



**SNOHOMISH
HEALTH
DISTRICT**

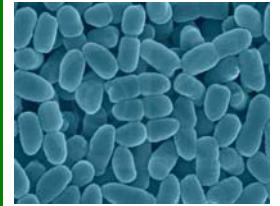
COMMUNICABLE DISEASE REPORT 2004-2008

● **For Health Care Providers** ●
Published January 2010



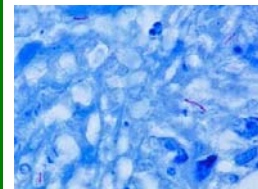
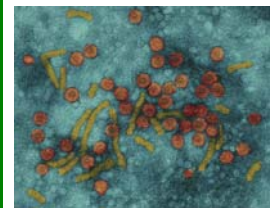
ENTERICS

**VACCINE-
PREVENTABLE
DISEASE**



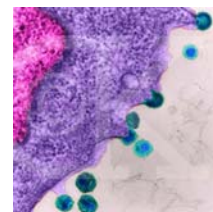
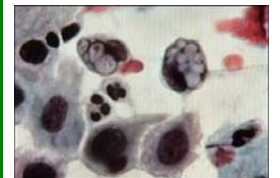
ZOONOTICS

HEPATITIS



TUBERCULOSIS

**SEXUALLY
TRANSMITTED
DISEASE**



HIV/AIDS

CONTACTS & ACKNOWLEDGEMENTS

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**SNOHOMISH
HEALTH
DISTRICT**

Mission Statement:

To improve the health of individuals, families, and communities through disease prevention, health promotion, and protection from environmental threats.

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INTRODUCTION

Communicable disease control played a major role in the declining death rate in the twentieth century. The discovery and development of antibiotics and vaccines allowed many diseases to become treatable and even preventable. Public health actions have also contributed to the control of communicable diseases. Advances in water treatment, food safety, and disease surveillance and investigation have all contributed to declining rates of disease.

Despite all efforts to reduce and eliminate communicable disease, new threats are constantly emerging. New strains of familiar diseases such as influenza, as well as new viruses and bacteria always pose a threat to the health of our community.

At the heart of communicable disease control is disease surveillance. Local public health jurisdictions conduct disease surveillance by partnering with health care providers, laboratories, and veterinarians. In Washington State there are currently over sixty notifiable conditions which require public health partners to report disease to their local health jurisdiction in a timely manner. Prompt reporting allows local health jurisdictions to detect disease outbreaks, identify persons at risk of developing disease, implement preventive measures when possible, monitor disease trends, and develop interventions aimed at the reduction and elimination of disease transmission.

This report presents summary data on notifiable conditions reported to the Snohomish Health District (SHD) from 2004-2008. Washington Administrative Code (WAC) Chapters 246-100 and 246-101 outline disease surveillance and reporting requirements for healthcare providers and facilities, laboratories, veterinarians, food service establishments, childcare facilities, and schools.

All numbers reported are for confirmed cases only. Please note that confirmed cases are just a proportion of the actual disease burden in Snohomish County. Depending on the condition, infected persons may not seek medical attention because they are not aware they have the disease. They also may become ill and chose not to receive care. Cases that do seek medical attention may not be confirmed due to inappropriate testing or are not reported after diagnosis.

Population estimates (Appendix A) used to calculate rates come from the Washington State Office of Financial Management: <http://www.ofm.wa.gov/pop/index.htm>. Rates are not provided for fewer than 5 cases and are not age-adjusted due to the small numbers of cases. Conditions are categorized into enteric disease, vaccine-preventable disease, zoonotic disease, hepatitis, tuberculosis, sexually transmitted disease, HIV, and AIDS.

ENTERIC DISEASE

Enteric (gastrointestinal) diseases cause disruption to the body's digestive system. These illnesses are associated with nausea, vomiting and diarrhea. Disease is most often acquired through contaminated food or water. Most enterics can also be transmitted from person-to-person through the fecal-oral route. Illness can be prevented and transmission of disease reduced through good hygiene and proper food handling.

Campylobacteriosis is the most commonly reported enteric disease in Snohomish County and Washington State. There were no significant differences in the rates of campylobacteriosis in Snohomish County compared to state rates during the time period of 2004-2008. In the fall of 2008, Snohomish County experienced a restaurant related outbreak of enterohemorrhagic *E. coli*. (See Outbreaks 2008 section for details.) Due to this outbreak the rates of enterohemorrhagic *E. coli* in Snohomish for 2008 were significantly higher than the rates seen in Washington State. In 2004, 2006 and 2008 Snohomish County had significantly higher rates of giardiasis than was seen in Washington State. The higher rates were not due to any known outbreaks of disease. Overall, rates of salmonellosis, and shigellosis are relatively stable. The rate of shigellosis reported in Snohomish County for 2007 is significantly higher than the state rate, which reflects the impact of an outbreak (see Communicable Disease Report 2003-2007 for details). The number of cases of cryptosporidiosis, listeriosis, vibriosis, and yersiniosis were too small for comparative analysis of rates. Rates of vibriosis in Washington State were higher in 2006 due to a statewide outbreak.

ENTERIC DISEASE		2004		2005		2006		2007		2008	
		Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000
Campylobacteriosis	Snohomish County	88	13.6	110	16.8	94	14.0	117	17.0	123	17.7
	Washington State	861	14.0	1045	16.7	993	15.6	1020	15.7	1069	16.2
Cryptosporidiosis	Snohomish County	6	0.9	2	*	9	1.3	14	2.0	5	0.7
	Washington State	63	1.0	94	1.5	95	1.5	139	2.1	99	1.5
Enterohemorrhagic <i>E. coli</i>	Snohomish County	20	3.1	17	2.6	17	2.5	19	2.8	53	7.6
	Washington State	153	2.5	149	2.4	162	2.5	141	2.2	189	2.9
Giardiasis	Snohomish County	63	9.8	54	8.2	62	9.2	73	10.6	80	11.5
	Washington State	444	7.2	437	7.0	451	7.1	591	9.1	486	7.4
Hemolytic Uremic Syndrome	Snohomish County	1	*	1	*	1	*	0	*	0	*
	Washington State	6	0.1	4	0.1	1	0.0	2	0.0	2	0.0
Listeriosis	Snohomish County	1	*	2	*	2	*	7	1.0	1	*
	Washington State	13	0.2	14	0.2	18	0.2	25	0.4	29	0.4
Salmonellosis	Snohomish County	67	10.4	69	10.5	65	9.7	73	10.6	87	12.5
	Washington State	660	10.7	626	10.0	627	9.8	758	11.7	846	12.8
Shigellosis	Snohomish County	10	1.6	16	2.4	11	1.6	30	4.4	11	1.6
	Washington State	133	2.2	185	3.0	170	2.7	159	2.5	116	1.8
Vibriosis	Snohomish County	2	*	4	*	8	1.2	5	0.7	4	*
	Washington State	28	0.5	20	0.3	80	1.3	25	0.4	29	0.4
Yersiniosis	Snohomish County	6	0.9	1	*	3	*	5	0.7	1	*
	Washington State	34	0.6	19	0.3	22	0.3	28	0.4	19	0.3

*Incidence rates not calculated for <5 cases.

VACCINE-PREVENTABLE DISEASE

Many communicable diseases that were once considered common (e.g., measles, polio, pertussis) are now preventable through the use of vaccines. Vaccines are 80-100% effective (depending on the disease specific vaccine) when given at the correct doses and in accordance with the CDC immunization schedule. To eliminate reservoirs of vaccine-preventable diseases in our community, vaccines must be given throughout a person's lifetime. For example, the new acellular pertussis vaccine is now available for older children and adults. Revaccinating this population can help to reduce the transmission of pertussis to vulnerable individuals.

Pertussis is by far the most common vaccine-preventable disease that is reported to the Snohomish Health District. During 2004 to 2006 Snohomish County had a significantly lower rate of pertussis when compared to the overall incidence in Washington State. In 2007 and 2008 there were no differences between the rates seen in Washington State and Snohomish County. The number of confirmed cases of pertussis are only a fraction of the true burden of disease in our community. Older children and adults often only have mild illness and do not seek medical care. If ill persons do seek medical attention, they are often diagnosed with bronchitis or similar illnesses and are not tested. Also, testing for pertussis needs to be timely and done within the first two weeks to yield reliable results.

Meningococcal disease is reported to the Snohomish Health District every year. It is important to remember that the meningococcal vaccine does not protect against all types of meningococcal disease. The vaccine covers against serogroups A, C, Y and W-135. In 2008, three of the five cases were vaccine preventable.

From 2004 to 2008 there were 3 cases of mumps and no cases of diphtheria, *Haemophilus Influenzae* (invasive disease), measles, poliomyelitis, rubella, or tetanus in Snohomish County.

VACCINE-PREVENTABLE DISEASE		2004		2005		2006		2007		2008	
		Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000
Haemophilus Influenzae	Snohomish County	0	0.0	0	0.0	0	0.0	2	*	0	0.0
	Washington State	4	1.0	5	1.2	5	1.2	6	1.4	2	0.0
Measles	Snohomish County	1	*	0	0.0	0	0.0	1	*	0	0.0
	Washington State	7	0.1	1	0.0	1	0.0	3	0.0	19	0.3
Meningococcal disease	Snohomish County	3	*	4	*	5	0.7	4	*	5	0.7
	Washington State	42	0.7	53	0.8	45	0.7	32	0.5	40	0.6
Mumps	Snohomish County	0	0.0	2	*	0	0.0	0	0.0	3	*
	Washington State	2	0.0	3	0.0	42	0.7	53	0.8	14	0.2
Pertussis	Snohomish County	40	6.2	55	8.4	21	3.1	46	6.7	46	6.6
	Washington State	842	13.7	1026	16.4	377	5.9	482	7.4	460	7.0

*Incidence rates not calculated for <5 cases.

ZOONOTIC DISEASE

Zoonotic diseases are transmitted to humans from animals. Animals can transmit disease to humans through a variety of mechanisms. One way animals can transmit disease to humans is through insect bites. These zoonotic illnesses are called vector-borne and include diseases such as West Nile virus, malaria, and Lyme disease. Animals can also transmit illness to people through ingestion or aerosolization of blood, urine, or fecal matter, or through improper handling of an animal carcass. For example, people can contract hantavirus by breathing in the aerosolized urine, droppings, or saliva of an infected deer mouse.

Zoonotic illnesses are rare in Washington State. In Snohomish County there were 4 cases of travel-associated Lyme disease and 10 cases of malaria. From 2004 to 2008 there was only one endemically acquired case of tularemia, and no cases of arboviral disease (including West Nile virus), brucellosis, hantavirus pulmonary syndrome, leptospirosis, plague, psittacosis, Q fever, rabies, or relapsing fever.

ZOO NOTIC DISEASE		2004		2005		2006		2007		2008	
		Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000
Hantavirus Pulmonary Syndrome	Snohomish County	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Washington State	2	0.0	1	0.0	3	0.0	2	0.0	2	0.0
Leptospirosis	Snohomish County	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Washington State	0	0.0	4	0.1	1	0.0	5	0.1	1	0.0
Lyme Disease	Snohomish County	0	0.0	2	*	0	0.0	2	*	0	0.0
	Washington State	14	0.2	13	0.2	8	0.1	12	0.2	23	0.3
Malaria	Snohomish County	1	*	1	*	4	*	4	*	0	0.0
	Washington State	24	0.4	24	0.4	43	0.7	30	0.5	32	0.5
Tularemia	Snohomish County	0	0.0	0	0.0	0	0.0	1	*	0	0.0
	Washington State	4	0.1	10	0.2	1	0.0	1	0.0	4	0.1
West Nile Virus[^]	Snohomish County	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Washington State	1	0.0	3	0.0	8	0.1	5	0.1	4	0.1

*Incidence rates not calculated for <5 cases.

[^]Cases in 2004, 2005 and 2007 were travel related.

HEPATITIS

Hepatitis is liver disease caused by one of 5 different known types of hepatitis viruses. The different types of hepatitis viruses are A, B, C, D, and E. Disease caused by these viruses ranges from mild to severe illness. These different viruses also vary in how they are transmitted, and if they can become a chronic condition. Vaccines are available for hepatitis A and hepatitis B.

Hepatitis A (HAV) and E are transmitted through the fecal-oral route and do not become chronic conditions. Hepatitis E is very rare in the United States, but is endemic in many parts of the world. Hepatitis B (HBV) and D are transmitted through the blood and sexual fluids. Hepatitis D relies on the hepatitis B virus to replicate and can only be transmitted along with HBV. Hepatitis C virus (HCV) is transmitted primarily through the blood, but is also rarely spread through sexual contact. Both HBV and HCV can be passed from the mother to her baby at the time of delivery. Acute hepatitis B and C disease are rarely reported, as most cases are asymptomatic at the time of infection. Hepatitis B, C, and D can become chronic infections. Chronic hepatitis B and C can cause liver disease, cirrhosis, and liver cancer. There are approximately 2,000-4,000 deaths per year in the United States from chronic HBV infection, and 8,000-10,000 from chronic HCV.

The rates of hepatitis A in Snohomish County for 2008 were significantly higher than those in Washington State. The higher rates were not due to any known outbreaks of disease. For all other years there were no significant differences in hepatitis A rates. Acute hepatitis B has gone down from 11 cases in 2004 to 1 case in 2008. There were only 2 cases of acute hepatitis C in Snohomish County from 2004-2008. Chronic hepatitis B and C rates are not analyzed by Washington State Department of Health and therefore cannot be compared. The number of chronic hepatitis C cases has risen sharply in 2006 and has remained at an increased level. This is most likely due to a combination of increased number of cases and new confirmatory testing, i.e. HCV RNA testing. Note that chronic hepatitis B and C cases are listed only in the year they were reported to SHD, not the year of disease onset.

HEPATITIS		2004		2005		2006		2007		2008	
		Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000
Hepatitis A	Snohomish County	5	0.8	11	1.7	8	1.2	9	1.3	10	1.4
	Washington State	69	1.1	63	1.0	52	0.8	60	0.9	51	0.8
Hepatitis B, Acute	Snohomish County	11	1.7	6	0.9	6	0.9	3	*	1	*
	Washington State	64	1.0	80	1.3	80	1.3	72	1.1	56	0.9
Hepatitis B, Chronic	Snohomish County	42	6.5	82	12.5	81	12.1	88	12.8	88	12.6
	Washington State	na	na	na	na	na	na	na	na	na	na
Hepatitis C, Acute	Snohomish County	0	0.0	1	*	0	0.0	0	0.0	1	*
	Washington State	23	0.4	21	0.3	23	0.4	18	0.3	25	0.4
Hepatitis C, Chronic	Snohomish County	183	28.4	236	36.0	650	96.8	707	103	781	112
	Washington State	na	na	na	na	na	na	na	na	na	na

*Incidence rates not calculated for <5 cases.

TUBERCULOSIS

Tuberculosis (TB) is a bacterial infection which spreads by airborne transmission. TB has a highly variable latency period (the time between infection and the development of active TB disease). TB can infect many different organs in the body. However, it most often infects the lungs (pulmonary TB). If active TB disease is not treated, the 5-year survival rate is approximately 50%. With effective antibiotic treatment, however, TB infection is preventable and active TB disease is curable.

In 2004 Snohomish County had a significantly lower rate of active tuberculosis than the overall incidence in Washington State. There were no significant differences in TB rates between Snohomish County and Washington State from 2005 through 2008.

TUBERCULOSIS		2004		2005		2006		2007		2008	
		Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000
Tuberculosis, Active	Snohomish County	15	2.3	24	3.6	26	3.8	24	3.5	25	3.6
	Washington State	245	3.9	256	4.0	262	4.1	291	4.5	228	3.5

SEXUALLY TRANSMITTED DISEASE

Sexually transmitted diseases (STDs) include a variety of illnesses caused by bacterial, viral, and parasitic organisms. STDs are transmitted from one person to another through vaginal, anal, or oral sex. Bacterial STDs such as *Chlamydia*, gonorrhea and syphilis can be cured with antibiotics. Most STDs caused by viruses cannot be cured, but they can usually be treated to relieve symptoms and help prevent complications. If untreated, STDs can have consequences ranging from mild brief illness to serious complications such as infertility, tubal pregnancy, cancer, stroke, and death. Many STDs can cause serious health problems in infants born to infected mothers.

The rates of *Chlamydia* and gonorrhea have increased in Snohomish County and Washington State from 2004-2008. Snohomish County, however, had significantly lower rates of *Chlamydia* and gonorrhea throughout the 5 year period when compared to Washington State. Conversely, the rates of genital herpes simplex (HSV-1 and HSV-2) are significantly higher in Snohomish County than the rates seen in Washington State from 2004 to 2008. The rates of syphilis in Snohomish County (2004-2008) remain stable and are too low to compare to Washington State.

SEXUALLY TRANSMITTED DISEASE		2004		2005		2006		2007		2008	
		Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000
Chlamydia	Snohomish County	1632	253.1	1556	237.3	1503	223.7	1416	206.3	1719	246.8
Trachomatis	Washington State	17635	285.9	18617	297.6	17819	279.5	19123	294.7	21327	323.7
Gonorrhea	Snohomish County	166	25.7	244	37.2	317	47.2	296	43.1	207	29.7
	Washington State	2810	45.6	3738	59.7	4231	66.4	3646	56.2	3116	47.3
Herpes Simplex, Genital	Snohomish County	268	44.4	305	46.5	395	55.8	270	39.3	328	47.1
	Washington State	2153	34.9	2331	37.3	2446	38.4	1952	30.1	2009	30.5
Syphilis, Primary and Secondary	Snohomish County	8	1.2	3	*	6	0.9	9	1.3	7	1.0
	Washington State	150	2.4	152	2.4	182	2.9	168	2.6	181	2.7

HIV/AIDS

Human immunodeficiency virus (HIV) is found in the blood, semen, or vaginal fluid of an infected person. It is transmitted through sexual contact, percutaneous exposure, and from mother to baby (before or during delivery and through breastfeeding). HIV causes acquired immunodeficiency syndrome (AIDS) in the late stages of infection. It can take years, even without treatment, for HIV to progress into AIDS. A person is determined to have AIDS when that individual's immune system is to the point of having difficulty fighting off unusual infections.

Rates of HIV in Snohomish County remain relatively stable. In almost all years (2004-2008) the incidence of newly diagnosed cases of HIV in Snohomish County was significantly lower than the incidence in Washington State. In 2005 the rate of newly diagnosed HIV in Snohomish County was similar to that seen in Washington State as a whole.

HIV/AIDS		2004		2005		2006		2007		2008	
		Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000
Human Immunodeficiency Virus	Snohomish County	38	5.9	53	8.1	43	6.4	47	7.0	34	4.9
	Washington State	561	9.1	577	9.2	570	8.9	610	9.4	541	8.2

OUTBREAKS 2008

Restaurant Associated Outbreak of Enterohemorrhagic *E. coli*

On October 16th, 2008 the Snohomish Health District Communicable Disease Program began an investigation on 3 Enterohemorrhagic *E. coli* cases. Through interviewing these cases it was discovered that all three had eaten at the same local restaurant during their exposure periods. On October 16th, the Environmental Health Food Program was notified for immediate inspection of the restaurant. On October 17th, 2008, the Snohomish Health District Communicable Disease Program received 5 more EHEC case reports. All of these cases reported eating at the implicated restaurant between October 9th and October 11th, 2008.

A total of 24 confirmed and probable and 41 suspect cases of Enterohemorrhagic *E. coli* were identified throughout the outbreak investigation. Illness onset ranged from October 7th through October 18th, 2008 and there were 3 cases of secondary transmission. Through extensive interviewing and data analysis the food most strongly associated with illness was guacamole (OR 26.5, $p < 0.001$, 95% C.I. 3.5-77.7). After the restaurant voluntarily closed and disposed of all food items, sanitized and reopened there was no evidence of ongoing transmission.

APPENDIX A: POPULATION ESTIMATES

Year	Snohomish County	Washington State
2004	644,800	6,167,800
2005	655,800	6,256,400
2006	671,800	6,375,600
2007	686,300	6,488,000
2008	696,600	6,587,600