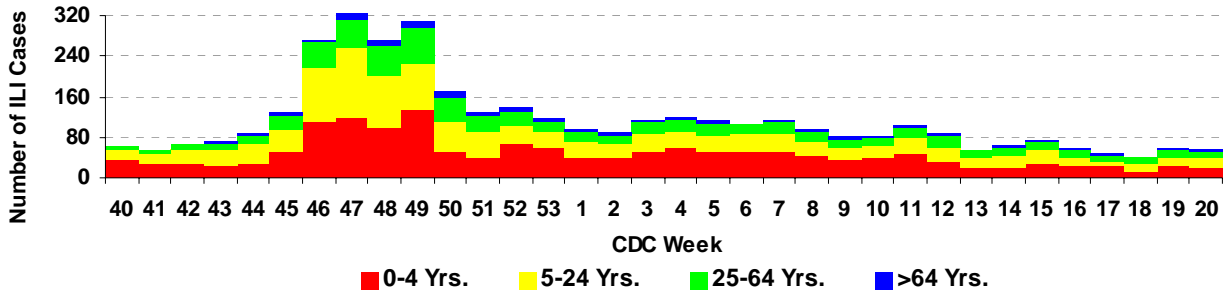
- ◆ 918 influenza A (H3N2) viruses,
- ◆ 3 influenza A (H1) viruses,
- ◆ and 70 influenza type B viruses.

The hemagglutinin proteins of the influenza A (H1) viruses were similar antigenically to the hemagglutinin of the vaccine strain A/New Caledonia/20/99. Of the 918 influenza A (H3N2) isolates that have been characterized, 106 (11.5%) were similar antigenically to the vaccine strain A/Panama/2007/99 (H3N2), and 812 (88.5%) were similar to the drift variant, A/Fujian/411/2002 (H3N2). Sixty-five of the influenza B viruses belonged to the B/Yamagata lineage and were similar antigenically to B/Sichuan/379/99. Five influenza B viruses belonged to the B/Victoria lineage and were similar antigenically to the vaccine strain B/Hong Kong/330/2001.

2. Washoe County

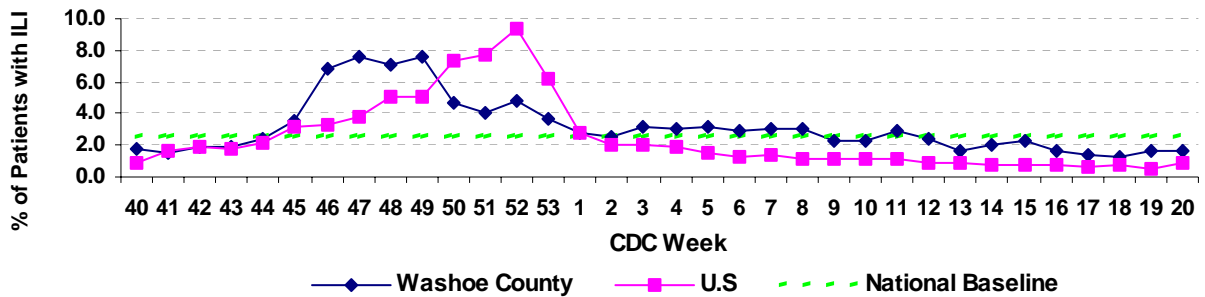
The 2003-2004 influenza surveillance program was conducted between September 28, 2003 and May 22, 2004. Six local health care providers sent weekly fax reports of the numbers of persons seen with ILI. WCDHD staff searched death certificates for reports of deaths due to influenza or pneumonia.

Figure 5.2 Number of ILI Cases by Week and Age Group Reported by Sentinel Physicians, Washoe County Influenza Surveillance, 2003 – 2004.



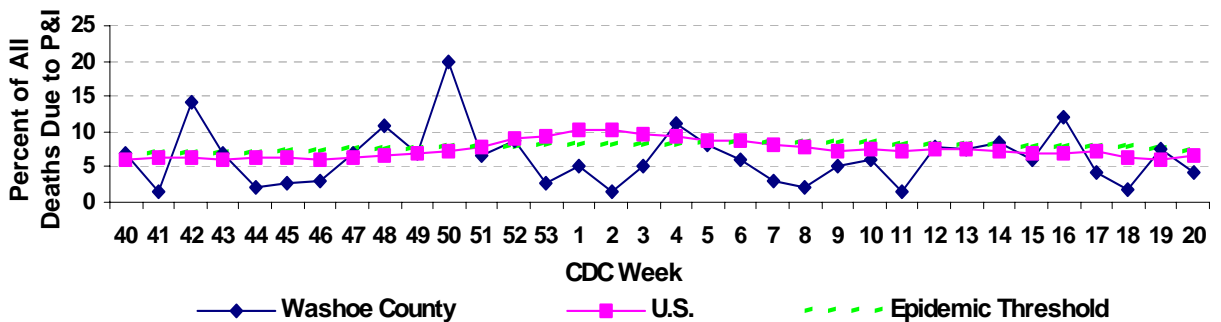
The percentage of overall patient visits for ILI in Washoe County peaked at 7.6% during the weeks ending November 22, 2003 (week 47) and December 6, 2003 (week 49).

Figure 5.3 Proportion of Patients Seen with ILI by Sentinel Physicians, Washoe County Influenza Surveillance, 2003 – 2004.



The proportion of deaths due to pneumonia and influenza (P & I ratio) peaked at 19.8% during the week ending December 13, 2003 (week 50) in Washoe County. Figure 5.4 shows that Washoe County exceeded the epidemic threshold during weeks 40, 42, 43, 48, 50, 52, 4, 14, and 16.

Figure 5.4 Pneumonia and Influenza Mortality, Washoe County Influenza Surveillance, 2003 – 2004.



Three providers were given culture media to culture patients who fit the criteria for ILI. The hospital providers did not participate in the testing component of the surveillance. Sentinel providers submitted

49 specimens for viral testing to the Nevada State Public Health Laboratory (NSPHL). Twenty-six (26) specimens (53%) yielded influenza isolates.

All 26 isolates were identified as influenza type A (H3N2). Three (3) influenza type A isolates (two H3N2, one not subtyped) were also reported from non-sentinel health care providers. The earliest confirmed isolate was from a specimen collected on October 27, 2003. This isolate was identified as influenza type A (H3N2). In addition, there were 40 positive influenza reports by test methods other than viral isolation (i.e., DFA and rapid flu antigen tests).

Figure 5.5 Test Results from Sentinel Providers, Washoe County Influenza Surveillance, 2003 – 2004.

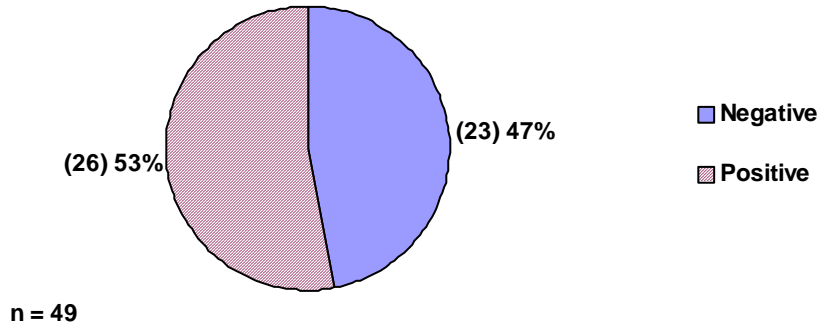
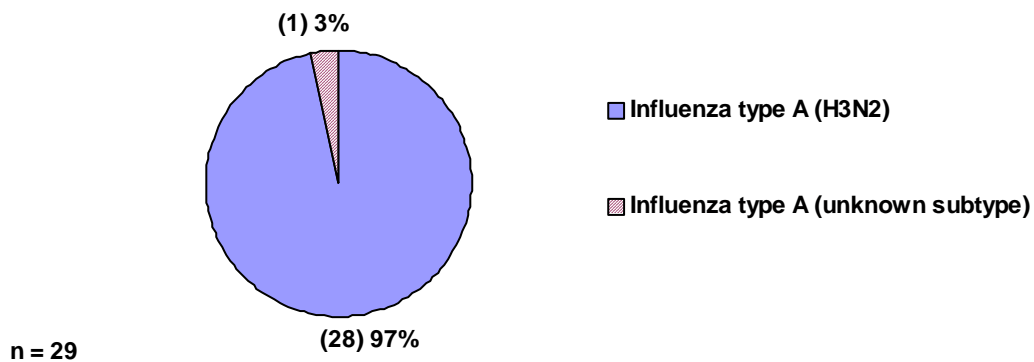


Figure 5.6 Influenza Virus Isolates, Washoe County Influenza Surveillance, 2003 – 2004.



Seven (7) specimens were forwarded to CDC for antigenic characterization. See Table 5.1 for results.

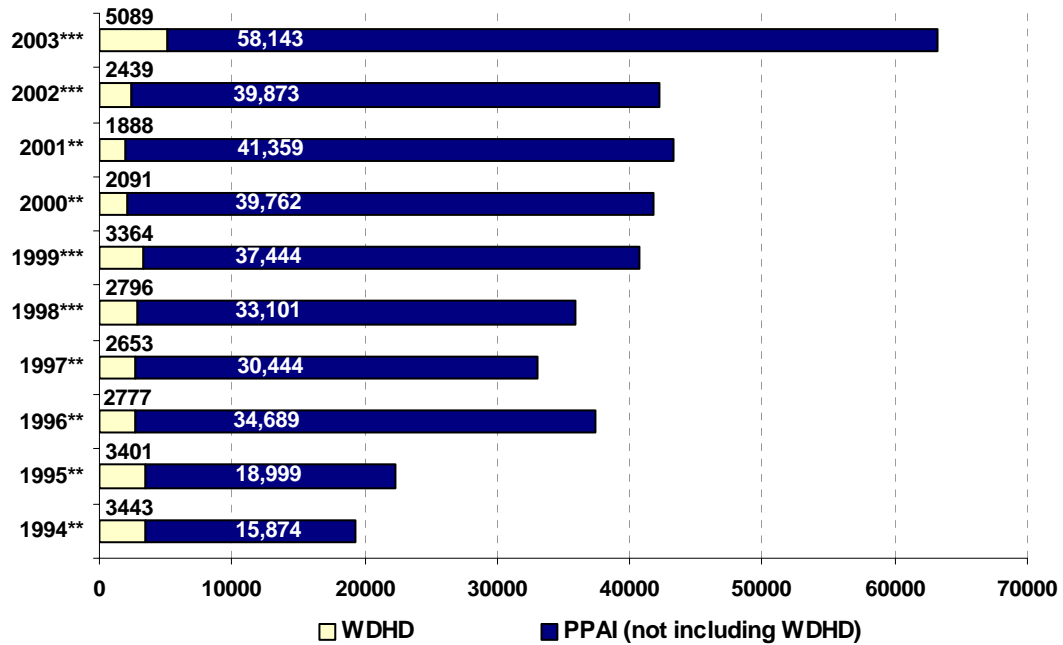
Table 5.1 Antigenic Characterization of Seven Confirmed Influenza Isolates, Washoe County, 2003 – 2004.

Type	Sub type	# of isolates	Antigenic Characterization
A	H3N2	1	A/Fujian/4111/2002
A	H3N2	3	A/Korea/770/2002-like
A	H3N2	3	A/Panama/2007/99-like

B. Prevention and Control

Vaccinating persons at high risk for complications of influenza before the season each year is the most effective means of reducing the impact of influenza. The optimal time to vaccinate is usually from the beginning of October through mid-November. The majority of influenza vaccine is administered during this time.

Figure 5.7 Total Doses of Influenza Vaccine Administered by WCDHD and PPAI*, 1994 – 2003.



* Partners Promoting Adult Immunization – Northern Nevada Medical Center, Saint Mary’s Health Network, Washoe District Health Department, Washoe Health System, Regional Emergency Medical Service Authority. For 2003 Don’s Pharmacy and Maxim Healthcare Services were also part of PPAI.

** Estimated.

*** Actual.

VECTOR-BORNE DISEASES

I. Mosquito-Borne Diseases

A. Arboviral Encephalitides

Arthropod-borne viruses or “arboviruses” occur in nature and cycle between birds and mosquitoes. Other vertebrates, including humans, can become accidental hosts. Mosquitoes in the genus *Culex* are the primary vectors. Two *Culex* species (*Culex tarsalis* and *Culex pipiens*) are common in the Truckee Meadows. Viruses associated with human disease include: St. Louis Encephalitis (SLE), Western Equine Encephalomyelitis (WEE), and most recently West Nile Virus (WNV).

1. West Nile Virus

a. Reported Incidence

WNV first appeared in the United States in New York in 1999. Table 1.1 summarizes human WNV infections in the U.S. from 1999 through 2004.

Table 1.1 Summary of WNV Cases, U.S., 1999-2004.

Year	Neuroinvasive disease	Fever	Unspecified	Total Human Cases Reported to CDC	Deaths	Mortality Rate
1999-2000	N/A	N/A	N/A	97	13	13.4
2001	N/A	N/A	N/A	52	5	9.6
2002	N/A	N/A	N/A	4156	284	6.8
2003	2866	6830	166	9862	264	2.7
2004	900	1017	553	2470	88	3.6
Total	3766	7847	719	16637	654	3.9

Three (3) laboratory-confirmed cases of West Nile Virus were reported in Washoe County in 2004 for a reported incidence of 0.78 cases per 100,000 population. Two of the three cases were classified as West Nile Fever; the third case was classified as West Nile neuroinvasive disease. In 2003, the national incidence of arboviral encephalitis/meningitis attributed to WNV infection was 1.0 case per 100,000 population.

One blood donor reported by United Blood Services tested positive for WNV in 2004. The individual was asymptomatic, so did not meet the case definition to be counted.

b. Population Affected

All three WNV cases were white males, aged 30 to 72 years. The cases recovered without reported sequelae.

All three cases reported a history of outdoor activities in the four weeks prior to onset of symptoms. Two cases also reported a history of travel outside of Washoe County in this same time period. The asymptomatic blood donor reported history of mosquito bites/exposure and outdoor activity at home, but denied any travel outside of Washoe County in the four weeks prior to donating blood.

Risk Behavior (not mutually exclusive)	Number of cases
Mosquito bites/exposure	2
Outdoor activity	3
Travel outside Washoe County	2
Travel outside Nevada	2

B. Parasitic Diseases

1. Malaria

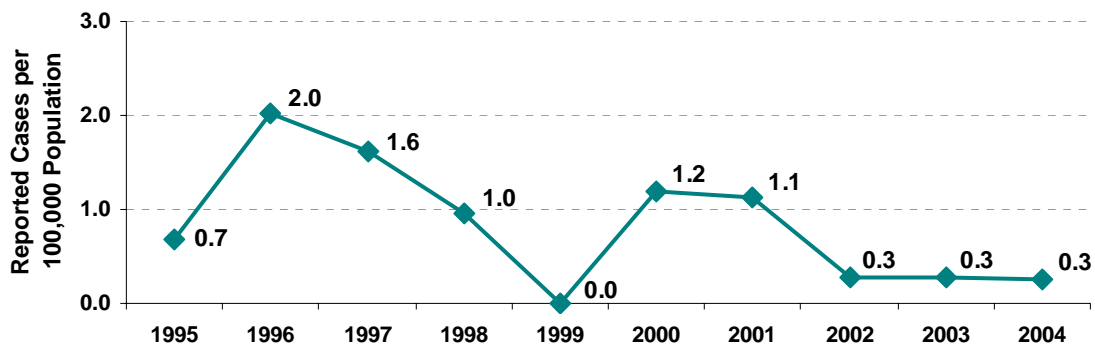
Malaria is caused by infection with any of four species of the protozoan parasite *Plasmodium* (i.e., *P. falciparum*, *P. vivax*, *P. ovale*, *P. malariae*). The *Plasmodium* parasite is transmitted by the bite of an infected anopheline mosquito. Until the 1940s, malaria was endemic in the United States. *Anopheles* mosquitoes are present in the Truckee Meadows, however, most likely not in dense enough numbers for the transmission of malaria.

The Healthy People 2010 national health objective for malaria is under development. The objective will focus on increasing the proportion of international travelers who receive recommended anti-malarial prophylaxis when traveling to areas where malaria is endemic.

a. Reported Incidence

One laboratory-confirmed imported case of *Plasmodium vivax* was reported in Washoe County in 2004 for an incidence of 0.26 cases per 100,000 population. In 2003, the national incidence of malaria was 0.49 cases per 100,000 population.

Figure 1.1 Annual Rate of Reported Cases of Malaria, Washoe County, 1995 – 2004.



b. Population Affected

The 2004 case was a 56-year-old White male with a history of living in Brazil where malaria is endemic. He did not take anti-malarial chemoprophylaxis before or during the time he was in Brazil.

C. Mosquito-Borne Disease Surveillance, Prevention & Control

The District Health Department'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

Controlling the mosquito population for arboviruses also controls malaria and other potential parasitic diseases. Mosquito-borne disease surveillance consists of monitoring conditions necessary for viral disease transmission that include: adequate extrinsic incubation temperature, a minimum density of mosquitoes, and the presence of virus. These contributing conditions are monitored in order to evaluate the risk of virus transmission to humans.

a. Environmental Conditions

Extrinsic incubation refers to the temperature needed for the pathogen to survive and multiply in the ectothermic mosquito. Daily average temperatures must exceed 65° F for WEE and 75° F for SLE for 10 days or more. Optimal average daily temperatures for WNV are thought to be around 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 viral transmission is 10 or more females per New Jersey trap night. Transmission of WNV may occur at lower densities. Densities of vector-competent mosquito species are plotted together with 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 the antibodies to WEE and SLE approximately two weeks before the disease occurs in humans. This provides a window of opportunity to increase control efforts in the area where the virus is identified.

Five sentinel chicken flocks of 10 birds each were placed at sites in Washoe County based on the local prevalence of vector species and proximity to human populations. Flocks were sampled bi-weekly from the first week of May through mid-October, 2004. Blood samples were tested for antibodies specific to WEE and SLE. SLE and WNV are members of the same virus family -- *Flaviviridae*, so serological tests cross-react. Any samples that test positive for SLE are further tested for WNV.

There were no WEE-positive samples from the sentinel flocks in 2004. Two samples collected in Washoe Valley and Spanish Springs on June 23, 2004, were positive on ELISA for flavivirus when tested by the VBDP laboratory. The Nevada Department of Agriculture, Animal Disease Laboratory (ADL) also tested the samples and reported equivocal results. Both specimens were reported as IgM positive and IgG negative for WNV. Additional confirmatory testing was still pending as of December 31, 2004.

2. Wild Birds

On July 16, 2004, a dead crow collected from Carson City and tested by ADL was positive by PCR for WNV. This was the first recognized presence of WNV in Nevada. Subsequently, in Washoe County, VBDP staff collected and sampled 79 dead birds of various species with 52

(65.8%) testing positive for WNV. An additional six dead birds submitted by Washoe County residents directly to the ADL tested positive. Statewide, 147 WNV positive birds were reported in 12 counties.

3. Mosquitoes

In cooperation with ADL, VBDP collected and tested adult female mosquitoes for WNV. The mosquitoes were trapped using CDC CO₂ traps. VBDP staff trapped and/or identified (to species and sex) 590 pools from 16 counties for a total of 20,567 mosquitoes. Clark County staff collected an additional 154 pools (~4,900 mosquitoes).

In Washoe County, 37 of 68 pools (54%) were positive for WNV. In Clark County, 25 of 154 pools (16%) were positive for WNV. ADL tested all pools for WEE, SLE and WNV. Reporting of lab results within 48 hours assisted the VBDP to quickly target control measures in foci of infected mosquito populations.

d. Storm Drain Catch Basins

Surveillance of storm drain catch basins showed they are a significant source of urban mosquitoes, especially *Cx. pipiens* and *Cx. stigmatosoma*. During the summer of 2004, VBDP staff surveyed 1,180 catch basins of which 73% (866/1180) harbored mosquito larvae and required control measures.

VBDP staff developed a geo-database of nearly 13,000 catch basins using Arc GIS™ and Access™ software. Mobile GIS capability is being developed using hand-held “PDAs” (Recon™) equipped with Arc Pad™ software to allow digital maps to be taken into the field. Field staff will be able to locate catch basins easily and record data, e.g., date, number of larvae present, treatment used, etc. Data can be uploaded in the office and the geo-database updated quickly.

2. Mosquito Abatement

The use of Arc GIS™ software and digital orthophotography (provided by Washoe County IT-GIS) has become a standard tool in conducting field surveys and aerial larvicide applications. Table 1.3 shows the areas treated in 2004.

Table 1.3 Summary of Acres Treated, WCDHD Vector-Borne Disease Program, 2004.

Method	Acres Treated	Number of Treatments
Air Larvicide (Reno/Sparks)	5220	93
Air Larvicide (Gerlach)	175	2
Ground Larvicide (Reno/Sparks)*	35	130
Ground Larvicide (Gerlach)	23	9
Adulticide (Reno/Sparks)	5006	65
Adulticide (Gerlach)	979	6
Adulticide (Fernley)	1293	11
Totals	12731	316

*An additional 1180 catch basins were surveyed of which 866 were treated, but not included in the acreage value.

II. Flea-borne Diseases

A. Plague

Plague, caused by the bacterium *Yersinia pestis*, is endemic in most of the western United States. It is associated with rodents and their fleas. When outbreaks occur in rodent populations, many rodents die and their fleas look for blood meals elsewhere. People living in or visiting areas where there has been a rodent “die off” are at increased risk for contracting plague. Humans usually become infected from being bitten by infected rodent fleas.

1. Reported Incidence

No human cases of plague (*Yersinia pestis*) were reported in Washoe County in 2004.

2. Population Affected

No human cases of plague (*Yersinia pestis*) were reported in Washoe County in 2004.

3. Surveillance, Prevention and Control

a. Animal Testing

VBDP conducts routine surveillance for plague in cooperation with the Wildlife Services Program of the United States Department of Agriculture, Wildlife Services (USDA-WS). In 2004, 1100 carnivore and rodent blood samples were collected from all 17 Nevada counties. CDC’s Division of Vector-Borne Infectious Diseases in Fort Collins, Colorado performed serological tests on the samples.

VBDP also collected tissue samples from 18 rodents associated with service requests from citizens. The samples were all negative on FA tests for plague done by ADL. Overall in Washoe County in 2004, 19 of 377 specimens tested (5%) were positive for plague.

Table 2.1 Summary of Specimens Tested for Plague, Washoe County, 2004.

Specimen	# Pos.	# Tested	Species	
Tissues	0	12	<i>Spermophilus beecheyi</i>	California ground squirrel
	0	1	<i>Tamias amoenus</i>	Yellow pine chipmunk
	0	1	<i>Tamias quadrimaculatus</i>	Long-eared chipmunk
	0	3	<i>Sylvilagus nuttalli</i>	Mountain cottontail
Sera	14	81	<i>Canis latrans</i>	Coyote
	1	4	<i>Felis concolor</i>	Mountain lion
	3	151	<i>Marmota flaviventris</i>	Yellow-bellied marmot
	1	124	<i>Spermophilus beecheyi</i>	California ground squirrel
Total	19	377		

Table 2.2 Positive Specimens by County (Serum Via Nobuto), Nevada, 2004.

County	Number Positive	Number Tested	% Positive	Species
Elko	5	90	5.6	Coyote
Eureka	1	18	5.6	Coyote
Humboldt	4	109	3.7	Coyote
Lander	3	30	10.0	Coyote
Lincoln	34	171	19.9	Coyote
Lyon	5	54	9.3	Coyote
Nye	2	16	12.5	Coyote
Washoe	14	81	17.3	Coyote
	1	4	25.0	Mountain Lion
	3	151	2.0	Yellow-bellied marmot
	1	124	0.8	California ground squirrel
White Pine	39	184	21.2	Coyote
	2	5	40.0	Mountain Lion
	1	2	50.0	Badger
Total	115	1039	11.1	

Surveillance data in 2004 indicated plague activity increased from what was observed in 2003. Of particular note were several positive specimens collected in the Truckee Meadows area. The first was a California ground squirrel (titer 1:1024) collected from Rancho San Raphael Park on April 1.

VBDP staff had dusted burrows at the park just before the dead animal was submitted. Staff of the Washoe County Parks & Recreation Department posted plague warning signs provided by VBDP. VBDP conducted a follow-up flea survey to determine whether control measures continued to suppress flea densities. California ground squirrels were live-trapped, anesthetized and combed for fleas. No fleas were found on the animals checked.

VBDP also found plague activity at Lakeridge Golf Course at about the same time. A yellow-bellied marmot was sero-positive for plague (1:128) on April 6, 2004. Two more marmots collected on April 8, 2004, from the same location also tested positive (1:64 & 1:128 respectively).

b. Flea Suppression

VBDP conducted flea suppression at the following locations: Bower’s Mansion Regional Park, Governor’s Bowl Park, Idlewild Park, Manzanita Park, Paradise Park, South Valley’s Sports Complex, Davis Creek Park, Rancho San Raphael Park, Galena Creek Park and Sand Harbor State Park. Rodent burrows were treated with DeltaDust®.

III. Tick-Borne Diseases

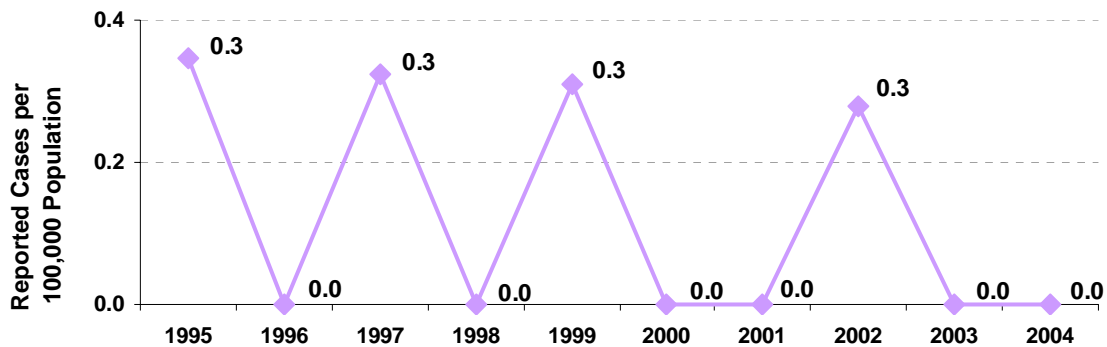
A. Lyme Disease

Lyme Disease is caused by *Borrelia burgdorferi* and is not endemic in Nevada. Although it is one of the most common vector-borne diseases in the United States, 95% of the cases are reported in Connecticut, Delaware, Rhode Island, Maine, Maryland, Massachusetts, Minnesota, New Jersey, New Hampshire, New York, Pennsylvania, and Wisconsin. Occasional cases do occur in the interior western U.S, with 161 cases reported from the intermountain western states between 1990 and 1999. The Healthy People 2010 national health objective for Lyme disease is 9.7 new cases per 100,000 population in endemic states.

1. Reported Incidence

No laboratory-confirmed cases of Lyme disease were reported in Washoe County in 2004.

Figure 3.1 Annual Rate of Reported Cases of Lyme Disease, Washoe County, 1995 – 2004.



2. Population Affected

No laboratory-confirmed cases of Lyme disease were reported in Washoe County in 2004.

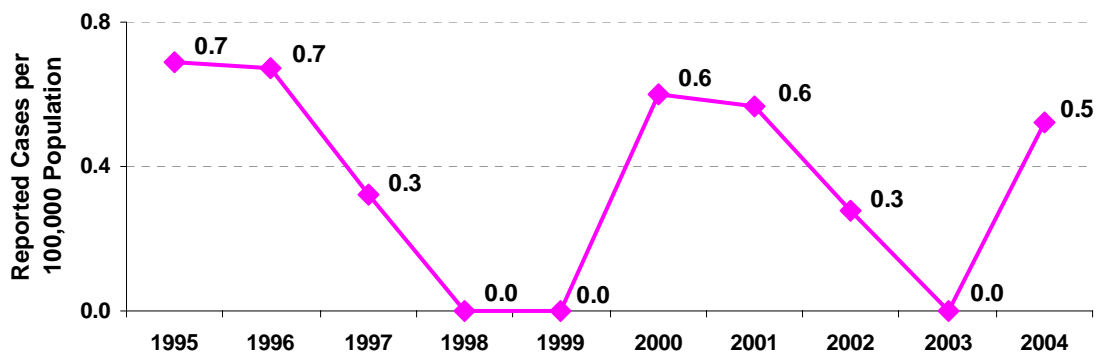
B. Relapsing Fever

1. Reported Incidence

Relapsing Fever in this geographic area is caused by *Borrelia hermsii* and is transmitted by the *Ornithodoros hermsii* tick. Human cases occur sporadically. Outbreaks occur occasionally in limited areas of the western U.S. and Canada.

Two (2) laboratory-confirmed cases of relapsing fever were reported in Washoe County in 2004 for a reported incidence of 0.52 cases per 100,000 population.

Figure 3.2 Annual Rate of Reported Cases of Relapsing Fever, Washoe County, 1995 – 2004.



2. Population Affected

Both cases in 2004 were White males between 51 and 60 years of age who lived in Incline Village. No source of infection was identified. Of the 12 cases reported in Washoe County since 1995, 8 reported living in this area.

C. Tick-Borne Disease Surveillance, Prevention and Control

VBDP staff identifies ticks to species and tests for *Borrelia burgdorferi*. In 2004, a total of 160 tick samples were tested for *B. burgdorferi* using indirect fluorescent antibody (IFA). None of the Washoe County specimens were positive. However, two of a group of 42 samples submitted as part of a collaborative project with California Department of Health Services indicated a positivity rate of up to 4.8% for a nearby collection site in northern California.

IV. Rabies

A. Human Rabies

Rabies in humans is a rare occurrence in the United States with usually less than 5 cases reported per year. In the US, 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.

1. Reported Incidence

No human rabies cases were reported in Washoe County in 2004.

2. Population Affected

No human rabies cases were reported in Washoe County in 2004.

B. Animal Rabies

Two animals (both bats) tested positive for rabies in Washoe County in 2004. All rabies testing for Nevada is performed by the ADL. In 2004, 8.8 % (8/91) of bats tested positive for rabies. The following table summarizes the positive bat specimens by date and county.

Table 4.1 Positive Bats by Date and County, Nevada, 2004.

Date	Species	Common Name	County
August 6	Species not given	Bat	Douglas
August 6	Species not given	Bat	Clark
August 6	Species not given	Bat	Clark
August 12	Species not given	Bat	Washoe
August 12	Species not given	Bat	Washoe
September 1	Species not given	Bat	Clark
October 11	Species not given	Bat	Clark
November 4	<i>Lasiurus cinereus</i>	Hoary bat	Storey

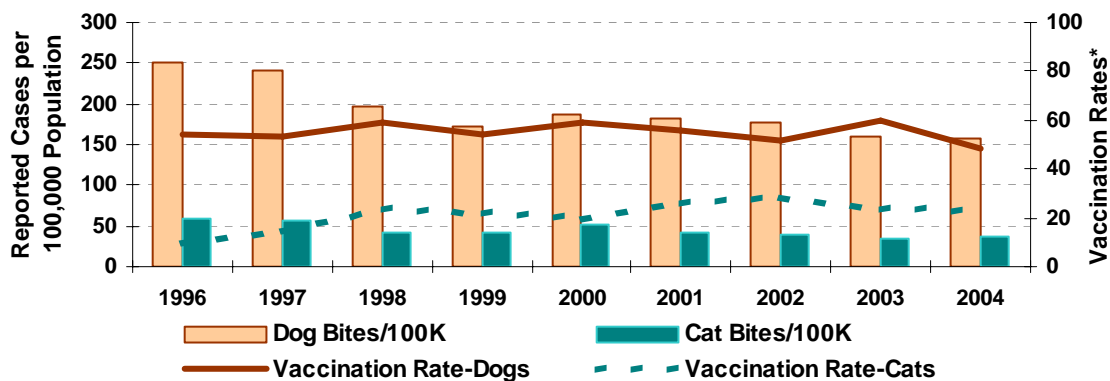
Table 4.2 Summary of Specimens Tested for Rabies, Washoe County, 2004.

Species	Number Positive	Number Tested	% Positive
Alpaca	0	1	0.0
Bat	2	55	3.6
Bobcat	0	10	0.0
Cat	0	21	0.0
Coyote	0	1	0.0
Dog	0	29	0.0
Goat	0	1	0.0
Lagomorph	0	1	0.0
Marmot	0	1	0.0
Mule Deer	0	1	0.0
Raccoon	0	6	0.0
Skunk	0	1	0.0
Squirrel (California ground)	0	2	0.0

C. Surveillance, Prevention and Control

VBDP staff review all domestic animal bite cases investigated by local animal control agencies to assure proper quarantine procedures were implemented.

Figure 4.1 Animal Bite Incidence, Washoe County, 1996-2004.



*Vaccination Rates were calculated by:
$$\frac{\text{\# of animals with confirmed current rabies vaccination at the time of incident}}{\text{total \# of bite incidents}}$$

Table 4.3 Vaccination Status of Biting Animals, Washoe County, 2004.

Agency	Species	# Vaccinated	Total	% Vaccinated
Reno Police Animal Services	Dogs	122	246	49.6
	Cats	19	67	28.4
Washoe County Animal Control	Dogs	126	282	44.7
	Cats	4	46	8.7
WCDHD - Vector-Borne Diseases Program	Dogs	44	77	57.1
	Cats	10	31	32.3
Totals	Dogs	292	605	48.3
	Cats	33	144	22.9

V. Rodent-borne Diseases

A. Hantavirus Infection

Hantavirus pulmonary syndrome (HPS) was first recognized in 1993 among residents of the southwestern U.S. It has subsequently been found throughout the contiguous U.S. and the Americas. The Hantavirus that causes HPS was later identified as Sin Nombre Virus (SNV). Humans contract HPS by inhaling aerosols of dried mouse urine and feces. As of January 5, 2005, a total of 384 cases of HPS have been reported in the United States. Thirty-six percent (36%) of all reported cases have been fatal. A total of 15 cases of HPS have been reported in Nevada with a case fatality of 13%.

1. Hantavirus Pulmonary Syndrome (HPS)

a. Reported Incidence

One (1) human case of HPS was reported in Washoe County in 2004 for a reported incidence of 0.26 cases per 100,000 population. In 2003, the national incidence of HPS was 0.01 cases per 100,000 population.

b. Population Affected

The 2004 case was a 66-year-old White female who resided in Incline Village. The environmental assessment (description to follow) revealed the infection was most likely acquired at the case's residence.

B. Surveillance, Prevention and Control Activities

VBDP staff investigated one human case of HPS in 2004. The case resided in Incline Village. On May 20, 2004 staff trapped six deer mice (*Peromyscus maniculatus*) in the crawl space under the case's home. Upon testing by ELISA in the VBDP laboratory, 4 of the 6 mice (66%) were positive for Sin Nombre virus. The Nevada State Health Laboratory confirmed the results by PCR.

A comparison of viral gene sequences between the patient and rodents was not possible because samples from the patient were not available. However, the findings of the case investigation strongly suggested the infection was acquired at the case's residence.

Fourteen additional rodent specimens submitted to the VBDP during 2004 tested negative for SNV.