



Communicable Disease Summary 2003 and 2004

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INTRODUCTION

Public health surveillance is the ongoing, systematic collection of data regarding health-related events. The analysis, interpretation, and dissemination of this information are used to reduce morbidity and mortality and to improve health.

Surveillance data can be used for immediate public health action, program planning and evaluation, and formulating research hypotheses. For example, data from a public health surveillance system can be used to:

- Guide investigation and disease control activities for cases of public health importance;
- Measure the burden of a disease (or other health-related event), including changes in causative factors, the identification of populations at high risk, and the identification of new or emerging health concerns;
- Monitor trends in the burden of a disease (or other health-related event), including the detection of epidemics (outbreaks) and pandemics;
- Guide the planning, implementation, and evaluation of programs to prevent and control disease, injury, or adverse exposure;
- Evaluate public policy;
- Detect changes in health practices and the effects of these changes;
- Prioritize the allocation of health resources;
- Describe the clinical course of disease; and
- Provide a basis for epidemiologic research.

This is the second annual surveillance report to be published in this format containing data from the Communicable Disease Control, Epidemiology and Immunization Section, the Tuberculosis Control Program, and the Sexually Transmitted Diseases Program. Additional information about the content of this report is available from the respective programs. Epidemiological reports on HIV/AIDS are published separately by Public Health's HIV/AIDS Program and are available as quarterly epidemiology reports at: <http://www.metrokc.gov/health/apu/epi/epipub.htm>.

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DEFINITIONS OF TERMS USED IN THIS REPORT

Bacteremia: The presence of viable bacteria in the blood stream.

CDC: Centers for Disease Control and Prevention

Enteric infection: An infection of the intestinal tract.

Fecal-Oral Transmission: Fecal-oral transmission occurs when organisms (viruses, bacteria, or parasites) in the stool of one person are swallowed by another person. Inadequate hand washing after toileting, changing diapers, sexual practices or helping an incontinent child or adult, especially prior to preparing food, facilitates fecal-oral transmission.

Incidence Rate: A disease incidence rate is the number of new cases of disease in the population, over a certain time period. In this report we report incidence rate as the number of new cases of disease per 100,000 people per year.

Incubation Period: The period between the initial exposure to an infection agent and the development of symptoms of disease.

MSM: Men who have sex with men.

Nosocomial: Originating or taking place in a hospital or long term care facility.

Prodrome: Symptoms that are typically nonspecific, that precede the more characteristic symptoms of an illness.

Prophylaxis: Treatment given before or after to an infectious agent to prevent the subsequent occurrence of disease. This can include administration of antibiotics (e.g., pertussis, meningococcal disease), antivirals (e.g., influenza), anti-parasitics (e.g., malaria), immune-globulin (e.g., hepatitis A and B, tetanus, and rabies), or vaccine (e.g., measles and rabies)

Public Health: In this document, Public Health refers to Public Health-Seattle & King County Health. There are several sections within Public Health that investigate communicable disease, including the Sexually Transmitted Disease section, the HIV/AIDS section, the Tuberculosis Program, and the Communicable Disease Epidemiology and Immunization Section.

Public Health contact numbers:

	Phone	Fax
Sexually Transmitted Diseases	(206) 731-3954	
Tuberculosis (<i>daytime and after hours</i>)	(206) 731-4579	(206) 731-4350
HIV/AIDS	(206) 296-4645	
All other Notifiable Communicable Diseases (<i>daytime and after hours</i>)	(206) 296-4774	(206) 296-4803
Voice mail line for reporting <u>ONLY</u> non-immediately notifiable conditions (<i>24 hours a day</i>)	(206) 296-4782	

Public Health Laboratory: In this document, Public Health Laboratory refers to the Public Health-Seattle & King County Health Department Laboratory at 325 Ninth Avenue, Seattle, Washington 98104; 206-731-8950.

NOTIFIABLE COMMUNICABLE DISEASE CONDITIONS IN WASHINGTON
Notification Timeframes, and Specimen Submission Requirements
for Health care professionals and Laboratories

Notifiable Condition	Notifiable by Health Care Provider	Notifiable by Laboratory	Specimen Submission Required
Acquired Immunodeficiency Syndrome (AIDS)	Within 3 work days		
Animal Bites	Immediately		
Arboviral disease	Within 3 work days	2 days	
Botulism (Foodborne)	Immediately	Immediately	Serum and Stool - If available, submit suspect food (2 days)
Botulism (Infant)	Immediately	Immediately	Stool (2 days)
Botulism (Wound)	Immediately	Immediately	Culture, Serum, Debrided tissue, or Swab sample (2 days)
Brucellosis (Brucella species)	Immediately	2 days	Culture (2 days)
CD4+ (T4) lymphocyte counts less than 200 or 14%		Monthly	
Campylobacteriosis	Within 3 work days		
Chancroid	Within 3 work days		
<i>Chlamydia trachomatis</i> infection	Within 3 work days	2 days	
Cholera	Immediately	Immediately	Culture (2 days)
Cryptosporidiosis	Within 3 work days	2 days	
Cyclosporiasis	Within 3 work days	2 days	Specimen (2 days)
Diphtheria	Immediately	2 days	Culture (2 days)
Disease of Suspected Bioterrorism Origin:			
Anthrax	Immediately	Immediately	Culture (2 days)
Smallpox	Immediately	Immediately	Consult with Public Health
Disease of Suspected Foodborne Origin (clusters only)	Immediately		
Disease of Suspected Waterborne Origin (clusters only)	Immediately		
Enterohemorrhagic <i>E. coli</i>, including <i>E. coli</i> 0157:H7 infection	Immediately	2 days	Culture (2 days)
Gonorrhea	Within 3 work days	2 days	
Granuloma Inguinale	Within 3 work days		
<i>Haemophilus influenzae</i> invasive disease (under age 5, excluding otitis media)	Immediately		
Hantavirus Pulmonary Syndrome	Within 3 work days		
Hemolytic Uremic Syndrome	Immediately		
Hepatitis A	Immediately	IgM Positive, 2 days	
Hepatitis B (acute)	Within 3 work days	Monthly	

NOTIFIABLE COMMUNICABLE DISEASE LIST, CONTINUED

Notifiable Condition	Notifiable by Health Care Provider	Notifiable by Laboratory	Specimen Submission Required
Hepatitis B surface antigen+ in pregnant women	Within 3 work days	Monthly	
Hepatitis B (chronic) Initial diagnosis, and previously unreported prevalent cases	Monthly	Monthly	
Hepatitis C (acute and chronic)	Monthly	Monthly	
Hepatitis , unspecified (infectious)	Within 3 work days		
Herpes simplex , neonatal and genital (initial infections only)	Within 3 work days		
Human immunodeficiency virus (HIV) infection (Western Blot assays, P24 antigen or viral culture)	Within 3 work days	2 days	
Human immunodeficiency virus (HIV) infection (RNA or DNA nucleic acid tests)		Monthly	
Immunization reactions , severe, adverse	Within 3 work days		
Legionellosis	Within 3 work days		
Leptospirosis	Within 3 work days		
Listeriosis	Immediately	2 days	
Lyme Disease	Within 3 work days		
Measles (rubeola)	Immediately	Immediately	Serum (2 days)
Meningococcal disease	Immediately	2 days	Culture from blood/CSF, or other sterile sites (2 days)
Paralytic Shellfish Poisoning	Immediately		
Pertusis	Immediately	2 days	
Plague	Immediately	Immediately	Culture or appropriate clinical material (2 days)
Poliomyelitis	Immediately		
Psittacosis	Within 3 work days		
Q Fever	Within 3 work days		
Rabies post-exposure prophylaxis	Immediately	Immediately	Tissue or other appropriate clinical material (upon request only)
Relapsing Fever	Immediately		
Rubella (including congenital rubella syndrome)	Immediately		
Salmonellosis (including Typhoid Fever)	Immediately	2 days	Culture (2 days)
Shigellosis	Immediately	2 days	Culture (2 days)
Syphilis	Within 3 work days		Serum (2 days)
Tetanus	Within 3 work days		
Trichinosis	Within 3 work days		

NOTIFIABLE COMMUNICABLE DISEASE LIST, CONTINUED

Notifiable Condition	Notifiable by Health Care Provider	Notifiable by Laboratory	Specimen Submission Required
Tuberculosis	Immediately	2 days	Culture (2 days)
Tuberculosis (Antibiotic sensitivity for first isolates only)		2 days	
Tularemia	Within 3 work days		Culture or appropriate clinical material (2 days)
Typhus	Immediately		
Vibriosis	Within 3 work days		
Yellow Fever	Immediately		
Yersiniosis	Within 3 work days		
Other rare diseases of public health significance	Immediately	Immediately	
Unexplained critical illness or death	Immediately		

REPORTED NOTIFIABLE CONDITION TABLE, 2000 TO 2004

Disease	2000	2001	2002	2003	2004
Animal Bites and other Potential Rabies Exposures	NA	NA	NA	106	223
Botulism, Infant	1	1	0	1	0
Botulism, Foodborne	0	0	0	0	0
Botulism, Wound	0	0	0	0	1
Brucellosis	0	0	0	1	0
Campylobacter	320	325	300	262	264
Chlamydia	4,495	4,4295	4,471	5,189	5,428
Cholera	0	1	1	1	0
Cryptosporidiosis	5	29	34	38	34
Cyclosporiasis	0	5	5	1	9
Encephalitis	2	2	12	5	12
Enterohemorrhagic E. Coli (including E. coli O157:H7)	60	36	32	43	42
Giardiasis	229	150	171	124	126
Gonorrhea	1,222	1,556	1,462	1,349	1,286
Group A Strep	4	36	41	35	26
Haemophilus influenzae	0	0	1	2	2
Hantavirus Pulmonary Syndrome	0	0	0	1	0
Hepatitis A	98	28	32	30	14
Hepatitis B, Acute	42	36	31	34	23
Hepatitis B, Chronic	398	629	585	526	632
Hepatitis C, Chronic (Probable or Confirmed)	775	1314	1417	758	1285
Hepatitis C, Chronic (Possible)	577	639	507	343	359
Hepatitis C, Acute	13	9	12	8	10
Legionellosis	4	4	3	2	7
Leptospirosis	1	2	0	1	0
Listeriosis	8	4	4	6	4
Lyme disease	3	2	6	2	10
Malaria	20	9	15	16	12
Measles	2	12	0	0	6
Meningococcal Disease	17	13	21	6	18
Mumps	9	1	0	0	1
Paralytic Shellfish Poisoning	0	0	0	0	0
Pertussis	207	39	156	280	201
Psittacosis	0	0	0	0	0
Q Fever	0	0	0	0	0
Relapsing Fever	1	0	5	2	1
Rubella	2	0	2	0	0
Salmonellosis	205	260	212	243	234
Shigellosis	156	111	86	88	63
Streptococcal Group A Invasive Disease	4	36	41	35	26
Syphilis	117	110	96	84	166
Tetanus	0	0	0	0	0
Trichinosis	1	0	0	0	0
Tuberculosis	127	139	158	155	133
Tularemia	0	0	0	1	0
Typhoid Fever	3	4	4	2	4

REPORTED NOTIFIABLE CONDITIONS 2000 TO 2004, CONTINUED					
Disease	2000	2001	2002	2003	2004
Vibriosis	7	5	13	7	8
Yersiniosis	20	17	12	10	15
Total	3,408	4,173	4,092	3,157	4,052

ANIMAL BITES AND OTHER POTENTIAL RABIES EXPOSURES

Disease Reporting Requirements:

Health care professionals – Immediately report animal bites from potentially rabid animals, and all bat exposures to Public Health.

Laboratories - No requirement.

Purpose of Surveillance:

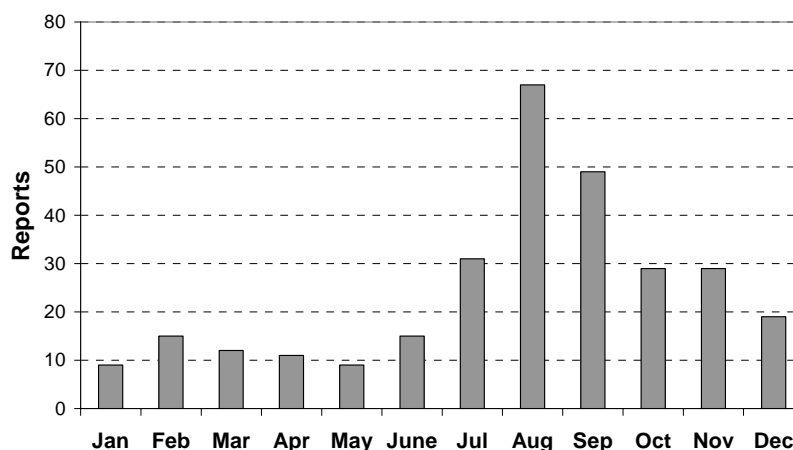
- To identify persons potentially exposed to rabies, and to assure appropriate evaluation and treatment if necessary.
- To assure that potentially rabid animals are managed appropriately.
- To identify and eliminate preventable sources of rabies transmission.

In 2003, a total of 144 animal bites or bat exposures were reported to Public Health. One hundred-six of these were determined to be potential rabies exposures. Thirty exposed persons required rabies post-exposure prophylaxis (PEP) because either the animal could not be watched for signs of illness for 10 days, or the animal tested positive for rabies.

In 2004, a total of 295 animal bites or bat exposures were reported to Public Health. Two hundred twenty-three were determined to be potential rabies exposures. Eighty-eight exposed persons required rabies post-exposure prophylaxis (PEP) because either the animal could not be watched for signs of illness for 10 days, or the animal tested positive for rabies.

The majority of animal bites that were not determined to be potential rabies exposures were provoked bites from cats, dogs, or squirrels. Bites are most often reported during the summer months.

Animal Bite Reports by Month, 2004



2003 Potential Rabies Exposures and Recommendations for Rabies Post-Exposure Prophylaxis (PEP)

Animal	PEP Recommended		PEP Not Recommended		Total
	No Animal Available for Testing or Quarantine	Animal Tested Positive for Rabies	Animal Survived Quarantine	Animal Tested Negative for Rabies	
BAT	15	5	0	21	41
CAT	0	0	15	6	21
DOG	5	0	28	4	37
FERRET	0	0	1	0	1
GOAT	0	0	1	0	1
RACCOON	4	0	0	0	4
SKUNK	1	0	0	0	1
Total	25	5	45	31	106

2004 Potential Rabies Exposures and Recommendations for Rabies Post-Exposure Prophylaxis (PEP)

Animal	PEP Recommended		PEP Not Recommended		Total
	No Animal Available for Testing or Quarantine	Animal Tested Positive for Rabies	Animal Survived Quarantine	Animal Tested Negative for Rabies	
BAT	57	9	0	29	95
CAT	1	0	15	14	30
COYOTE	1	0	0	0	1
DOG	3	0	66	5	74
GOAT	0	0	0	2	2
MINK	2	0	0	1	3
MONKEY	4	0	0	0	4
PIG	0	0	1	0	1
RACCOON	11	0	0	0	11
SQUIRREL	0	0	0	1	1
Total	79	9	83	52	223

BIOTERRORISM- DISEASES OF SUSPECT BIOTERRORISM ORIGIN

Disease Reporting Requirements:

Health care professionals - report diseases of suspect bioterrorism origin to Public Health immediately.

Laboratories – report the receipt of any specimen in which the health care professional asks that an agent of possible bioterrorism to be ruled out. For instance, report immediately any specimen labeled by the health care professional “rule out *Bacillus anthracis*”, or “rule out variola virus”. Report confirmed or suspected *Brucella*, *Bacillus anthracis*, *Francisella tularensis*, *Yersinia pestis*, and Variola virus immediately. Consult with Public Health before transporting such specimens to the Public Health Laboratory.

Purpose of Surveillance:

- To identify illnesses caused by the intentional release of a bioterror agent.

Since January of 2001, diseases of suspect bioterrorism origin have been notifiable in Washington State. This disease category includes, but is not limited to anthrax, brucellosis, Q fever, hemorrhagic fevers, plague, smallpox and tularemia. Clinicians practicing in the community should be alert to, and report any diseases of suspect bioterrorism origin.

Some Epidemiologic Clues that a Biologic or Chemical Attack Has Taken Place

- 1) Large numbers of ill persons with a similar disease or syndrome.
- 2) An increase in unexplained diseases or deaths.
- 3) Unusual illness in a population (i.e., renal disease in a large population may suggest exposure to a toxic agent such as mercury).
- 4) Higher than expected morbidity and mortality in association with a common disease or syndrome, or failure of such patients to respond to usual therapy.
- 5) Single case of disease caused by an uncommon agent (i.e., *Burkholderia mallei* or *pseudomallei*, smallpox, viral hemorrhagic fever, pulmonary anthrax).
- 6) Several unusual or unexplained diseases coexisting in the same patient without any other explanation.
- 7) Disease with an unusual geographic or seasonal distribution (i.e., tularemia in a nonendemic area, influenza in the summer).
- 8) Illness that is unusual (or atypical) for a given population or age group (i.e., outbreak of atypical varicella-like rash in adults).
- 9) Unusual disease presentation (i.e., pulmonary instead of cutaneous anthrax).
- 10) Similar genetic type among agents isolated from distinct sources at different times and locations.
- 11) Unusual, atypical, genetically engineered, or antiquated strain of an agent or antibiotic resistance pattern.

- 12) Stable endemic disease with an unexplained increase in incidence (i.e., tularemia, relapsing fever).
- 13) Simultaneous clusters of similar illness in noncontiguous areas, domestic or foreign.
- 14) Atypical disease transmission through aerosols, food, or water, which suggests deliberate sabotage.
- 15) Ill persons who seek treatment at about the same time (point source with compressed epidemic curve).
- 16) No illness in persons who have separate closed ventilation systems when illness is seen in persons in close proximity who have a common ventilation system.
- 17) Unusual pattern of death or illness among animals, (which may be unexplained or attributed to an agent of bioterrorism) that precedes or accompanies illness or death in humans.

Symptoms and clinical findings in diseases of possible bioterrorism origin

Agent	Disease	Symptoms and Clinical Findings
<i>Bacillus anthracis</i>	Inhalation Anthrax	Fever, malaise, cough and mild chest discomfort progressing to severe respiratory distress with dyspnea, diaphoresis, stridor, cyanosis and shock. X-ray may show mediastinal widening.
<i>Yersinia pestis</i>	Pneumonic Plague	High fever, chills, headache, followed by cough (often with hemoptysis) progressing rapidly to dyspnea, stridor, cyanosis and death. GI symptoms are also often present.
<i>Coxiella burnetii</i>	Q Fever	Fever, cough and pleuritic chest pain.
<i>Francisella tularensis</i>	Typhoidal Tularemia	Fever, headache, malaise, substernal discomfort, prostration, weight loss and non-productive cough.
Variola Virus	Smallpox	Prodrome of malaise, fever, rigors, vomiting, headache and backache. Two to three days later macular lesions quickly progress to papular and then pustular lesions. Lesions develop synchronously and are more abundant on the extremities, helping to differentiate it from rash due to varicella.
Various	Hemorrhagic Fevers	Variable: Fever, flushing of the face and chest, petechiae, bleeding, edema, hypotension and shock; may include malaise, myalgias, headache, vomiting and diarrhea.
<i>Clostridium botulinum</i> toxin	Inhalation Botulism	Cranial nerve palsies including ptosis, blurred vision, diplopia, dysphonia, dysphagia followed by symmetrical descending flaccid paralysis.

BOTULISM

Disease Reporting Requirements:

Health care professionals - report suspect cases immediately.

Laboratories - report immediately and submit appropriate specimens to the Public Health Laboratory.

Purpose of Surveillance:

- To confirm suspected cases and identify common source outbreaks.
- To promptly identify cases requiring medical evaluation and/or treatment, including therapy with botulism antitoxin.
- To identify and remove contaminated food products that could cause further cases of foodborne botulism.

Spores from *Clostridium botulinum* are found worldwide in soil, agricultural products, and animal intestinal tracts. Neurotoxins produced by the bacterium cause three forms of botulism: infant, foodborne, and wound botulism. Public Health is the community resource for obtaining both botulinum antitoxin through the CDC for treatment of probable or confirmed cases of foodborne or wound botulism, and botulism immune globulin for treatment of infant botulism (through the California Infant Botulism program).

Foodborne botulism results from eating improperly handled or preserved food contaminated with the spores of *Clostridium botulinum*. In a low oxygen environment, the spores germinate and produce the botulism toxin. Improperly home-canned foods, especially foods that are low in acid, such as green beans, are frequently implicated. Botulism has also occurred with commercial products, and in items such as baked potatoes wrapped in aluminum foil, sautéed onions, and cured foods in airtight packaging. Treatment is supportive care and early administration of botulinum toxin. With treatment, the mortality rate for foodborne botulism is 5 to 10 percent. Testing and botulinum antitoxin can be obtained by reporting suspect cases to Public Health.

There have been no cases of food borne botulism reported in King County since 1993, when three cases occurred which were associated with home-canned beets.

Infant botulism is the most common form of botulism reported in the United States. Infant botulism occurs when an individual ingests *C. botulinum* spores, the organism colonizes the intestines, and releases toxin upon growth. As its name indicates, infant botulism occurs almost exclusively in children under one year of age due to the low acidity of their gastrointestinal tracts; however, there have been documented cases in adults who have altered gastrointestinal anatomy and microflora. Raw honey has been implicated in some, but not all cases of infant botulism.

Symptoms usually begin with constipation followed by lethargy, difficulty swallowing, and weakness (“floppy baby”). Currently, human-derived botulism antitoxin for treatment

of infants is available through a California Department of Health protocol. Stool and sera should be submitted for diagnostic testing on suspected cases.

Infant botulism is rare in King County. Since 1993, there have been five reported cases of infant botulism. No source of exposure was determined for any of these cases. Three of the infants were six months old at time of onset, 1 was one month old, and 1 was less than one month of age. There have been no reported cases of adult intestinal botulism in King County.

Wound botulism occurs when *C. botulinum* infects a wound or sinus cavity. Symptoms are similar to those seen in foodborne botulism, but gastrointestinal symptoms are generally absent. Outbreaks have occurred among persons who used illicit drugs; recent cases in Washington State have been associated with injection of “black tar” heroin. There was one reported case of wound botulism in King County in 2004 in a person who reported injecting “black tar” heroin. There have been 12 total cases of wound botulism reported in Washington State since 1999.

BRUCELLOSIS

Disease Reporting Requirements:

Health care professionals - report suspect cases immediately.

Laboratories - report within two working days, and submit isolate to the Public Health Laboratory. *Consult with the Public Health Laboratory before transporting isolates because special precautions should be taken to prevent transmission to laboratory workers.*

Purpose of Surveillance:

- To identify naturally occurring cases of brucellosis and common source outbreaks for investigation.
- To identify and eliminate sources of transmission.
- To identify cases resulting from a bioterrorism attack.

Brucellosis is caused by the bacteria of the genus *Brucella*. These bacteria cause disease in many different mammals, especially sheep, goats, and cattle. Humans become infected by coming in contact with animals, or contaminated animal products. In humans, brucellosis can cause a range of nonspecific symptoms, including fever, sweats, headaches, back pain, and physical weakness. Brucellosis can also cause chronic recurrent fevers, joint pain, and fatigue. Diagnosis of brucellosis is usually by a rise in serum antibody titer.

In the United States, 100 to 200 brucellosis cases are reported each year. Because small amounts of aerosolized bacteria can cause disease, *Brucella* is considered a potential agent of bioterrorism.

One case of Brucellosis, in an African immigrant, was reported in 2003. Since 1994, there have been six cases of brucellosis reported in King County.

CAMPYLOBACTERIOSIS

Disease Reporting Requirements:

Health care professionals - report within three working days of diagnosis.

Laboratories -no requirement.

Purpose of Surveillance:

- To identify common source outbreaks for investigation.
- To identify and eliminate sources of transmission including contaminated food and water.

Infections with *Campylobacter* are the most common bacterial cause of diarrheal illness in the United States.

Campylobacteriosis is an acute infection that normally lasts from two to five days, rarely longer than ten days.

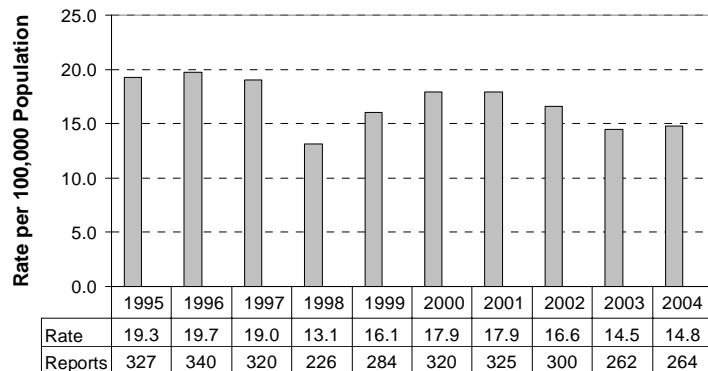
Symptoms are diarrhea (sometimes bloody), abdominal cramps, fever, nausea, and vomiting. Several species cause disease in humans, with the most prevalent being

Campylobacter jejuni. Rare post-infection complications include reactive arthritis, Guillain-Barré syndrome, and febrile convulsions. Other serotypes, such as *C. coli* and *C. larij*, are associated with blood infections among the elderly and immuno-compromised.

Most cases of campylobacteriosis occur as isolated, sporadic events and not as parts of large outbreaks. Most cases are associated with consumption of undercooked meat (especially poultry), or ready-to-eat foods that were cross-contaminated with juices from raw meat. Person-to-person transmission is uncommon, but occasionally occurs. Large outbreaks due to campylobacteriosis are usually related to consumption of unpasteurized milk or cheese, or contaminated water. Animals can also become infected, and humans can become infected after contact with their pets, especially puppies and kittens. Campylobacteriosis is common in the developing world, and travelers to foreign countries are at risk for infection.

In 2003, 262 cases of campylobacteriosis were reported, for an incidence rate in King County of 14.5 cases per 100,000 persons. In 2004, 264 cases were reported for an incidence rate of 14.8.

**Campylobacteriosis Rates by Year
1995 - 2004**

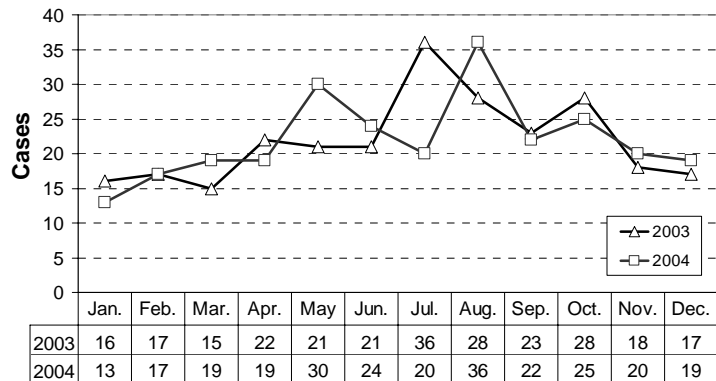


In 2003, approximately 54 percent (141/262) of isolates were serotyped and *C. jejuni* accounted for 99 percent (138/141) of typed isolates. In 2004, 37 percent (98/264) of isolates were serotyped and *C. jejuni* accounted for 94 percent (92/98) of the typed isolates.

In 2003, a suspected source of infection was identified for 61 cases; travel in 54 cases, non-restaurant foodborne exposure in five cases, and exposure to infected animals in two cases. In 2004, a suspected source of infection was identified for 67 cases; travel in 49 cases, non-restaurant foodborne exposure in 6 cases, exposure to infected animals in 6 cases, household exposure in 2 cases, and restaurant meals in 2 cases.

For both 2003 and 2004, cases were more common during the summer months, which is typical of many enteric diseases.

Campylobacteriosis by Month of Onset, 2003 and 2004



CHOLERA

Disease Reporting Requirements:

Health care professionals - report suspect cases immediately.

Laboratories – report immediately and submit isolate to the Public Health Laboratory within two days.

Purpose of Surveillance:

- To identify cases and common source outbreaks for investigation.
- To identify and eliminate sources of transmission including contaminated food and water.

Cholera, a severe and potentially fatal diarrheal disease, is caused by infection with certain toxin-producing strains of *Vibrio cholera* (serogroups O1 and O139).. Eating undercooked or raw shellfish, especially when traveling in the developing world, is the main risk for acquiring cholera. Failure to keep shellfish cold after harvesting can contribute to bacterial growth.

There has been one case of cholera reported each year for the years 2001, 2002, and 2003, all associated with international travel. There were no cases reported in 2004.

CRYPTOSPORIDIOSIS

Disease Reporting Requirements:

Health care professionals - report within three working days of diagnosis.

Laboratories - report within two working days.

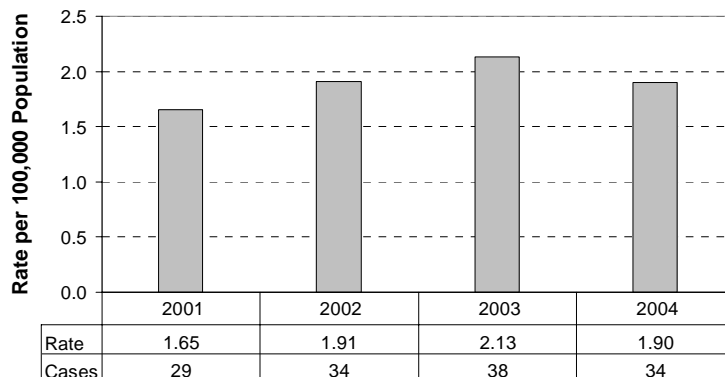
Purpose of Surveillance:

- To identify common source outbreaks for investigation.
- To identify and eliminate sources of transmission.

Infection with *Cryptosporidium parvum*, a protozoan organism, can cause fever, nausea, cramps, bloating, and watery diarrhea. Illness may last 1 to 14 days, but much more severe and prolonged illness occurs in immunocompromised individuals. Exposure is through the fecal-oral route, and may be due to exposure to untreated surface water, livestock, wild animals, pets, contaminated swimming pools, and person-to-person transmission. Boiling water for at least one minute kills the parasite, but chlorination has not been shown to be effective in killing the organism. The filters of most swimming pools also do not remove *Cryptosporidia*, and exposures to contaminated pools have caused large outbreaks of cryptosporidiosis.

Cryptosporidiosis became a reportable disease in Washington State in December of 2000. Thirty-eight cases were reported in 2003 and 34 cases were reported in 2004.

**Cryptosporidiosis Rates by Year
2001 - 2004**



CYCLOSPORIASIS

Disease Reporting Requirements:

Health care professionals - report within three working days of diagnosis.

Laboratories - report within two working days and submit specimen to the Public Health Laboratory.

Purpose of Surveillance:

- To identify common source outbreaks for investigation.
- To identify and eliminate sources of transmission including contaminated food or water.

Infection with the parasite *Cyclospora cayetanensis* causes persistent watery diarrhea, nausea, fatigue, and weight loss. The incubation period for cyclosporiasis is about one week. Because *Cyclospora* must mature outside the human host for approximately one week before it can cause infection, cyclosporiasis cannot be spread directly person-to-person. Cyclosporiasis is primarily waterborne, but may also be foodborne. It has been most often associated with consumption of imported berries and herbs that were sprayed with contaminated water.

Cyclosporiasis became reportable in Washington State in December of 2000. There were five reported cases of cyclosporiasis in both 2001 and 2002, one case in 2003, and nine cases in 2004.

DIPHTHERIA

Disease Reporting Requirements:

Health care professionals - report suspect cases immediately.

Laboratories - report within two days and submit isolate to the Public Health Laboratory.

Purpose of Surveillance:

- To facilitate appropriate treatment of cases, disease control measures, and preventive treatment for contacts of cases.
- To identify other exposed persons at risk for diphtheria.

Diphtheria is an acute toxin-mediated disease caused by infection with *Corynebacterium diphtheriae*. Diphtheria primarily involves the tonsils, pharynx, larynx, and nose, but occasionally skin or membranes in other parts of the body, including the conjunctivae or vagina can be affected. A characteristic feature of pharyngeal diphtheria is an asymmetric, adherent, grayish-white membrane, with surrounding inflammation. Myocarditis with heart block and progressive congestive heart failure may occur approximately one week after onset. Late complications include paralysis that can mimic Guillain-Barré syndrome. Mortality rates for non-cutaneous diphtheria are 5% - 10%. The lesions of cutaneous diphtheria vary, and may look very much like impetigo. Strains of *Corynebacterium diphtheriae* in cutaneous lesions are not usually toxin-producing.

The last case of toxigenic diphtheria reported in Washington State occurred in 1979.

ENTEROHEMORRHAGIC *E. COLI* (EHEC), INCLUDING *E. COLI* O157:H7 INFECTION

Disease Reporting Requirements:

Health care professionals - report suspect cases immediately.

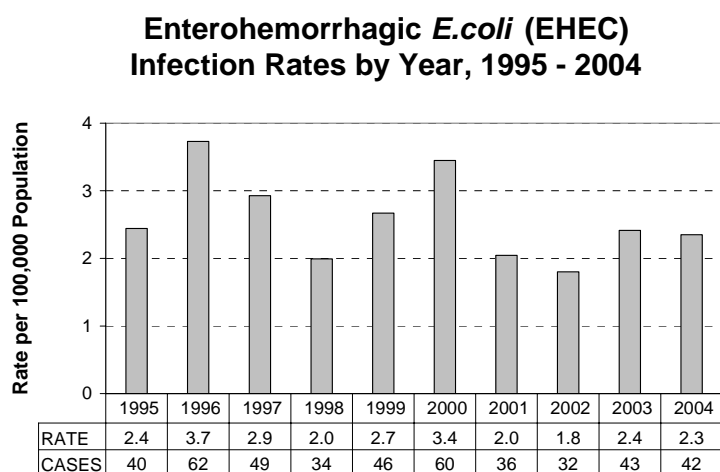
Laboratories - report within two working days, and submit isolate to the Public Health Laboratory.

Purpose of Surveillance:

- To identify sporadic cases and common source outbreaks for investigation.
- Implement disease control measures to prevent the continued spread of infection.
- To identify and eliminate sources of transmission including contaminated food and water.

Enterohemorrhagic *Escherichia coli* (EHEC) bacteria produce Shiga toxins, and can cause hemorrhagic colitis, manifested as bloody stools.

Infection with *E. coli* O157:H7, and other EHEC strains, is characterized by diarrhea, abdominal cramps, and, little or no fever. The diarrhea ranges from mild and non-bloody, to diarrhea with stools that contain mostly blood. The incubation period for EHEC, including *E. coli* O157:H7, is typically three to five days, but can range from one to eight days.



The most commonly reported EHEC strain in Washington State is *E. coli* O157:H7, and the primary reservoir for *E. coli* O157:H7 is cattle. Sources of transmission include consumption of undercooked contaminated ground beef, and other beef products; unpasteurized milk, cheese, and juice; contaminated raw fruits, vegetables, and herbs; water contaminated with animal feces; direct contact with farm animals; and swimming or playing in

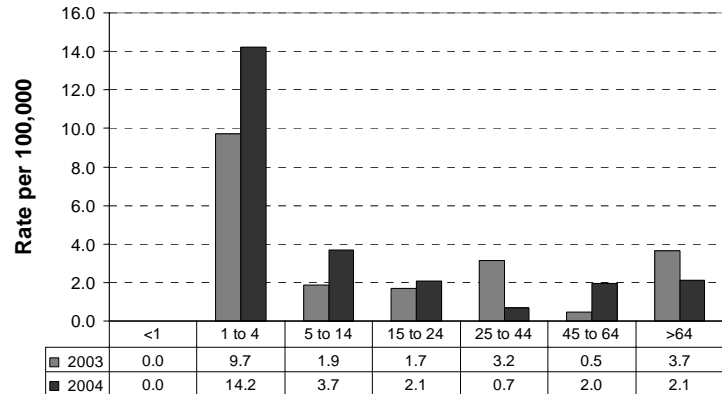
contaminated lakes and pools. Person-to-person transmission can occur within households, child daycare centers, and long-term care facilities.

Serious complications of EHEC infections, including hemolytic uremic syndrome (HUS) and renal failure, which occurs in 10 percent of infected children under eleven years of

age, and in 2 to 7 percent of cases overall. It is estimated that about 90 percent of HUS cases in the United States are caused by infection with EHEC

In 2003, there were 43 cases of EHEC reported in King County; 41 were caused by *E. coli* O157:H7, and two were caused by non-O157 strains of EHEC. In 2004, there were 42 reported cases of EHEC and all were O157:H7.

**Enterohemorrhagic *E.coli* (EHEC) Infection
Age Specific-Rates, 2003 and 2004**



FOODBORNE ILLNESS

Disease Reporting Requirements:

Health care professionals - report cases and clusters of suspect foodborne illness immediately.

Laboratories - no requirement.

Purpose of Surveillance:

- To identify outbreaks for investigation.
- To identify and eliminate sources of transmission including contaminated food and water.

Foodborne illness investigations are initiated in response to reports of suspected foodborne illnesses by citizens, health care professionals, and restaurants. Foodborne illness reports are evaluated to determine the likelihood that the reported illnesses are associated with food consumption.

Public Health received 741 foodborne illness complaints in 2003 and 46 of these were determined to be probable or confirmed foodborne disease outbreaks. In 2004, there were 641 total complaints, and 22 were determined to be probable or confirmed foodborne disease outbreaks. Outbreaks classified as "confirmed" cases must be laboratory confirmed, whereas outbreaks classified as "probable" lack supporting laboratory evidence. Both confirmed and probable outbreaks require either evidence of food handling violations from an environmental investigation or strong epidemiologic evidence of an outbreak.

GIARDIASIS

Disease Reporting Requirements:

Health care professionals - report within three working days of diagnosis.

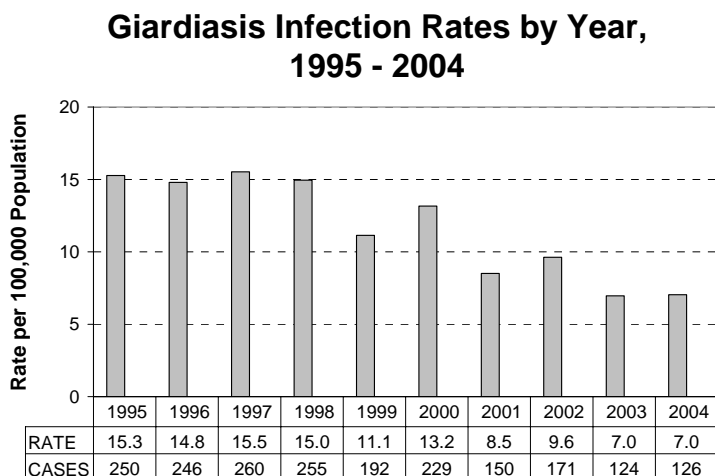
Laboratories - no requirement.

Purpose of Surveillance:

- To identify common source outbreaks for investigation.
- To identify and eliminate sources of transmission including contaminated food and water.
- To identify cases associated with child day care centers to control spread of infection.

Giardia lamblia is a flagellate protozoan, widely found in nature, that can infect the upper small intestine of humans. Severity of disease varies widely; patients may be asymptomatic, or may have chronic diarrhea, cramps, bloating, steatorrhea, fatigue, and weight loss, lasting weeks to months. Persons with giardia are infectious to others for the entire period of their illness. Serious effects, most commonly seen in children, may include malabsorption resulting in nutritional deficiencies.

The incubation period can vary from 5 days to more than 25 days, though the average incubation period is 7 to 10 days. Humans and other mammals, (especially beavers, puppies, cats, and kittens), are reservoirs, and shed the organism in their stool. Person-to-person, fecal-oral transmission can occur in child day care centers, within households, and during sexual contact. Child day care center outbreaks are often associated with small toddler wading pools, where several diapered children share the same water.



An increase in cases during warmer months is typical, similar to other enteric infections, probably due the increased incidence of swimming in contaminated water, as well as an increase consumption of contaminated surface water during camping.

In 2003, 124 cases of giardiasis were reported in King County, and in 2004, 126 cases were reported.

HAEMOPHILUS INFLUENZAE INVASIVE DISEASE

Disease Reporting Requirements:

Health care professionals - report cases of invasive disease in persons under age 5, (excluding cases of otitis media) immediately.

Laboratories: - no requirement.

Purpose of Surveillance:

- To identify *Haemophilus influenzae* serotype b (Hib) disease for investigation.
- To monitor for occurrence of invasive disease due to non-serotype b *Haemophilus influenzae*.
- To identify contacts of persons with *Haemophilus influenzae* serotype b (Hib) infection, and assure administration of post-exposure prophylaxis.

Prior to 1987, most invasive *Haemophilus influenzae* infections were due to *H. influenzae* serotype b (Hib). The introduction of the Hib conjugate vaccine in 1987 led to a rapid decline in the number of pediatric invasive *H. influenzae* infections, including meningitis, bacteremia, epiglottitis, and pneumonia. Meningitis accounts for approximately 50 to 60 percent of invasive cases, and can lead to complications such as hearing impairment and neurologic sequelae in 15-30 percent of cases.

The diagnosis of invasive *H. influenzae* disease is made by isolating the organism from blood, cerebrospinal fluid (CSF), or other normally sterile body site. There were two reported cases in both 2003 and 2004. In 2003, a 10 month old was infected with *H. influenzae* type C, and 4 year old was infected with a strain which was non-typeable. In 2004, a four year old was infected with *H. influenzae* type F, and a 22 month old was infected with a strain which was non-typeable.

HANTAVIRUS PULMONARY SYNDROME

Disease Reporting Requirements:

Health care professionals - report Public Health within three working days of diagnosis.

Laboratories - no requirement.

Purpose of Surveillance:

- To facilitate diagnostic testing.
- To facilitate environmental clean up of rodent-infested areas where cases have occurred.

Hantavirus Pulmonary Syndrome (HPS) was first reported in the United States in the Southwest in 1993. The Sin Nombre virus is the main cause of HPS reported in the United States, but other viruses may cause similar diseases in other countries. The deer mouse *Peromyscus maniculatus* is the main carrier of the virus in the U.S., but other wild rodents can also be carriers. Infected rodents shed the virus in their urine, saliva, and droppings, but do not show any signs of illness. Illness results from inhalation of aerosolized virus-containing rodent excreta.

The incubation period is approximately two weeks, with a range of a few days to six weeks. The first symptoms are non-specific, including fever, myalgias, and gastrointestinal symptoms, progressing abruptly to hypotension, and ventilatory compromise, often requiring mechanical ventilation. Most cases show an elevated hematocrit, hypoalbuminaemia, and thrombocytopenia.

Three cases of HPS have been reported in King County. A 23 year old man died of HPS in 1997, a 35 year old man survived infection in 1999, and a 19 year old man survived infection in 2003. All three were most likely exposed in Eastern or Central Washington.

HEPATITIS A

Disease Reporting Requirements:

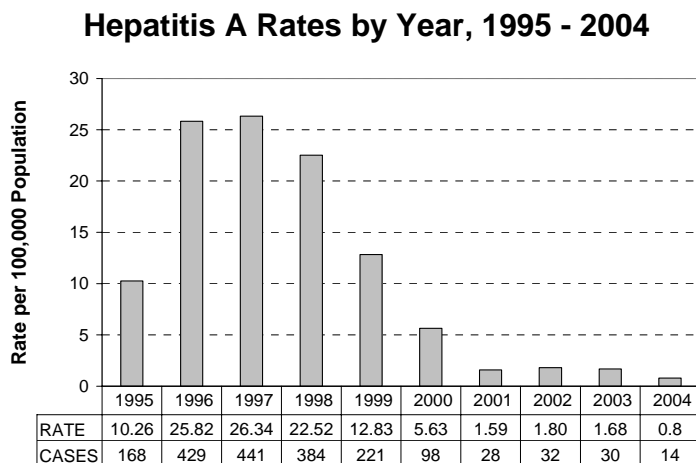
Health care professionals - report to suspect cases immediately.

Laboratories - report positive hepatitis A IgM antibody results within two days.

Purpose of Surveillance:

- To promptly identify persons exposed to cases of infectious hepatitis so that preventive treatment can be administered.
- To identify common source outbreaks.
- To identify and eliminate sources of transmission including contaminated food and water.

Hepatitis A infection is characterized by an abrupt onset of fever, malaise, nausea, vomiting, and abdominal pain. Jaundice follows within a few days. Illness ranges from a mild illness lasting a few weeks to a severe illness lasting several months. Severity of illness increases with age, and children are often asymptomatic.



Hepatitis A virus (HAV) infection is primarily acquired via the fecal-oral route, either through person-to-person contact, or by ingestion of feces contaminated food, or water. Prior to the introduction of hepatitis A vaccine in 1995, the incidence of reported hepatitis A cases in King County fluctuated, with cyclical peaks occurring approximately every five years. Since 1997, hepatitis A cases have been declining in King County.

There were 30 cases of HAV reported in 2003, and 14 cases in 2004. International travel was the most common risk factor, reported by 46 percent (14/30) of cases in 2003, and 57 percent (8/14) of cases in 2004.

HEPATITIS B – ACUTE AND CHRONIC INFECTIONS

Disease Reporting Requirements:

Health care professionals – report cases of acute or chronic hepatitis B in pregnant women within three working days. Report other cases of chronic hepatitis B within one month.

Laboratories – report within one month.

Purpose of Surveillance:

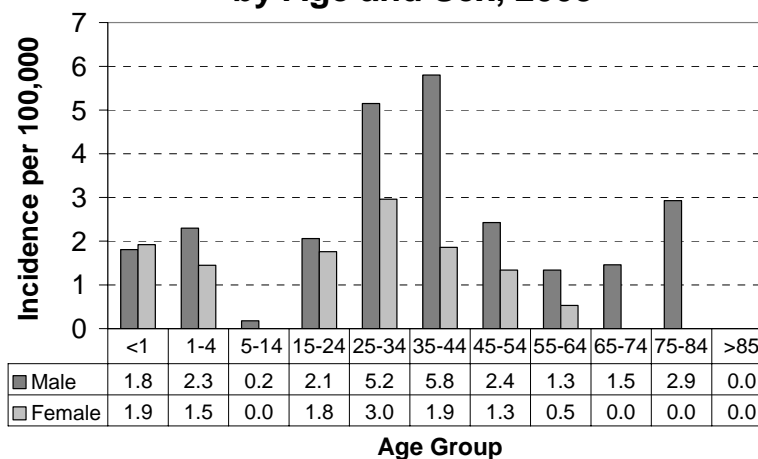
- To identify outbreaks and sporadic cases for investigation.
- To identify infected pregnant women, and ensure prompt treatment to prevent infection of the newborn.
- To identify exposed persons eligible for post-exposure prophylaxis.
- To identify and eliminate sources of nosocomial transmission.

Symptoms of acute hepatitis B virus (HBV) infection range from mild or no symptoms to severe illness, and may include abdominal pain, loss of appetite, nausea, and vomiting. Nearly all infants and children, and up to 50% of adults have no discernible symptoms. Consequently, many infections go undetected. The number of reported HBV infections is likely an underestimate of the true incidence of disease.

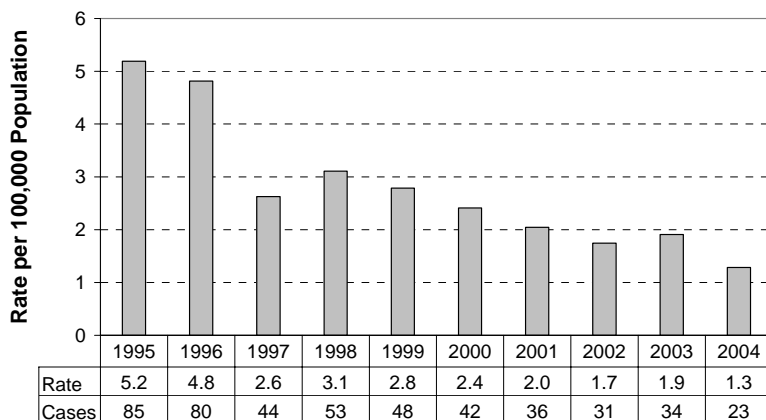
Most infected adults (90 to 95 percent) will resolve their infection within six months. However, 50% of children, and over 90% of infants with acute HBV infection do not resolve, and develop chronic infection. Chronic HBV infection is a risk factor for liver disease, including cirrhosis and liver cancer. One quarter of infants with chronic HBV infection develop liver disease later in life.

HBV is spread through contact with virus-containing blood and body fluids. Being born to an HBV-infected woman, having unprotected sex, sharing injection drug equipment, sharing personal hygiene items (razors, nail clippers, toothbrushes), and living in a household with infected persons are all risk factors for HBV infection. The incubation period is six weeks to six months.

Incidence of Acute Hepatitis B by Age and Sex, 2003



Acute Hepatitis B Infection Rates by Year, 1995 - 2004



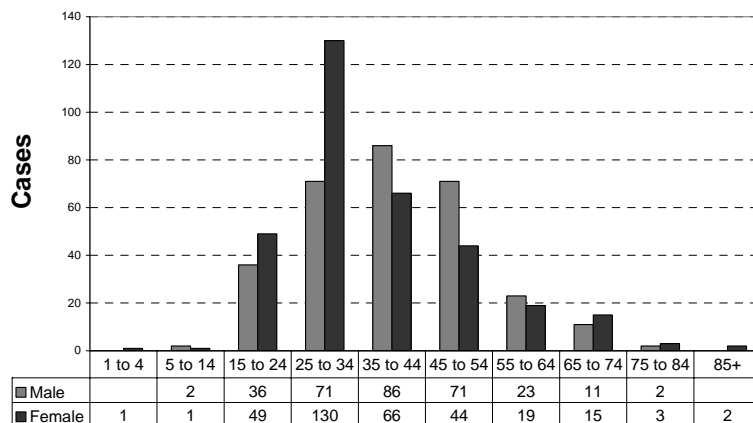
The number of acute HBV cases reported in King County, and nationally, has been declining since the 1980's. The decrease in the number of cases is attributed primarily to HIV prevention efforts, and increasing hepatitis B vaccine use among men who have sex with men (MSM), and injection drug users; two groups at high risk for acquiring HBV infection.

Thirty-four cases of acute hepatitis B were reported in 2003, and 23 cases in 2004. In both 2003 and 2004, a majority of reported cases were men; 62 percent (21/34) in 2003, and 83 percent (19/23) in 2004. This higher incidence of acute hepatitis B among men is likely attributable to infections among MSM.

In the US, babies born to women with acute or chronic HBV infections, who develop hepatitis B by 24 months of age, are classified as acute hepatitis B cases, even though they are often asymptomatic. There were no cases of perinatally acquired acute hepatitis B in 2003, but in 2004, there were three infants who developed acute hepatitis B after being born to hepatitis B surface antigen positive mothers (chronic carriers), despite receiving appropriate post-exposure prophylaxis.

Chronic HBV infection was made reportable in December 2000. Prior to that date, voluntary reporting of chronic hepatitis B was encouraged but not required. In 2004, the number of reports among women aged 20 to 39 years is two and a half times higher than for men in the same age group. This does not necessarily reflect a higher prevalence of HBV among women, but is likely attributable to the number of cases identified through routine testing of women for HBV infection during pregnancy.

Chronic Hepatitis B by Agegroup and Sex, 2004



HEPATITIS C – ACUTE AND CHRONIC INFECTIONS

Disease Reporting Requirements:

Health care professionals - report acute and chronic cases within one month.

Laboratories – report within one month.

Purpose of Surveillance:

- To identify risk factors for acquisition of HCV.
- To identify and eliminate sources of transmission.
- To provide education to cases in order to minimize risk of transmission, and to reduce risk factors for development of chronic liver disease.
- To monitor the prevalence of disease and associated disease burden in the community
- To identify epidemiological features of hepatitis C for prioritization of prevention activities and other HCV-related services.

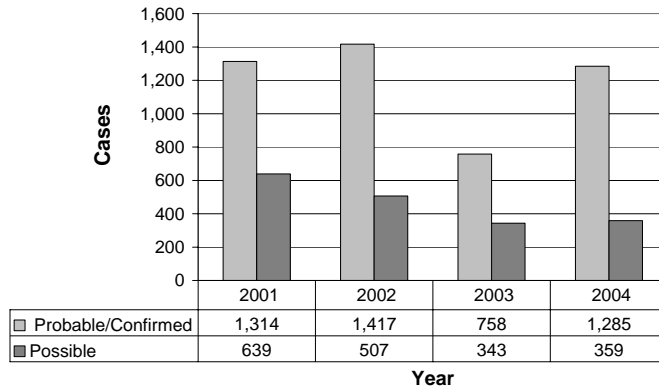
Over 70 percent of persons with acute hepatitis C virus (HCV) infections are asymptomatic. Symptoms of acute infection may include abdominal pain, anorexia, nausea, vomiting, rash, and jaundice. A high proportion, 60 to 85 percent, of persons infected with hepatitis C, develops chronic infections, and, approximately 10 to 15 percent of them will go on to develop cirrhosis within 20 years after infection.

Hepatitis C virus (HCV) is transmitted primarily by direct exposure to the blood of an infected person. Before a reliable screening test was introduced in 1992, blood and blood product transfusions accounted for a large proportion of infections. Today, the most likely way to acquire HCV infection is through injection drug use (IDU). The risk of perinatal transmission from an HCV-infected pregnant woman is about 5 percent. There is no post-exposure prophylaxis that is effective in preventing infection in exposed infants. The risk of sexual transmission is low among long-term, monogamous partners and higher for persons with multiple sexual partners. The risk for sexual transmission appears to be increased for women, similar to other bloodborne viruses.

Acute HCV infection was reportable as acute non-A, non-B hepatitis prior to 2000. The number of cases that meet the criteria for acute infection remains consistent at less than 1% of all reports (between 6 and 13 new cases per year). Of the persons reported with acute HCV infections between 1998 and 2002, 63% reported a history of intravenous drug use.

Chronic HCV infection became reportable in December 2000. In 2004, reports of chronic hepatitis C accounted for 44 percent of all diseases or conditions reported to Public Health. Reports of chronic hepatitis C cases are expected to remain high because of the 20 to 30 year delay between the time of infection and the development of complications that lead to testing and diagnosis of HCV infection.

**Reported Cases of Chronic Hepatitis C,
2001 to 2004**



Chronic hepatitis C cases can be classified as confirmed, probable, or possible. A confirmed case of chronic HCV infection is a case that has tested positive for HCV by anti-HCV enzyme immunoassay (EIA), plus *supplemental confirmatory* testing by recombinant immunoblot assay (RIBA), or any case with positive qualitative or quantitative HCV RNA testing. A probable case is defined as a positive HCV EIA test result, in the absence of

confirmatory testing, in persons at high risk for HCV infection, including injecting drug users. Cases with a positive HCV EIA test who don't meet the "confirmed" or "probable" case definitions are classified as possible HCV cases.

LEGIONELLOSIS

Disease Reporting Requirements:

Health care professionals - report within three working days.

Laboratories – no requirement.

Purpose of Surveillance:

- To identify common source outbreaks and nosocomial cases for investigation.
- To identify and eliminate preventable sources of transmission.

Legionellosis (“Legionnaire’s Disease”) was first identified after a 1976 outbreak in Philadelphia among attendees at the American Legion’s annual convention. Various species of *Legionella*, most commonly *L. pneumophila*, cause pneumonia and febrile illness. Other possible symptoms include diarrhea, abdominal pain, headache, and neurologic changes.

Legionella live in soil and natural bodies of water, water distribution systems, and building cooling towers. Disease occurs when the organism is inhaled in aerosolized water droplets, causing pneumonia. It has also been associated with inhalation of aerosols generated when using potting soil. Persons at increased risk for legionellosis include the elderly, persons with underlying lung and heart disease, persons with cancer, persons who have received organ transplants, and persons with other immune system disorders. The incubation period is typically two to ten days, but can be longer. Legionellosis outbreaks have occurred in hospitals and long-term care facilities, where residents are at higher risk due to advanced age and other chronic conditions.

Most reported cases (79 percent) in King County have been in individuals 40 years or older who were on immunosuppressive therapy. In 2003, two cases of legionellosis cause by *L. pneumophila* were reported in King County. There were seven persons with *Legionella* infections reported in 2004; five infections due to *L. pneumophila*, and one each due to *L. micdadei* and *L. longbeachae*

LISTERIOSIS

Disease Reporting Requirements:

Health care professionals - report suspect or confirmed cases immediately.

Laboratories - report within two working days.

Purpose of Surveillance:

- To identify common source outbreaks for investigation.
- To identify and eliminate sources of transmission including contaminated food products.

Listeriosis is a bacterial infection caused by *Listeria monocytogenes*. Persons at increased risk for severe infection, including meningoencephalitis and sepsis, include immunocompromised persons, the elderly, pregnant women, and newborn infants. Persons with healthy immune systems who are infected may suffer no symptoms, or only mild flu-like symptoms. The median incubation period is three weeks (range three to 70 days).

The primary reservoir of *Listeria monocytogenes* is the feces of mammals and birds, and so the organism is also found in soil, water, mud, and animal feed. This bacterium is unusual among foodborne pathogens in that it multiplies in refrigerated foods. Transmission occurs primarily through ingestion of contaminated drinks and foods, including raw (unpasteurized) or contaminated milk, soft cheeses, vegetables, and ready-to-eat meats. Intrauterine transmission can lead to spontaneous abortion or stillbirth, and transmission during delivery can cause severe, often fatal, infections in the newborn, even if the mother is asymptomatic.

In 2001, three pregnant Hispanic women residents of King County developed infections with *Listeria monocytogenes* after consuming privately distributed queso fresco, a soft Mexican cheese that is often made with unpasteurized milk. One of the women delivered an infected stillborn infant at 23 weeks gestation, and the other two delivered infants that suffered serious medical complications requiring lengthy hospitalizations.

In King County, six cases of listeriosis were reported in 2003. The six cases include 1 eleven month-old infant, 1 four year old child, and 4 other persons who were immunocompromised. Four cases were reported in 2004. Three cases occurred in persons who were immunocompromised, and one case was in a pregnant woman who experienced fetal demise at 20 weeks of pregnancy.

LYME DISEASE

Disease Reporting Requirements:

Health care professionals - report cases within three working days of diagnosis.

Laboratories - no requirement.

Purpose of Surveillance:

- To detect and investigate any increase in the incidence of disease.
- To facilitate appropriate diagnostic testing and treatment for infected persons.

Lyme disease is caused by the spirochete *Borrelia burgdorferi*, which is transmitted by the bite of infected *Ixodes* ticks. Ticks are infected by feeding on infected deer and deer mice. The incubation period is seven to ten days, and ranges from three to thirty-two days. Most infections begin with a classic “bulls-eye” type rash (erythema migrans). Other symptoms include malaise, fever, headache, arthralgias, myalgias and lymphadenopathy. Serious neurologic and cardiac sequelae may result from untreated infections. Chronic arthritis may develop years after an untreated infection.

In the U.S., exposure to Lyme disease is common in the northeastern states, Atlantic coastal states, and the upper Midwest. Lyme disease is uncommon in much of Washington State, and the Pacific Northwest in general. Most cases thought to be acquired in Washington State, have had outdoor exposure in counties west of the Cascade Mountains or in the Cascade foothills, where *Ixodes* ticks, along with their deer and rodent hosts, are located.

In 2003, there were two reports of Lyme disease, both in persons who had traveled to the East Coast. In 2004, there were 10 reported cases; six were persons who had traveled to the East Coast, one had traveled to the Midwest, two traveled internationally. One person was lost to follow-up.

MALARIA

Disease Reporting Requirements:

Health care professionals - report within three working days.

Laboratories – no requirement.

Purpose of Surveillance:

- To identify risk factors for malaria among King County residents.
- To guide targeted interventions to prevent malaria among travelers to malaria endemic regions.

Malaria is an infection caused by a parasite of the genus *Plasmodium*. Anopheline mosquitoes in tropical zones transmit the parasite. There are four species of *plasmodium* parasites: *malariae*, *vivax*, *ovale*, and *falciparum*. Untreated *falciparum* malaria has a high mortality rate.

Symptoms of malaria include malaise, anorexia, chills, sweats, fever, and headache. Symptoms may last for days and present in a cyclical pattern with a relief of symptoms during non-febrile periods. The incubation period is nine to forty days, and varies by species. Malaria chemoprophylaxis that is suboptimal may increase the incubation period.

In 2003, there were 16 cases of malaria reported, and in 2004, 12 cases were reported. Ten of these infections were caused by *P. falciparum*, nine by *P. vivax* and nine were un-typeable.

In 2002, there was one fatal case in a returned traveler to Africa who did not take malaria prophylaxis, or seek

Malaria Cases by Country, 2003 and 2004 Combined*		
County	Travel Associated	Immigration Associated
Bangladesh	1	
Benin	1	
Burkina Faso	1	
Ethiopia	1	3
Ghana		1
Guatamala	1	
Guinea	1	
India	1	
Ivory Coast	3	
Kenya	1	
Liberia		1
Mali	1	
Papua New Guinea	1	
Niger	1	
Nigeria	1	
Sierra Leone	4	2
Togo	1	

*One case was at sea and could not be contacted for follow-up.

medical treatment for the infection. This is the only fatal malaria case on record in King County during the past fourteen years.

MEASLES

Disease Reporting Requirements:

Health care professionals - report suspect cases immediately.

Laboratories – report immediately and submit specimen to the Public Health laboratory.

Purpose of Surveillance:

- To rapidly identify cases and exposed persons at risk for transmitting measles to others.
- To identify susceptible contacts of cases for measles post-exposure prophylaxis or preventive treatment.
- To implement disease control measures to prevent transmission and community outbreaks of measles.

Measles is an acute viral respiratory illness that is accompanied by a characteristic full body “morbilliform” rash. It is one of the most highly infectious diseases known, but it is preventable through vaccination. Symptoms begin with fever, coryza, conjunctivitis, and cough. After two to four days the rash begins on the face and spreads downward to become generalized. The rash usually lasts four to seven days. Complications of measles can include otitis media, pneumonia, and encephalitis. These complications can occur in all age groups, however, measles is most severe in infants and adults.

Diagnosis of measles must be confirmed by laboratory testing. This can be done by serologic testing, viral isolation from nasopharyngeal secretions, conjunctiva, blood or urine, or identification of viral antigen in blood or tissues. Public Health can facilitate expedited laboratory testing for suspect cases.

In 2004, there were six cases of measles in toddlers adopted from orphanages in China. No secondary cases occurred in King County. In 2001, 12 cases of measles linked to an outbreak in Korea were reported.

MENINGOCOCCAL DISEASE

Disease Reporting Requirements:

Health care professionals - report suspect cases immediately.

Laboratories - report within two working days and submit appropriate specimen to the Public Health Laboratory.

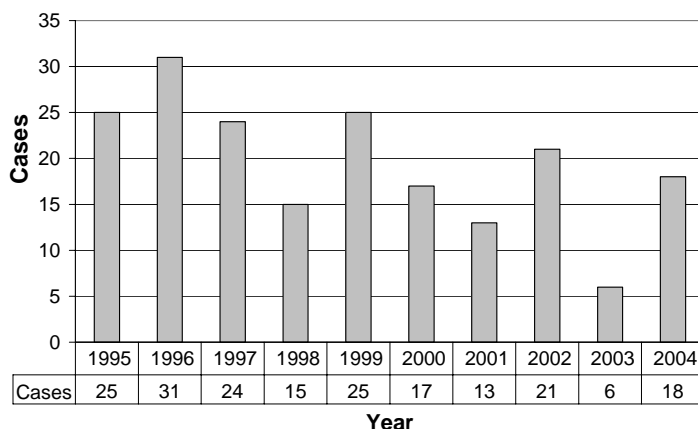
Purpose of Surveillance:

- To identify cases and exposed persons, and implement appropriate disease control measures including post-exposure prophylaxis.
- To identify outbreaks of disease requiring use of meningococcal vaccine.
- To monitor trends in the incidence of specific serotypes and strains of *Neisseria meningitidis*.

Meningococcal disease is caused by the bacterium *Neisseria meningitidis*. Meningitis is the most common presentation of invasive disease and is characterized by sudden onset of fever accompanied by severe headache, nausea and vomiting, stiff neck and frequently, a petechial rash. Meningococcal sepsis, or meningococcemia, is characterized by abrupt onset of fever and a petechial or purpuric rash, often associated with hypotension, shock, acute adrenal hemorrhage, and multiorgan failure. Even when treated, approximately 8 to 15 percent of cases of invasive meningococcal disease are fatal. Long term sequelae, which occur in 10 to 20 percent of those who survive, include mental retardation, hearing loss, and amputation.

N. meningitidis is spread from person to person via respiratory droplets. The risk of transmission is enhanced by intimate, or prolonged close contact. Carriers may have no symptoms or have only mild respiratory symptoms. Risk factors for meningococcal disease include age less than one year, smoking, recent viral respiratory infection, and living in certain congregate setting (e.g., college freshman dormitories).

**Reported Cases of Meningococcal Disease,
1995 to 2004**



MUMPS

Disease Reporting Requirements:

Health care professionals - report within three working days of diagnosis.

Laboratories - no requirement.

Purpose of Surveillance:

- To identify cases and susceptible persons exposed to mumps cases in order to implement disease control interventions.

Mumps is an acute viral disease characterized by fever and swelling of the salivary (typically parotid) glands. One common complication, orchitis, occurs in 20-30% of boys and men infected after puberty. Mastitis occurs in 31% of females over the age of 15. Rare complications include meningitis, encephalitis, sterility, arthritis, renal involvement, thyroiditis, and hearing impairment.

Other, more common conditions also cause swelling of the salivary glands. Diagnosis is made by isolating the mumps virus in tissue culture inoculated with throat washings, urine, or spinal fluid, or by serologic testing.

No cases of mumps were reported in King County in 2003, and there was one case reported in 2004.

PARALYTIC SHELLFISH POISONING

Disease Reporting Requirements:

Health care professionals - report suspect cases immediately.

Laboratories - no requirement.

Purpose of Surveillance:

- To identify common source outbreaks for investigation.
- To identify and eliminate distribution of contaminated shellfish.

Paralytic Shellfish Poisoning (PSP) is a neurologic syndrome caused by consuming shellfish contaminated with naturally-occurring toxic substances called "saxitoxins". High concentrations of these toxins occur in shellfish during algae blooms known as "red tides," but can also occur in the absence of a recognizable algae bloom.

Neurologic symptoms may begin within minutes to hours after eating contaminated shellfish, and include tingling, burning, numbness, drowsiness, incoherent speech, and respiratory paralysis. Additionally, gastrointestinal symptoms may occur. Symptoms usually resolve within a few days, but in unusual cases, death may occur despite supportive care. Diagnosis is based entirely on observed symptomatology and recent dietary history. Infection is confirmed by detection of the toxin in epidemiologically implicated food, if available.

The last reported cases in King County were five cases which were part of a 1998 outbreak. Surveillance for PSP cases supplements monitoring for saxitoxin contamination in Washington grown and imported shellfish.

PERTUSSIS

Disease Reporting Requirements:

Health care professionals - report suspect and confirmed cases immediately.

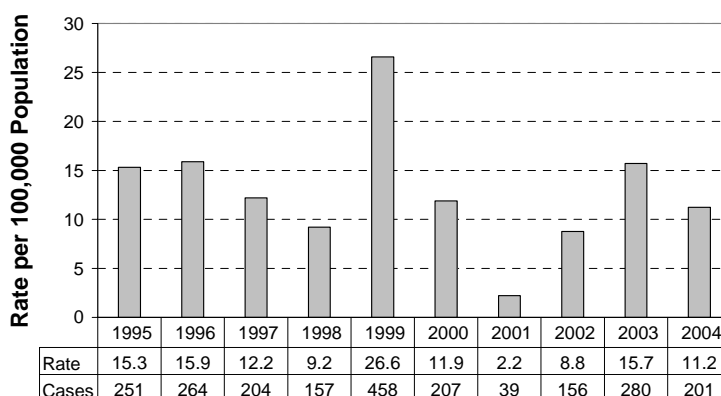
Laboratories - report within two working days.

Purpose of Surveillance:

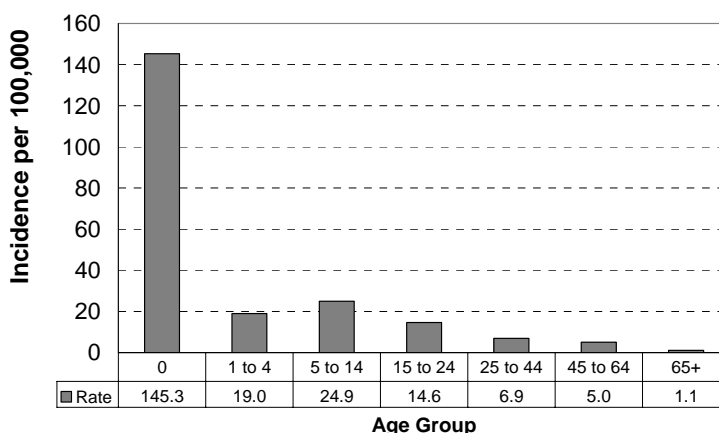
- To prevent transmission of pertussis to persons at high risk for severe illness and complications.
- To identify outbreaks and implement disease control, including early recognition, testing, and treatment of cases.

Pertussis, also known as “whooping cough”, is a toxin-mediated disease caused by *Bordetella pertussis*. Classic symptoms include a persistent, paroxysmal cough, of two or more weeks duration, that is worse at night, often followed by vomiting. Apnea and cyanosis, especially in infants, is also seen. Fever is usually low grade or absent. Symptoms may last for two to three months or even longer, despite antibiotic treatment, as respiratory cilia recover from the effect of the pertussis toxin. The disease is of particular concern in infants, because of higher rates of hospitalization, pneumonia, and death compared with older children and adults. Pertussis vaccination is designed to reduce the severity of disease among young children. The protective effect of pertussis vaccine wanes with time and the reservoir for pertussis in the community is thought to be unrecognized infections in older children and adults.

Pertussis Incidence Rates by Year, 1995 - 2004



Incidence of Pertussis by Agegroup 2004



PLAGUE

Disease Reporting Requirements:

Health care professionals - report suspected and confirmed cases immediately.

Laboratories - report the isolation of *Yersenia pestis* immediately, and submit the isolate to the Public Health Laboratory.

Purpose of Surveillance:

- To identify cases caused by potential agents of bioterrorism.
- To identify naturally-occurring sources of infection.
- To confirm reported cases, and other exposed persons requiring post-exposure prophylaxis, and/or monitoring.

Plague is caused by infection with the bacterium *Yersenia pestis*. This bacterium is found in rodents and their fleas, in many areas of the world, including the United States. Clinical forms of plague include bubonic, septicemic, pneumonic, and pharyngeal.

Bubonic plague is the most common form and is transmitted by the bite of an infected flea, or through the contamination of a break in the skin with *Y. pestis*. Symptoms include swollen, tender lymph glands (called buboes), fever, headache, chills, and weakness. Bubonic plague is not spread from person to person.

Pneumonic plague occurs when a person breathes in *Y. pestis* suspended in respiratory droplets from a person (or animal) with pneumonic plague, or from spread of bubonic or septicemic plague to the lungs. Untreated pneumonic plague has a high fatality rate.

Septicemic plague refers to an infection of the bloodstream, and can be a complication of bubonic or pneumonic plague, or can occur by itself. Septicemic plague can also be acquired directly from the bite of an infected flea, or through the contamination of a break in the skin with *Y. pestis*. Patients have fever, chills, abdominal pain, shock, and bleeding into skin and other organs. Septicemic plague does not spread from person to person.

The last case of plague reported in Washington State was bubonic plague in an animal trapper in 1987. This was the first case reported since 1907.

Y. pestis is considered a potential agent of bioterrorism.

POLIOMYELITIS

Disease Reporting Requirements:

Health care professional - report suspect cases immediately.

Laboratories - no requirement.

Purpose of Surveillance:

- To identify cases of imported poliomyelitis.
- To identify cases and susceptible contacts of cases for post-exposure prophylaxis (e.g., immunization) and institute infection control measures.

Poliomyelitis (polio) is a paralytic disease classically caused by poliovirus a highly infectious virus. Poliovirus that was declared eradicated from the Western Hemisphere in 1991, from the Western Pacific in 1997, and from Europe in 1998.

Poliovirus is transmitted primarily person to person via the fecal-oral route. The majority of cases are asymptomatic, with flaccid paralysis occurring in less than 1 percent of all infections. A polio-like illness can be caused by non-polio enteroviruses such as echovirus, enterovirus, and coxsackie virus, or West Nile virus. Accordingly, a thorough travel and immunization history should be taken and appropriate targeted diagnostic testing obtained for persons with a polio-like illness.

PSITTICOSIS

Disease Reporting Requirements:

Health care professionals - report suspect or confirmed cases within three working days.

Laboratories - no requirement.

Purpose of Surveillance:

- To identify source of transmission (infectious birds), and eliminate risk to others.
- To facilitate appropriate diagnostic testing and treatment for infected persons.
- To monitor clean-up of contaminated areas and management of infected birds.

Psitticosis (parrot fever, chlamydiosis or ornithosis) is caused by inhalation of the desiccated droppings, secretions, or dust from the feathers of from birds infected with *Chlamydia psittaci*. Psittacine birds such as parrots, parakeets, and cockatiels are the most common reservoir, but infection may also occur in other wild, domestic, or pet birds. Birds may be symptomatic, particularly if stressed, but healthy birds can also carry the organism.

The last reported human case of psitticosis in King County occurred in 1998.

Q FEVER

Disease Reporting Requirements:

Health care professionals - report within three working days.

Laboratories - no requirement.

Purpose of Surveillance:

- To identify sources of transmission and reduce the risk to further cases.
- To identify cases caused by potential agents of bioterrorism.

Acute *Coxiella burnetii* infection is a febrile illness, usually accompanied by rigors, myalgia, malaise, and headache. Severe disease can include acute hepatitis, pneumonia, and meningoencephalitis. Elevated liver enzyme levels are common. Asymptomatic and chronic infections may also occur. Potentially fatal endocarditis may evolve months to years after acute infection, particularly in persons with underlying valve disease. A chronic fatigue-like syndrome has been reported in some Q fever patients. *C. burnetii*, is considered a potential agent of bioterrorism.

The last case of Q fever reported in King County occurred in 1990.

RELAPSING FEVER

Disease Reporting Requirements:

Health care professionals - report suspect or confirmed cases immediately.

Laboratories - no requirement.

Purpose of Surveillance:

- To identify common source outbreaks.
- To identify and eliminate sources of transmission.
- To facilitate environmental clean up.
- To facilitate appropriate treatment, and provide disease prevention information.

Relapsing fever is a systemic disease caused by the spirochetes *Borrelia hermsii* and *B. turicatae*. In the United States, relapsing fever is a tickborne disease that typically occurs in the western states. It is transmitted to humans by the bites of argasid ticks species (most commonly *Ornithodoros hermsi* and *O. turicata*) infected with the *Borrelia* spirochete from feeding on infected rodents and squirrels. These ticks typically feed only at night and, unlike hard ticks, do not remain attached. They are found where rodents burrow and nest, often in older buildings, and are difficult to eradicate. These ticks can survive for long periods between blood meals, and, typically, don't produce a noticeable bite. In the western United States and British Columbia, exposure to relapsing fever commonly occurs in older buildings and cabins located in higher elevations.

This disease is characterized by recurrent fevers of up to 105°F, lasting two to nine days, followed by afebrile periods lasting two to four days. The number of relapses can be one to ten, or greater. Other symptoms can include headache, chills, body aches, prostration, nausea and vomiting, and in some cases, a rash. The incubation period is typically seven to eight days (range four to 18 days).

Relapsing fever is diagnosed by evidence of spirochetes in blood drawn during a febrile episode, bone marrow aspirates, or cerebral spinal fluid. Relapsing fever is not spread person-to person, although infection can be acquired in utero. Treatment is with an appropriate antibiotic; prophylactic treatment is not recommended for asymptomatic persons who may have been exposed to relapsing fever. These persons should be monitored for fever for 18 days after last exposure.

In 2003 two cases of relapsing fever were reported, and in 2004 one case was reported. All were exposed while visiting cabins in Eastern Washington. There have been nine total cases of relapsing fever reported in King County since 1999, all associated with exposures outside of western Washington. Exposure locations include Idaho, Montana, Oregon, and eastern Washington.

RUBELLA

Disease Reporting Requirements:

Health care professionals - report suspect cases immediately.

Laboratories - no requirement.

Purpose of Surveillance:

- To identify cases and implement disease control interventions.
- To prevent transmission to susceptible pregnant women and resultant congenital rubella syndrome.
- To identify risk factors for rubella infection.

Rubella (German Measles) is a mild viral illness that is important because of its ability to produce congenital anomalies in the developing fetus of pregnant women. Congenital rubella syndrome (CRS) occurs in up to 90 percent of infants born to women who are infected with rubella during the first trimester of pregnancy. Rubella causes a rash, accompanied by slight fever, and lymphadenopathy. Adults may have extended illness, but other than chronic arthritis, few complications are reported.

Diagnostic tests for rubella include antibody titers, virus isolation, and identification of viral antigen in blood or tissues. Congenital infection is confirmed by IgM antibody titers in the affected infant.

No cases of rubella were reported in 2003 or 2004. Two cases of rubella were reported in King County during 2002, both in unvaccinated recent immigrants.

SALMONELLOSIS

Disease Reporting Requirements:

Health care professionals - report immediately.

Laboratories - report within two working days and submit the isolate to the Public Health Laboratory.

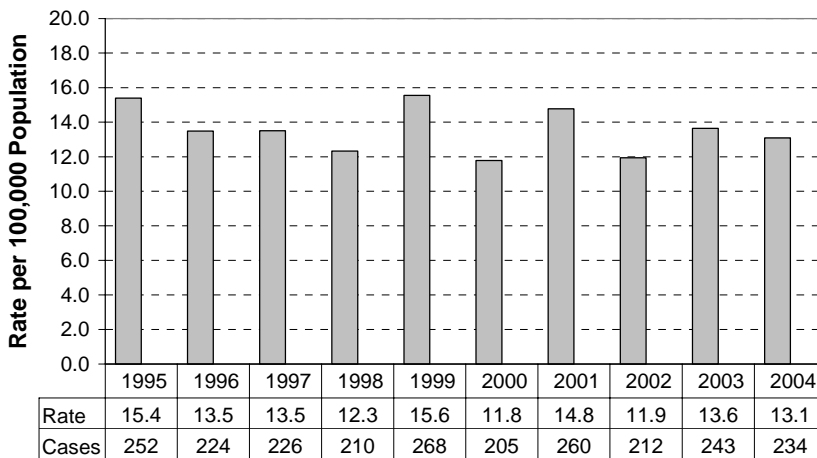
Purpose of Surveillance:

- To identify common source outbreaks.
- To identify and eliminate sources of transmission including contaminated food and water.
- To provide education to cases on disease control measures to prevent continued transmission and re-infection.

Salmonellosis is a bacterial infection of the colon characterized by fever, abdominal pain, diarrhea, headache, nausea, and in some cases, vomiting. *Salmonella* is spread through ingestion of food or water contaminated by the fecal matter of an infected animal or human, and through direct, and indirect contact with animals and their environments. Animals associated with transmission of salmonellosis include reptiles (e.g., lizards, snakes, turtles, and iguanas), amphibians (e.g., newts, salamanders, and toads) and other animals (cows, chickens, turkeys, birds, dogs, cats, sugar gliders, and hedgehogs). The incubation period is generally 12 to 36 hours (range 6 to 72 hours), and illness typically lasts four to seven days.

Person to person spread of *Salmonella* is not common because the infective dose is relatively high, (100 to 1000 organisms). Children and individuals with poor hygiene pose a greater risk of contaminating the household environment. Persons with

**Salmonellosis Rates by Year
1995 - 2004**



salmonellosis are typically communicable for several days to weeks, and in some cases longer. Up to five percent of children less than five years of age shed the organism for more than a year.

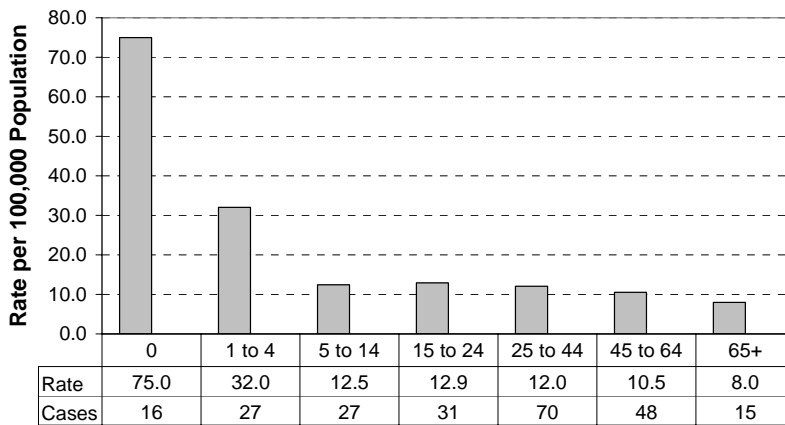
Complications of salmonellosis include extra-intestinal spread, resulting in abscesses, arthritis, bacteremia, and meningitis.

Infants, the elderly, and the immunocompromised are at increased risk of developing serious complications, including death. Tracking of *Salmonella* serotypes allows early identification of outbreaks.

In 2003, there were 243 salmonellosis cases reported in King County. *S. enteritidis* (54 cases) and *S. typhimurium* (48 cases), accounted for 42 percent of all reported cases. In 2004, 234 cases of salmonellosis were reported. *S. enteritidis* (41 cases) and *S. typhimurium* (40 cases), accounted for 35 percent of all reported cases. The highest incidence for both 2004 and 2005 was among children under age five.

A multistate outbreak of *S. enteritidis* in the Pacific Northwest, associated with consumption of eggs from a Washington State distributor occurred from November 2002 through 2003.

**Salmonellosis Age-Specific Rates
2004**



There was also a multistate outbreak of *S. enteritidis* associated with consumption of raw almonds which occurred between August 2003 and April 2004.

SEXUALLY TRANSMITTED DISEASES

Chlamydia

Disease Reporting Requirements

- Health care professionals – report cases of chlamydia to the PHSKC Sexually Transmitted Disease Program within 3 business days.
- Laboratory reporting - report positive results to the PHSKC Sexually Transmitted Disease Program within 2 business days.

Purpose of Surveillance:

- To identify and screen contacts to chlamydia to reduce further spread.
- To identify infected pregnant women and provide treatment in order to reduce the risk of infection in the newborn.
- To identify high risk populations for prevention activities.
- To monitor changes in chlamydia trends over time and across subpopulations

Chlamydia is the most commonly reported infection in the United States. It is transmitted through unprotected sex (vaginal, anal, and possibly oral), and can be transmitted from a mother to her baby during childbirth.

Chlamydial infection is often asymptomatic, and so rates of disease based on case reports almost certainly underestimate the true incidence of infection. Those who do develop symptoms of chlamydia usually do so within 1-3 weeks of exposure. Symptoms in women can include burning with urination or vaginal discharge, due to urethral or cervical infection respectively. Symptoms in men include burning during urination and discharge from the penis. Symptoms of rectal infection may include discharge, pain, or bleeding.

If left untreated, chlamydia can result in serious long term complications in women. Untreated chlamydia may result in pelvic inflammatory disease (PID). PID can result in infertility, ectopic pregnancy, and/or chronic pelvic pain. Untreated chlamydia in men can occasionally lead to epididymitis, a painful inflammation of part of the testicles, which can also lead to infertility.

A baby who contracts chlamydia from her mother during delivery may develop an infection of the eyes, or early infant pneumonia.

Adolescent and young adult women may be particularly susceptible to chlamydial infection because their cervical tissue is immature. Because so many infections among women cause no discernible symptoms, and young sexually active women are at high risk for becoming infected, it is recommended that sexually active women between the ages of 14 and 24 be screened for chlamydial infection annually.

In 2003, 5,189 cases of chlamydial infection were reported among residents of King County, for a crude incidence of 291.6 per 100,000 persons. In 2004, 5,428 cases were reported, for an overall incidence of 305.1 per 100,000 persons. Recommended routine chlamydial screening for young women results in many more cases of chlamydia being detected among women than men, although the true incidence of disease is probably similar in men and women. Among women, 3441 and 3647 cases were reported in 2003 and 2004, respectively, for incidences of 385.1 (2003) and 408.0 (2004) per 100,000 persons. Among men, 1748 and 1781 cases were reported in 2003 and 2004, respectively, for incidences of 197.4 (2003) and 201 (2004) cases per 100,000 men. Age-specific rates were highest among 15-20 year old women (2363.9 cases per 100,000 persons in 2004) and 20-24 year old men (814.9 cases per 100,000 persons in 2004), likely reflecting the increased biological susceptibility of young women, low rates of condom use among adolescents and young adults, and age discordant sexual partnerships between young women and older men.

Gonorrhea

Disease Reporting Requirements

- Health care professionals – report cases of gonorrhea to the PHSKC Sexually Transmitted Disease Program within 3 business days.
- Laboratory reporting - report positive results to the PHSKC Sexually Transmitted Disease Program within 2 business days.

Purpose of Surveillance:

- To identify and screen contacts to gonorrhea to reduce further spread.
- To identify infected pregnant women and provide treatment in order to reduce the risk of infection in the newborn.
- To identify high risk populations for prevention activities.
- To monitor changes in gonorrhea trends over time and across subpopulations

Gonorrhea is transmitted through unprotected sex (oral, anal, and vaginal). Gonorrhea can also be transmitted from mother to baby during vaginal delivery.

Gonococcal infection is often experienced without symptoms, particularly among women. About 10% of men and 50% of women are asymptomatic. Symptoms of urethral infection among men usually occur from 2 to 30 days after exposure and may include discharge from the penis or burning during urination. In women, symptoms may include pain or vaginal discharge, burning during urination, irregular bleeding between menstrual periods, lower abdominal pain, or pain with intercourse. Symptoms of rectal infection in both women and men may include discharge, anal itching, painful bowel movements, or bleeding. Gonococcal infection in the throat may cause a sore throat, but more often results in no symptoms. Because gonorrhea is often asymptomatic, many cases go unreported and rates based on case reports are an underestimate of the true burden of disease.

If left untreated, gonorrhea may result in serious long term sequelae, especially in women. Untreated gonorrhea may lead to pelvic inflammatory disease (PID), which in turn may cause infertility, ectopic pregnancy, and/or chronic pelvic pain. Untreated gonorrhea in men can lead to epididymitis, painful inflammation of part of the testicles, which can also lead to infertility. Individuals with gonorrhea are also at higher risk for acquisition of HIV.

An infant who contracts gonorrhea from her mother during delivery may develop gonococcal conjunctivitis, which may lead to blindness if untreated.

In 2003, 1349 cases of gonorrhea were diagnosed among King County residents, for an incidence of 75.8 per 100,000 persons. In 2004, 1286 cases were reported, for an incidence of 72.3 per 100,000 persons. There were 414 cases reported among women in 2004, for a rate of 46.3 per 100,000 persons, and 872 cases reported among men, for an incidence of 97.2 per 100,000 persons. The number of cases and incidence among men and women were similar in 2003. This gender differential probably reflects a higher incidence rate of gonorrhea among men who have sex with men (MSM).

Syphilis

Disease Reporting Requirements

- Health care professionals – report cases of syphilis to the PHSKC Sexually Transmitted Disease Program within 3 business days.
- Laboratory reporting - report positive results to the PHSKC Sexually Transmitted Disease Program within 2 working days.

Purpose of Surveillance:

- To identify and screen contacts to syphilis to reduce further spread
- To identify infected pregnant women and provide treatment in order to reduce the risk of infection in the newborn.
- To identify high risk populations for prevention activities
- To monitor changes in syphilis trends over time and across subpopulations

Syphilis is transmitted most often through unprotected sex (oral, anal, and vaginal). *Treponema pallidum* can also be transmitted from mother to baby during pregnancy, at any time during pregnancy, and result in neonatal death or congenital syphilis.

If untreated, persons with syphilis typically experience four clinical stages of infection. Primary infection is characterized by a painless chancre at the site of infection an average of three weeks from the time of exposure. Symptoms of secondary syphilis usually occur 3-6 weeks later and include a rash which characteristically includes the palms and soles, lymphadenopathy and malaise. Mucosal lesions of the oropharynx

and genitals may also occur. By definition, latent syphilis is characterized by positive serologic test with a lack of clinical symptoms, although patients may have spontaneous infectious relapses during this stage, usually in the first year following infection. Early latent syphilis is defined as infection less than one year and late latent syphilis is infection of one year or greater in duration. Neurosyphilis, the symptomatic manifestation of *T. pallidum*'s invasion of the central nervous system, can occur at any stage of syphilis infection.

A pregnant woman who transmits syphilis to her fetus risks premature delivery and neonatal death. If untreated, an infected infant may develop late lesions resulting in blindness, deafness, mental retardation, bone deformities and death.

In 2003, 84 cases of early syphilis were reported in King County. These included 17 cases of early syphilis, 40 cases of secondary syphilis, and 27 cases of early latent syphilis. The overall incidence of early syphilis in King County was 4.7 per 100,000 persons.

King County experienced a sharp increase in early syphilis cases in 2004, with 166 reported cases. Of these cases, 41 were diagnosed with primary syphilis, 81 with secondary syphilis, and 44 with early latent syphilis. The overall incidence of early syphilis in King County increased to 9.3 per 100,000. There were no cases of congenital syphilis in 2003 or 2004.

Since 1997, King County has experienced an epidemic of syphilis among MSM. Of the 166 total cases of early syphilis in King County in 2004, 140 were among MSM, for an incidence of 324.5 in MSM (based on a population estimate of 43,150 MSM in King County). In comparison, the estimated 2004 incidence among heterosexuals was 1.5 per 100,000. HIV positive MSM have been particularly affected by the epidemic. In 2003, 79 of the 140 early syphilis cases in MSM occurred in HIV positive MSM, resulting in an incidence of 1787.7 cases per 100,000 HIV positive MSM, compared to an incidence of 152.3 cases per HIV negative MSM (based on an estimated population of HIV positive MSM of 4304 for 2003).

King County also experienced an outbreak of syphilis among heterosexuals in 2004. There were 26 cases of early syphilis among heterosexuals in 2004, vs. 5 in 2003. Early syphilis incidence among heterosexuals correspondingly rose from 0.4 per 100,000 in 2003 to 1.5 per 100,000, as noted above. The 26 heterosexual cases in 2004 included 19 heterosexual men and 7 women. Most of these cases reported engaging in commercial sex work, sex with commercial sex workers, and/or drug use.

SHIGELLOSIS

Disease Reporting Requirements:

Health care professionals - report immediately.

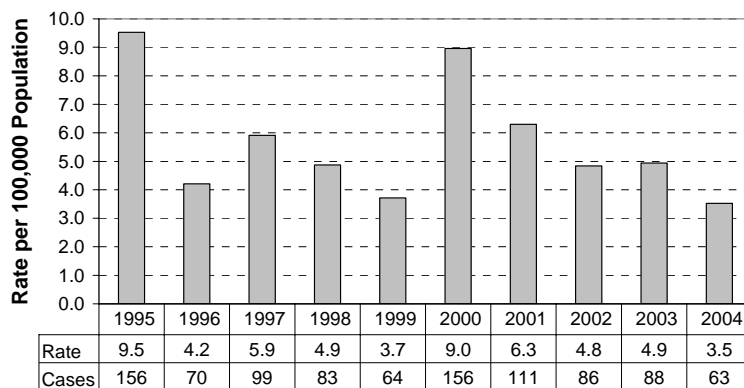
Laboratories - report within two working days and submit the isolate to the Public Health Laboratory.

Purpose of Surveillance:

- To identify common source outbreaks for investigation.
- To identify and eliminate sources of transmission including contaminated food and water.
- To identify and eliminate person-to-person spread of infection.

Shigellosis is an invasive bacterial disease spread through the fecal-oral route affecting only humans. Shigellosis is characterized by diarrhea often accompanied by fever, nausea, vomiting, and cramps, typically lasting four to seven days. The incubation period is typically one to three days (range 12 to 96 hours, and up to one week for *S. dysenteriae*).

**Shigellosis Rates by Year
1994 - 2003**



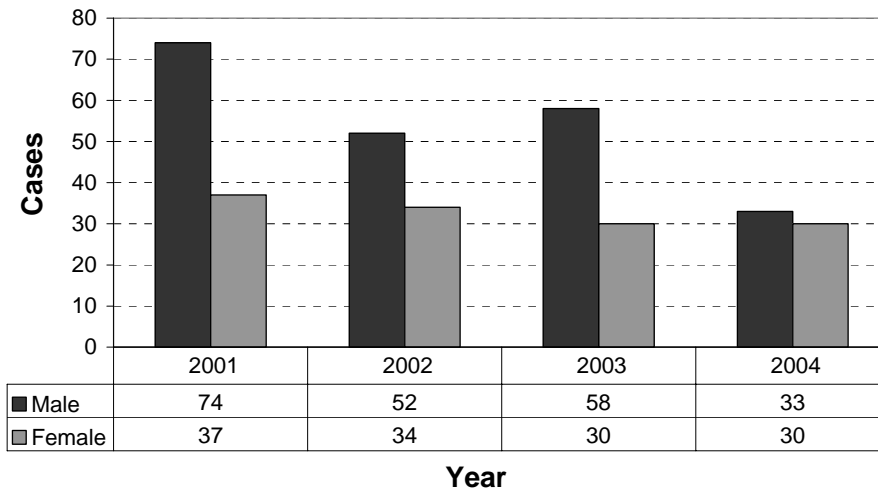
The genus *Shigella* is comprised of four species or serogroups: Group A (*S. dysenteriae*), Group B (*S. flexneri*), Group C (*S. boydii*), and Group D (*S. sonnei*). In the U.S., *S. sonnei* and *S. flexneri* are reported most frequently. Only one to two cases of *S. dysenteriae* and *S. boydii* are reported in King County each year, typically in persons with a history of international travel.

Food and water contaminated with fecal matter are common vehicles of transmission. Because the infective dose of *Shigella* bacteria is very low, this infection is commonly transmitted person to person through household or sexual contact with an infected person. In recent years, Seattle and other cities in the U.S. and overseas have had outbreaks of shigellosis among men who have sex with men (MSM) who may be at risk for infection from oral-anal contact (direct or indirect). International travel is the most common risk factor reported by shigellosis cases in King County.

In 2003, 88 cases of shigellosis were reported in King County, and in 2004, 63 cases were reported. No shigellosis outbreaks were detected in King County during 2003 or 2004.

Since 2001, the incidence of shigellosis among males has been consistently higher than the incidence among females. This may be related to a higher incidence of infection in MSM.

Shigellosis Cases by Sex,
2001 to 2004



Antibiotic resistance to a number of antibiotics, including ampicillin and trimethoprim-sulfamethoxazole (TMP-SMX) is common among *Shigella* strains reported in King County. Based on local antimicrobial drug sensitivity data, clinicians should consider routinely requesting antibiotic sensitivity testing of *Shigella* isolates. Public Health recommends antibiotic treatment of shigellosis infections if the patient is a foodhandler, in a childcare setting, or likely acquired the infection sexually. Persons who fall into these categories are at high risk of spreading their infection to others. Appropriate antibiotic treatment will shorten the duration of shedding of the organism, and decrease the incidence of secondary cases among contacts.

STREPTOCOCCAL GROUP A INVASIVE DISEASE

Disease Reporting requirements:

Physicians: Reportable between December 2000 and February 14, 2005

Laboratories: no requirement.

Invasive group A streptococcal (GAS) infection was made a notifiable condition in December 2000. There are several syndromes caused by invasive GAS infection: bacteremia, necrotizing fasciitis, toxic shock syndrome, meningitis, peritonitis, arthritis, osteomyelitis, pneumonia, and postpartum infection.

Potential risk factors for invasive GAS infection can include surgery, blunt trauma, diabetes, chicken pox, chemotherapy, hospitalization, residence in a nursing home, chronic wounds associated with diabetes, and injection drug use. The portal of entry is unknown for approximately 50% of invasive GAS cases.

There were 35 reported cases of invasive GAS infection in King County during 2003, and 26 cases reported in 2004.

TETANUS

Disease Reporting Requirements:

Health care professionals - report cases within three working days.

Laboratories - no requirement.

Purpose of Surveillance:

- To facilitate prompt appropriate diagnostic testing and management of cases.

Tetanus results from the action of a neurotoxin produced in infected tissues by *Clostridium tetani*, resulting in severe, potentially life-threatening muscle spasms. In the U.S., tetanus is predominately due to infection complicating injuries, including acute wounds contaminated with dirt, saliva, or feces, puncture wounds, crush injuries, and unsterile injections.

Mortality from tetanus can be high even with appropriate treatment. Tetanus is preventable with immunization. After an initial tetanus vaccination series, tetanus boosters should be administered every ten years throughout life. An additional dose may be needed for tetanus-prone injuries if the time interval since the most recent tetanus immunization has been more than five years.

In the US, tetanus typically occurs in adults over 60 years of age, reflecting a lack of immunity in this population. Tetanus was last reported in King County in 1996, when two cases were reported.

TRICHINOSIS

Disease Reporting Requirements:

Health care professionals - report within three working days.

Laboratories - no requirement.

Purpose of Surveillance:

- To identify common source exposures.
- To identify and eliminate infected food products to prevent further consumption.

Trichinosis is a disease caused by an intestinal roundworm, *Trichinella spiralis*, which infects many wild mammals. Human infection results from eating undercooked pork or wild game harboring the encapsulated cysts of *T. spiralis*. Encysted larvae survive some preparation methods for wild meat jerkies, and some strains resist freezing. The larvae may infect persons if the meat is consumed without further cooking.

The last human reported case in King County occurred in 2000, and was due to consumption of homemade cougar jerky.

TUBERCULOSIS

Disease Reporting Requirements:

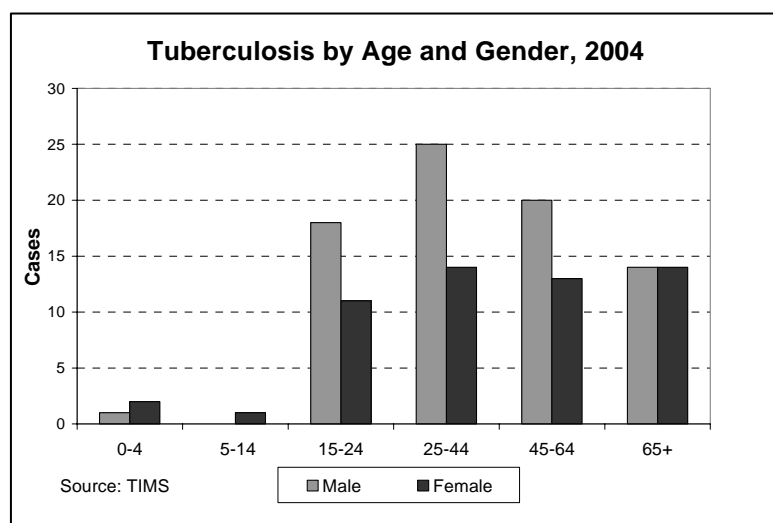
Health care providers – report suspected cases of tuberculosis to Public Health within one day (do not wait for laboratory results in order to report a suspected case). For hospitalized patients, obtain TB Control Program approval of outpatient management plans prior to discharge, including discussion of directly observed therapy and public health nurse case management.

Laboratories – report isolation of *Mycobacteria tuberculosis* within 2 working days to the Department of Health, and submit the isolate to the Public Health Laboratory.

Objectives of TB Control through Surveillance:

- Ensure that persons with active TB are found and fully treated.
- Ensure that contacts of persons with infectious TB are screened and offered appropriate preventive therapy.
- Ensure that persons at high risk for TB infection and reactivation receive appropriate screening and preventive therapy.
- Monitor the trend of TB in Seattle and King County.

Tuberculosis (TB) is caused by *Mycobacterium tuberculosis*. TB is spread person to person through airborne exposure. TB usually affects the lungs, but can affect other parts of the body such as the brain, kidneys or spine. TB bacteria are released into the air especially when a person with active TB disease coughs. An individual may be exposed to someone with active TB disease without ever becoming infected. An individual may also become infected with a dormant, latent TB infection by breathing in air that contains TB bacteria. Dormant latent infection is asymptomatic and not contagious. About one-third of the world's population and about 5-10 percent of the US population is infected with latent TB. About 100,000 people are currently living with latent TB infection in King County.



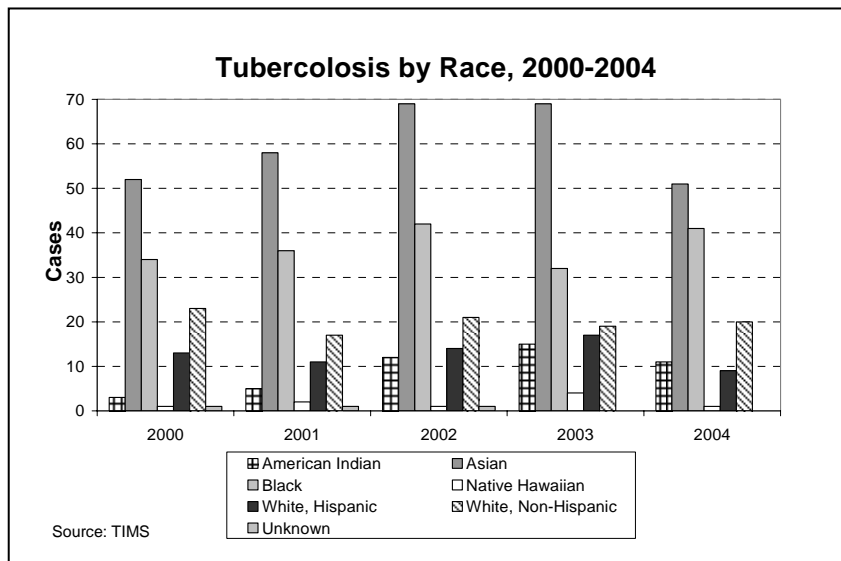
For those infected with latent TB, there is a 10 percent probability of developing active TB disease in their lifetime. If someone's immune system is compromised, there is a higher chance of developing TB (e.g. 8-10 percent per year in an HIV-infected person). The general symptoms of TB disease include feeling sick or weak, weight loss, fever and night sweats. Symptoms of TB of the lungs also include coughing, chest pain, and

hemoptysis. There are prescribed drugs that can be taken both for TB infection and active disease. Among communicable diseases, TB is one of the leading causes of death worldwide along with HIV/AIDS, killing nearly 2 million people each year.

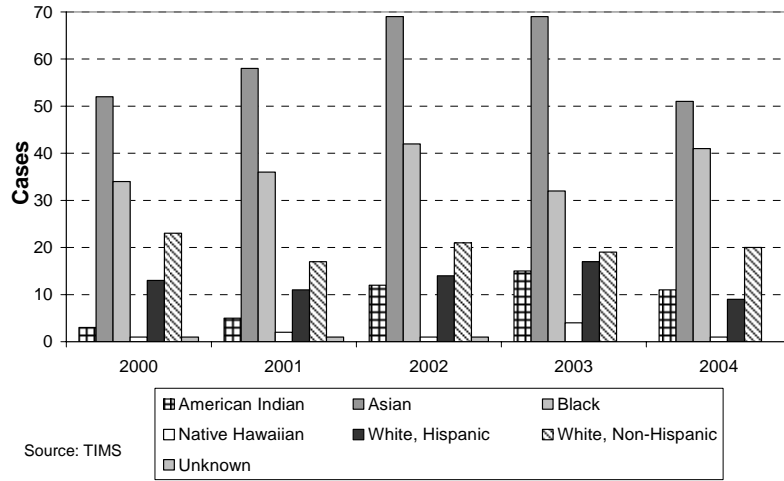
There were 133 new cases of tuberculosis countywide in 2004, down from 155 in 2003, with a rate of 7.4 cases per 100,000 people, a decline from 8.7 the previous year. TB cases in 2004 were largely male (59%), with high rates reported among Asians, Blacks and American Indians. The largest proportion of cases occurred in the 25-44 year age group (29%). The TB case count among children under 5 years continues to be low, comprising 3% of cases in 2004. In the last five years, there have been approximately 100 cases of TB each year among foreign-born residents. The number of TB cases with any drug resistance is 14% in King County. In 2004, Seattle-King County was in the midst of a TB outbreak among the homeless population, and another amongst mostly young males of East African origin.

To read the full 2004 TB report, please visit www.metrokc.gov/health/tb/tbfacts.htm

		2000	2001	2002	2003	2004
Washington State	Count	258	261	252	250	244
	rate/100,000	4.4	4.3	4.1	4.0	3.9
Seattle & King County	Count	127	139	158	155	133
	rate/100,000	7.3	7.9	8.9	8.7	7.4



Tuberculosis by Race, 2000-2004



TULAREMIA

Disease Reporting Requirements:

Health care professionals - report within three working days.

Laboratories – submit appropriate specimens to the Public Health Laboratory. Consult with the Public Health Laboratory before transporting specimens regarding precautions to prevent transmission to laboratory workers.

Purpose of Surveillance:

- To facilitate prompt and appropriate treatment for persons with tularemia.
- To identify and eliminate sources of transmission including contaminated food and water.
- To identify cases caused by potential agents of bioterrorism.

Tularemia is caused by the bacterium, *Francisella tularensis*, which naturally infects animals, especially rodents, rabbits, and hares. People become infected through the bites of arthropods (most commonly, ticks and deerflies) that have fed on an infected animal, by handling infected animal carcasses, by eating or drinking contaminated food or water, or by inhaling infected aerosols in a laboratory setting. Approximately 200 human cases of tularemia are reported annually in the U.S., mostly in persons living in the south-central and western states. If infected via the bite of an arthropod, symptoms include an ulcer at the site of the bite, and swelling of regional lymph nodes. Ingestion of organisms in food or water can cause painful pharyngitis (sore throat), abdominal pain, diarrhea, and vomiting. Inhalation of *F. tularensis* can cause severe respiratory illness, including life threatening pneumonia and systemic infection.

The use of *F. tularensis* as a weapon of bioterrorism is of concern because it is highly infectious, i.e., a small number of bacteria (10-50 organisms) can cause disease.

There was one case of tularemia reported in King County in 2003, acquired from an arthropod bite while visiting the Olympic Peninsula. There were no reported cases in 2004.

TYPHOID FEVER

Disease Reporting Requirements:

Health care professionals – report suspect cases immediately.

Laboratories - report within two working days and submit the isolate to the Public Health Laboratory.

Purpose of Surveillance:

- To identify and track chronic typhoid carriers who can transmit the disease.
- To identify and eliminate sources of transmission, including contaminated food and water.

Typhoid fever is a potential severe systemic infection caused by the bacteria *Salmonella Typhi*, and is characterized by fever, headache, malaise, lymph node inflammation, and rose spots on the trunk; constipation is reported more commonly than diarrhea. Children frequently experience only fever. The incubation period is typically 8 to 14 days (range three days to one month). Typhoid fever is usually acquired by drinking water, or eating food contaminated with *S. Typhi*, often shed by a chronic carrier of the bacteria.

Humans are the only reservoirs of *S. Typhi*. The case-fatality rate is less than 1% with appropriate antibiotic therapy, but even 15 to 20 percent of persons treated with antibiotics may experience relapses.

A small number of infected persons become chronic carriers, and can shed *S. Typhi* intermittently in their feces and urine for prolonged periods. The chronic carrier state is more common among middle-age persons, particularly women, and carriers often have biliary tract or gallbladder disease.

Typhoid fever is not endemic in King County. Two cases of typhoid fever were reported in 2003, and four cases were reported in 2004. All were either infected while traveling or residing in Asia, Africa, or Central America, or were household contacts of such persons.

TYPHUS

Disease Reporting Requirements:

Health care professionals - report immediately.

Laboratories - no requirement.

Purpose of Surveillance:

- To identify the source of transmission.
- To facilitate clean-up of contaminated areas.

Typhus is a rickettsial disease caused by two closely related organisms, *Rickettsia typhi*, transmitted by fleas, and *Rickettsia prowazekki*, transmitted by body lice (not to be confused with head lice). Symptoms typically include fever, chills, headache, myalgias, nausea, vomiting, and possibly, rash. Flea-borne typhus is generally milder than louseborne typhus. The case-fatality rate is less than 1%, but increases with age. Flea-borne typhus is endemic in Washington State.

Rats, mice, and possibly other small mammals are the reservoir for *Rickettsia typhi*. Humans are infected when bitten by an infected rat flea that defecates while sucking blood, contaminating the bite site and other fresh skin wounds. Humans are the only reservoir for *R. prowazekki*, which is spread through bites of the human body louse. Typhus is not directly transmitted person to person.

No cases of typhus were reported in King County in 2003 or 2004. The last reported case in Washington State occurred in 1994.

VIBRIOSIS

Disease Reporting Requirements:

Health care professionals - report within three working days.

Laboratories - no requirement.

Purpose of Surveillance:

- To identify common source outbreaks.
- To identify and eliminate sources of transmission including contaminated food and water.

Vibrio species occur naturally in marine waters, and different species can cause intestinal illness, septicemia, or wound infections. Eating undercooked or raw shellfish, especially when traveling in the developing world, is the main risk for acquiring vibriosis. Failure to keep shellfish cold after harvesting can contribute to bacterial growth. *Vibrio parahaemolyticus* is most commonly seen in warm months when its growth in seawater is amplified, and levels in shellfish increase. Symptoms can include abdominal cramps, severe watery diarrhea, vomiting, headache, and fever. *Vibrio vulnificus*, also associated with consumption of raw shellfish, causes septicemia in persons with immunosuppression, chronic liver disease, chronic alcoholism, or hemochromatosis.

In 2003, 7 cases of vibriosis were reported in King County residents. There was one ear infection caused by *V. alginolyticus*. The remaining six cases were all associated with consumption of shellfish and were caused by *V. parahaemolyticus* (4 cases), *V. fluvialis* (1 case), and non-toxigenic *V. cholera* (1 case).

Eight cases of vibriosis were reported in 2004 in King County. Seven of these cases were caused by *V. parahaemolyticus*, and all were associated with either consumption of raw seafood (six cases), or handling raw seafood (one case). Infection in the remaining case was due to non-toxigenic *V. cholera*, and the only risk factor reported by the case was swimming in the ocean.

VIRAL ENCEPHALITIS

Disease Reporting Requirements:

Health care professionals – as of February 14, 2005, viral encephalitis is not longer reportable. Arboviral disease (including encephalitis) within three working days.

Laboratories - no requirement.

Purpose of Surveillance:

- To identify cases and outbreaks, and monitor the extent of illness due to the agents of viral encephalitis.
- To implement appropriate disease control activities to interrupt transmission of infection.
- To facilitate appropriate diagnostic testing.

Western equine encephalitis (WEE), St. Louis encephalitis (SLE), and West Nile virus (WNV) are viral diseases transmitted from wild birds and small mammals to humans by certain species of mosquitoes. There is no direct person-to-person transmission, however, WNV can be transmitted via blood transfusion, and one case of transmission from mother to child via breast milk has been reported. The majority of persons infected with these viruses are asymptomatic. Mild cases are characterized by low-grade fevers, headache, and body aches. More severe infections are characterized by neurological symptoms.

No cases of WEE have been reported in Washington since 1982. No human cases of SLE have been reported in Washington since 1972. No human cases of locally acquired WNV have ever been reported in Washington State.

YERSINIOSIS

Disease Reporting Requirements:

Health care professionals - report within three working days.

Laboratories - no requirement.

Purpose of Surveillance:

- To identify common source outbreaks.
- To identify and eliminate sources of transmission.

Yersinia enterocolitica and, less commonly, *Y. pseudotuberculosis*, or *Y. kristensii*, causes acute bacterial infections with watery diarrhea, abdominal pain, fever, headache, sore throat, and vomiting. The incubation period is three to seven days. Fecal shedding can persist for months, and person-to-person transmission has been reported. Complications from infection with *Yersinia* include arthritis, skin ulcers, bone infections, liver or spleen abscesses, and sepsis. Because its symptoms strongly mimic those of appendicitis, persons with *Yersinia* infections have undergone appendectomies, or laparoscopic surgery prior to diagnosis with yersiniosis. Rarely, blood products contaminated with *Yersinia* from an infected donor cause transfusion-associated cases.

Wild and domestic animals are reservoirs for *Yersinia*. Raw pork, pork chitterlings, cross-contaminated food, and animal contact are risk factors for infection. Unlike most bacteria, *Yersinia* is resistant to cold, and can multiply in food under refrigeration.

Ten cases of yersiniosis were reported in King County in 2003, and fifteen cases were reported in 2004; a total of 163 cases were reported from 1994 through 2003. About one-third of these cases occurred in children less than five years of age. Yersiniosis is likely underdiagnosed, because it is not included in routine cultures screening for gastrointestinal pathogens.