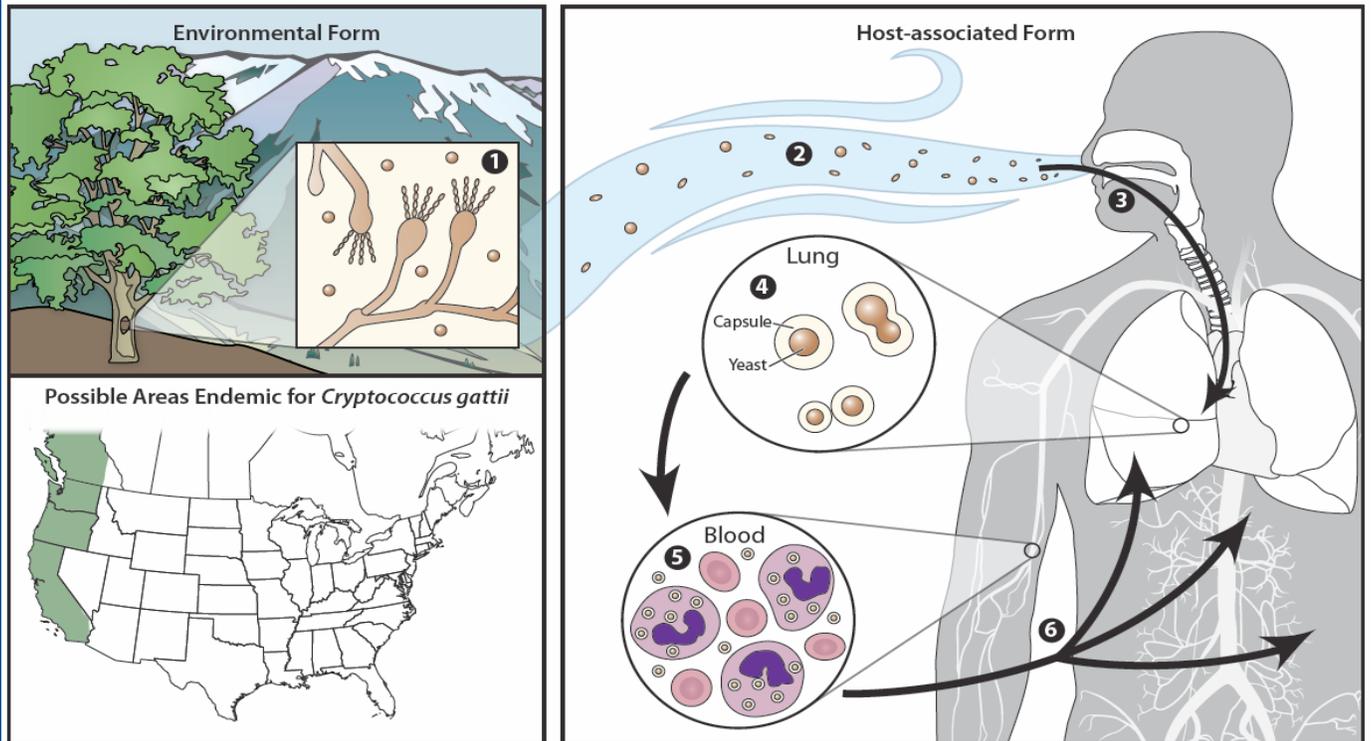


Selected Reportable Communicable Disease Summary

2013 State of Oregon

Biology of *Cryptococcus gattii*



Selected Reportable Communicable Disease Summary

2013 State of Oregon

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Cover image: Biology of *Cryptococcus gattii*; Centers for Disease Control and Prevention.

This document can be provided upon request in alternate formats for individuals with disabilities or in a language other than English for people with limited English skills. To request this publication in another format or language, contact the Acute and Communicable Disease Prevention Section at 971-673-1111.

About surveillance data

Oregon law specifies diseases of public health importance that must be reported to local public health authorities by diagnostic laboratories and health care professionals. This report reflects reporting laws in effect for 2013. In general, local public health officials investigate reports of a communicable disease to characterize the illness and collect demographic information about the case, to identify possible sources of the infection, and to take steps to prevent further transmission. Basic information about each case is forwarded to the Oregon Public Health Division. In some cases (e.g., *Salmonella* infection), laboratories are required to forward bacterial isolates to the Oregon State Public Health Laboratory for subtyping. Together, these epidemiologic and laboratory data constitute our communicable disease surveillance system. Data from 2013 and trends from recent years are summarized in this report.

But caveat lector! Reportable disease data have many limitations.

First, for most diseases, reported cases represent but a fraction of the true number. The most important reason for this is that many patients — especially those with mild disease — do not present themselves for medical care. Even if they do, the health care professional may not order a test to identify the causative microorganism. The reader may be scandalized to learn that not every reportable disease gets reported as the law requires. Cases are “lost” to surveillance along each step of the path from patient to physician to laboratory to public health department. In the case of salmonellosis, for example, reported cases are

estimated to account for approximately 3% of the true number.

Second, cases that do get reported are a skewed sample of the total. More severe illnesses (e.g., meningococcal disease) are more likely to be reported than milder illnesses. Infection with hepatitis A virus is more likely to cause symptoms (and those symptoms are more likely to be severe) in adults than in children. Testing is not random. Clinicians are more likely to test stool from children with bloody diarrhea for *E. coli* O157 than to test stool from adults with bloody diarrhea. Health care professionals may be more inclined to report contagious diseases such as tuberculosis — where the public health importance of doing so is obvious — than to report non-contagious diseases such as Lyme disease. Outbreaks of disease or media coverage about a particular disease can greatly increase testing and reporting rates. Despite their limitations reportable disease data remain valuable in a variety of ways. They help identify demographic groups at higher risk of illness. They allow analysis of disease trends and identify outbreaks of disease.

Cases are assigned to the county of residence at the time of the report — not to the county in which the case received medical care, or the county where the exposure to infection occurred. Incidence is annualized by onset date unless otherwise indicated. Case counts include both confirmed and presumptive cases. For additional information on case definitions, see the Oregon Investigative Guidelines available online.

For all conditions except the sexually transmitted diseases (STDs), population

estimates for rate calculations were obtained from the Population Research Center at Portland State University (www.pdx.edu/prc). Using rates instead of case counts allows for comparisons between populations of different sizes — e.g., U.S. versus Oregon. Rates are usually reported as cases per 100,000 persons per year. However, if the population in which the rate is calculated is very small (e.g., in Oregon “frontier” counties), a case or two might mean the difference between a rate of zero and a very high rate. To compensate for this, some of our maps and rates by age show an average rate over multiple years of data. Even with multi-year aggregation, for some conditions the case counts remain small.

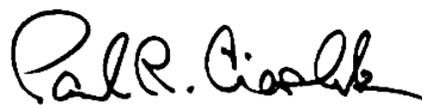
Rates presented may not be adjusted for age when small numbers of cases are found in each age group. Race and ethnicity denominators in the 1990, 2000 and 2010 censuses were not comparable to one another; therefore, National Center for Health Statistics (NCHS) bridged population estimates are used for STD rate calculations by race; these estimates allow for more reliable calculation of rates by race and ethnicity across the turn of the century.

With all this in mind, we present the 2013 Oregon reportable communicable disease summary. We present 26 years of case counts whenever possible. For most diseases, you will find case counts by year for the past 26 years, aggregate case counts by month to demonstrate any seasonal trends, incidence by age and sex, incidence in Oregon compared to national incidence over the past 15 years, and incidence by county. When appropriate, additional data on subtypes or risk factors for infection are included. At the end of this report you is a tally of disease outbreaks

reported during 2013, a summary of enhanced data on gastroenteritis outbreaks, a summary table of statewide case counts over the past 20 years, counts of lower-incidence conditions, and disease totals by county.

We hope that you will find these data useful. If you have additional questions, please call our epidemiology staff at 971-673-1111 or email ohd.acdp@state.or.us.

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Medical Director, Acute and Communicable Disease Prevention

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Campylobacteriosis

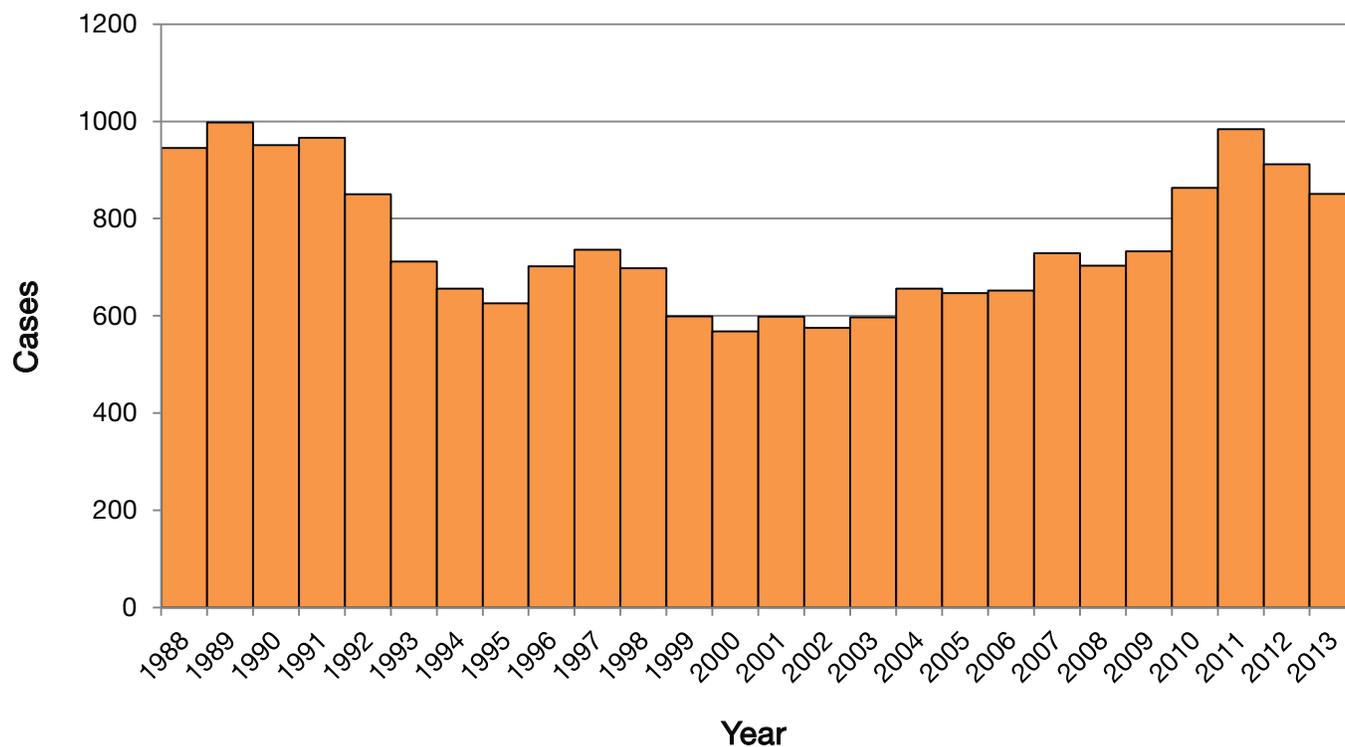
Campylobacteriosis is caused by the gram negative bacterium *Campylobacter*. It is characterized by acute onset of diarrhea, vomiting, abdominal pain, fever and malaise. Symptoms generally occur within 2–5 days of infection. Campylobacteriosis is the most common bacterial enteric infection reported in Oregon. It is of worldwide epidemiologic importance due to the fecal-oral route of infection and the extensive reservoir of the organism in both wild and domestic animals. Many cases are thought to result from eating raw or undercooked meat (in particular, poultry) or through cross-contamination of uncooked or ready-to-eat foods.

In 2013, Oregon's rate of 22.7 cases per 100,000 was 2.7 times the 2020 national health objective of 8.5 per 100,000. The cause of this increased incidence in Oregon is unknown. Children aged 0–4 years have the highest rates of illness. Infections occur year-round in Oregon, with peak incidence in the summer months.

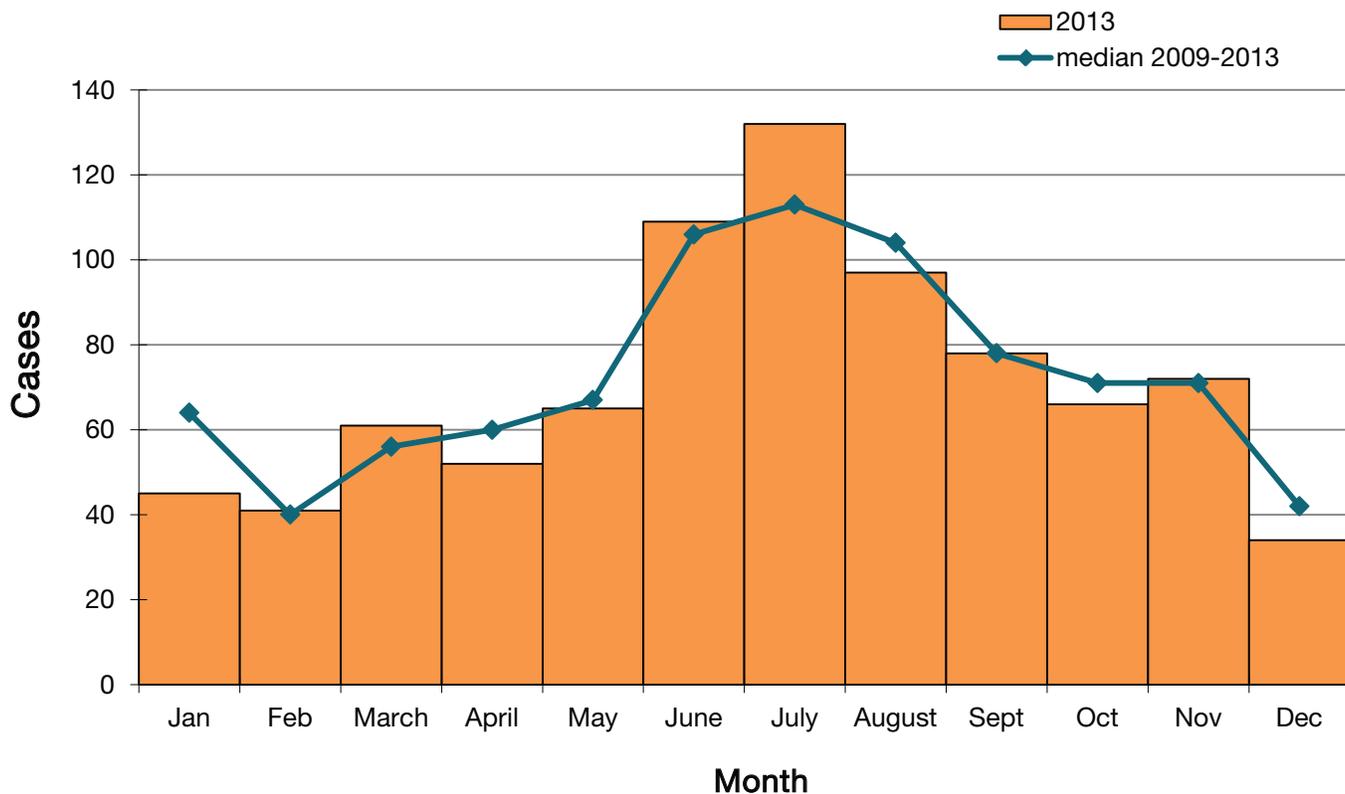
Campylobacteriosis is not a nationally notifiable condition, but U.S. estimates from the FoodNet program (of which Oregon is a member) indicate that in 2013 campylobacteriosis incidence is about 14 cases per 100,000 people, an increase of 13% compared to 2006–2008.

Most illnesses are sporadic, but outbreaks may be associated with undercooked meat (often chicken), unpasteurized milk, direct contact with animals or non-chlorinated water. There were no reported outbreaks in 2013. From 2000–2013, 10 outbreaks of campylobacteriosis have been investigated: four foodborne, two waterborne, three from animal contact and one of unknown etiology. Proper food handling and water treatment, along with good hygienic practices are the keys to prevention.

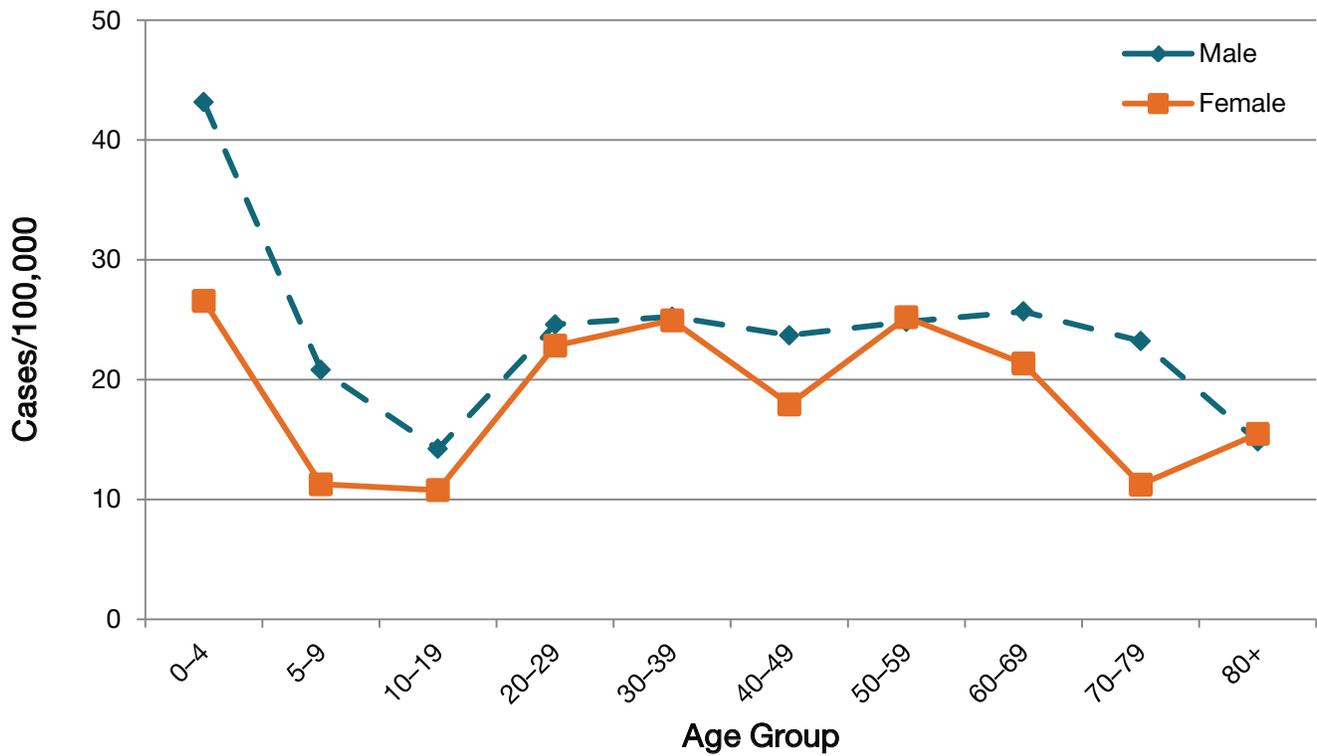
Campylobacteriosis by year: Oregon, 1988–2013



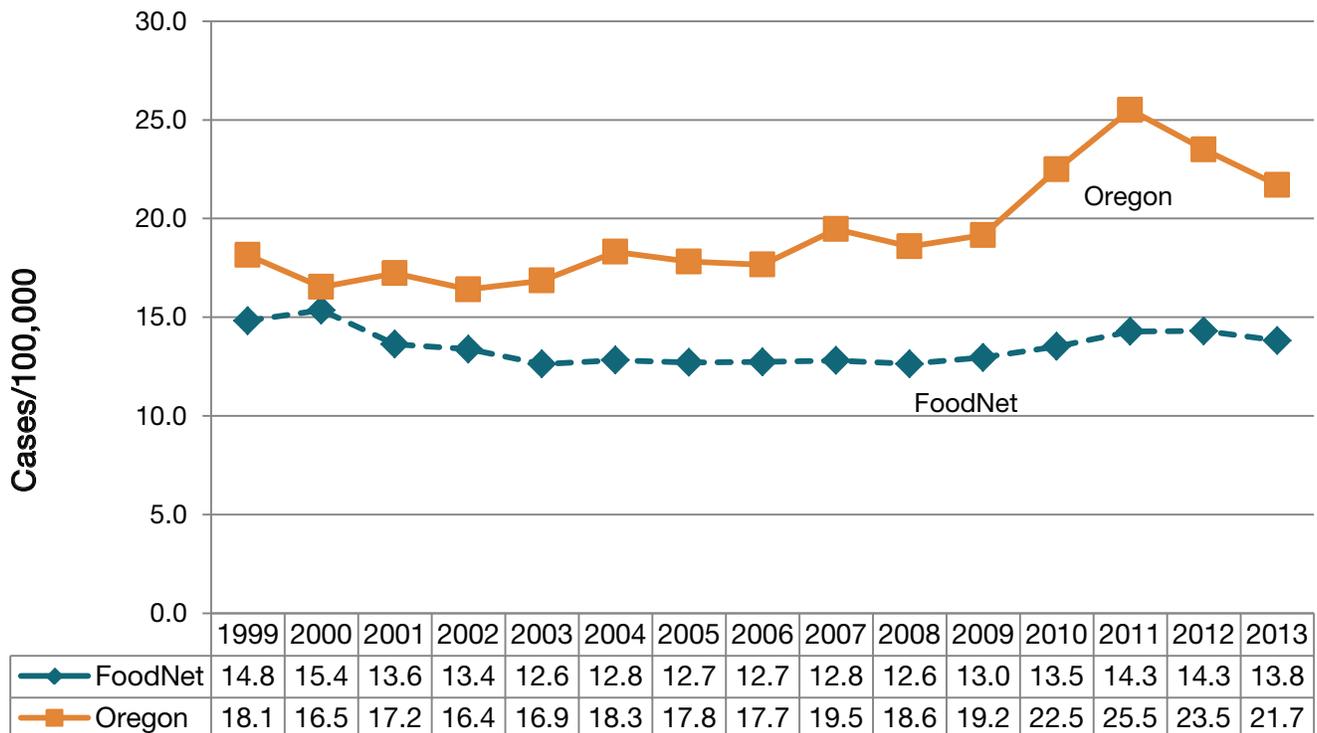
Campylobacteriosis by report month: Oregon, 2013



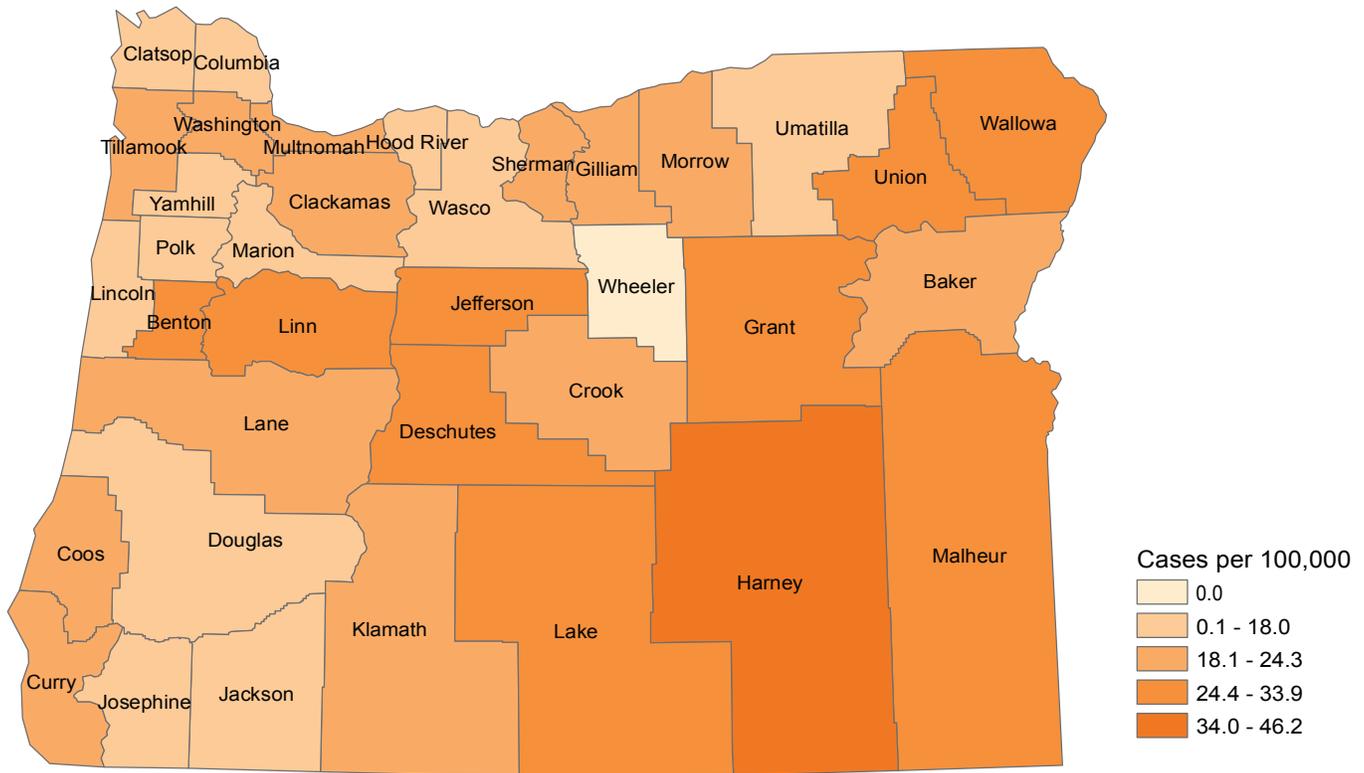
Incidence of campylobacteriosis by age and sex: Oregon, 2013



Incidence of campylobacteriosis: Oregon and U.S. (FoodNet sites), 1999–2013



Incidence of campylobacteriosis by county of residence: Oregon, 2004–2013



Prevention

- Wash hands with soap and hot water before preparing food, after handling foods of animal origin, and after contact with pet feces.
- Thoroughly clean all cutting boards, countertops, and utensils with soap and hot water after preparing foods of animal origin.
- Cook all products of animal origin, especially poultry products, thoroughly.
- Do not drink unpasteurized (raw) milk or untreated surface water.
- Make sure persons with diarrhea wash their hands diligently with soap and warm water after using the bathroom.

Carbapenem-resistant *Enterobacteriaceae* (CRE)

The *Enterobacteriaceae* are a large family of gram negative bacilli found in the human gastrointestinal tract. Commonly encountered species include *Escherichia coli*, *Klebsiella* spp., and *Enterobacter* spp. Carbapenem-resistant *Enterobacteriaceae* (CRE) are *Enterobacteriaceae* that are nonsusceptible to carbapenem antibiotics. They are broadly categorized based on the mechanism of their resistance as carbapenemase producers (CP-CRE) and non-carbapenemase producers.

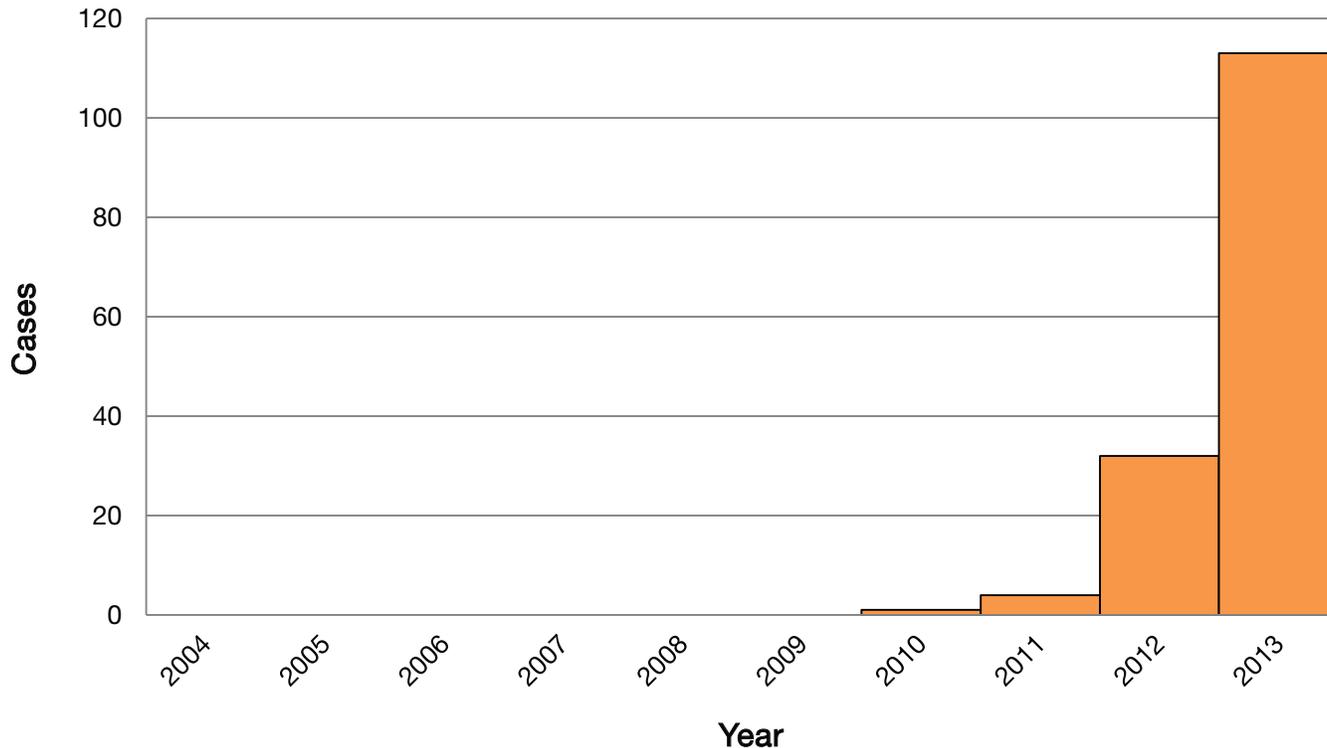
Carbapenems are broad-spectrum antibiotics typically used to treat severe health care-associated infections (HAIs) caused by highly drug-resistant bacteria; currently available carbapenems include imipenem, meropenem, ertapenem, and doripenem. Related to the beta-lactam antibiotics, carbapenems retain antibacterial activity in the presence of most beta-lactamases, including extended-spectrum beta-lactamases (ESBLs), and extended-spectrum cephalosporinases (e.g., AmpC-type beta-lactamases). Loss of susceptibility to carbapenems is a serious problem because few safe treatment alternatives remain against such resistant bacteria.

Infections caused by CRE most commonly occur among people with chronic medical conditions, invasive medical devices such as central venous and urinary catheters, frequent or prolonged stays in health care settings, or extended courses of antibiotics. CP-CRE are most concerning and have spread rapidly across the nation and around the globe, perhaps because carbapenemases can be encoded on plasmids that are easily transferred within and among bacterial species.

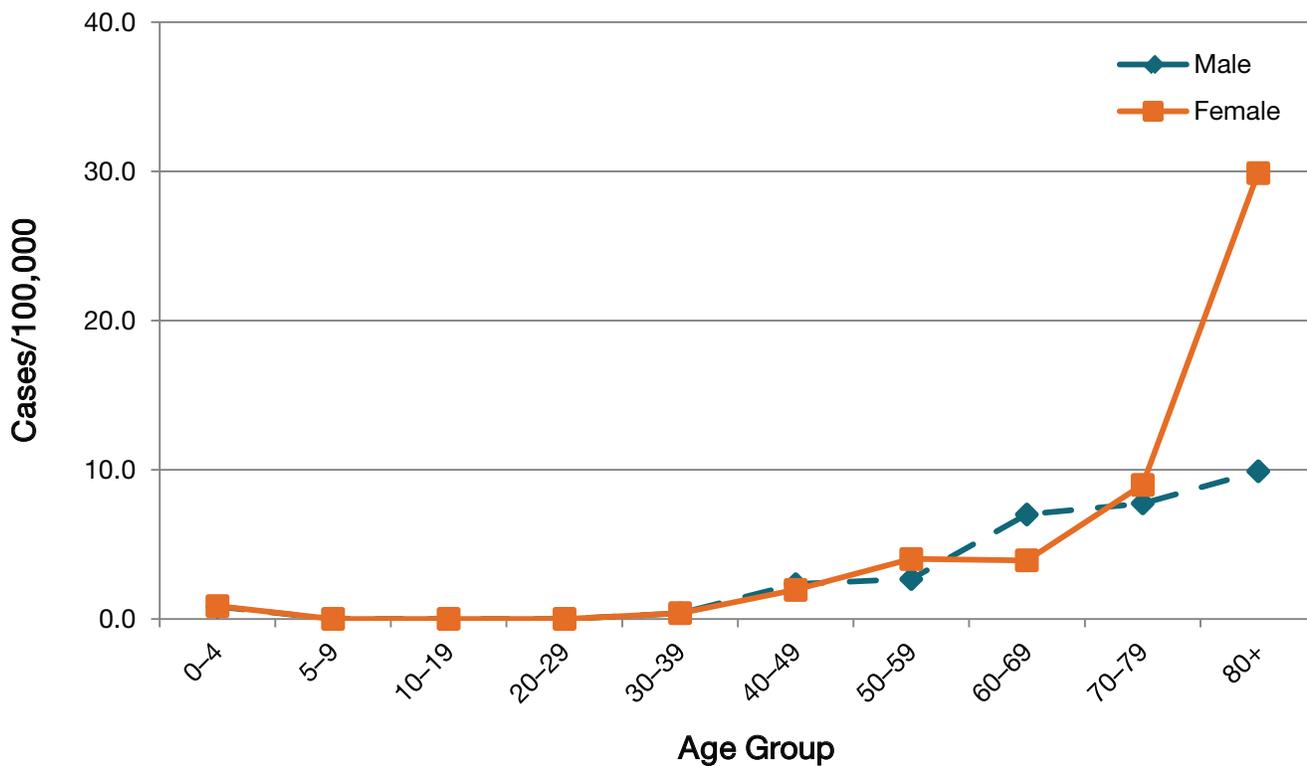
In December 2011, CRE bacterial isolates became reportable statewide. The Oregon State Public Health Laboratory offers specialized testing to determine whether reported CRE are carbapenemase producers and the Oregon Public Health Division's HAI program performs detailed investigation of any reported cases. In 2013, 113 cases of CRE infection or colonization occurred among Oregon residents; the median case age was 69 (range 0–92) years; 68 (60%) were female; 65 (58%) were hospitalized at the time of specimen collection. Urine was the most common source (62%) and *Enterobacter* spp. accounted for 64% of all isolates. In terms of case risk factors for CRE, 52% had surgery and 71% were hospitalized in the previous year. Forty-seven percent had medical devices in place within two days of culture collection and 81% had received antibiotics within 30 days before. Only one case of CP-CRE was identified in 2013, which was an *E. coli* New Delhi Metallo-beta-lactamase (NDM), the first seen in Oregon.

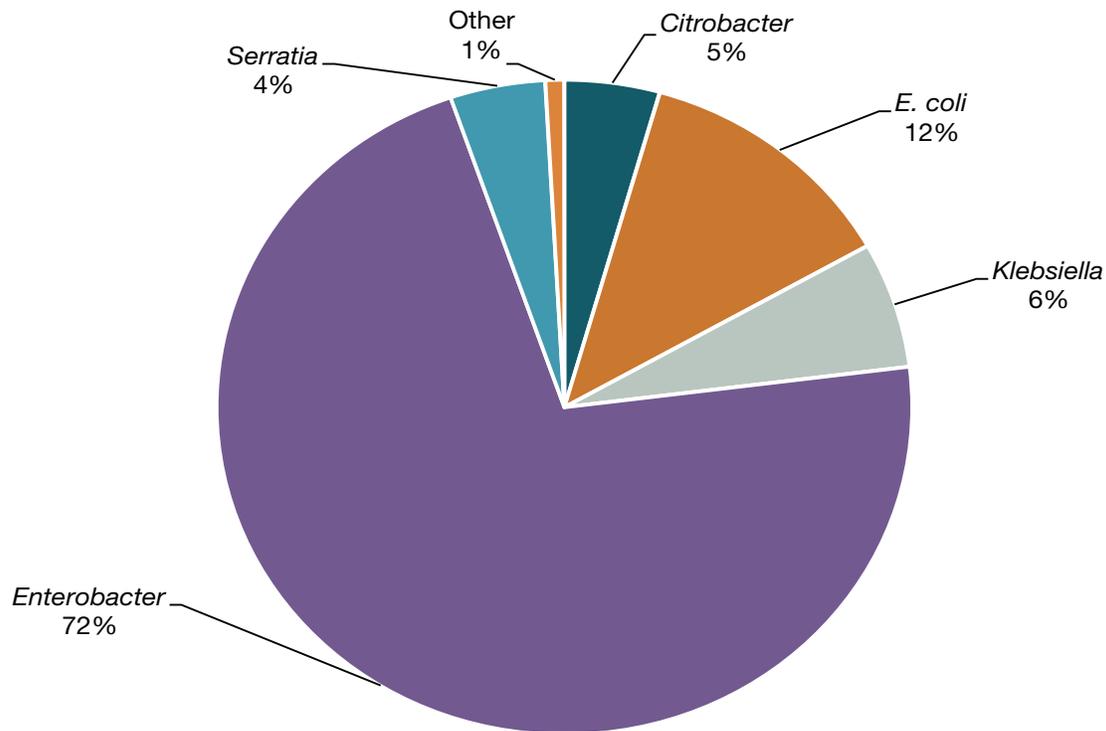
Unlike much of the rest of the county, we have no indication that CP-CRE are spreading in Oregon. We have instituted enhanced surveillance and prevention efforts and established the Drug-Resistant Organism Prevention Coordinated Regional Epidemiology Network (DROPCRE), a statewide network to rapidly detect, respond to and prevent CRE. At the end of 2013, the surveillance definition for CRE in Oregon was changed. Next year's definition will be more specific for detection of CP-CRE.

Carbapenem-resistant *Enterobacteriaceae* by year: Oregon, 2004–2013



Incidence of Carbapenem-resistant *Enterobacteriaceae* by age and sex: Oregon, 2013



Carbapenen-resistant *Enterobacteriaceae* by species: Oregon, 2013

Prevention

Think “NICE” if you encounter CRE:

- **Notify** the county health department, pertinent clinical groups, and your antibiotic stewardship program that CRE has been spotted.
- **Intervene** in all cases with core infection control activities: hand hygiene, contact precautions, private rooms, and optimized environmental cleaning. Reduce unnecessary antibiotics and use of invasive devices. Additionally, for CP-CRE, screen patient contacts, and cohort staff and patients.
- **Communicate** CRE infection or colonization status to the receiving facility upon patient transfer.
- **Educate** patients, staff, and visitors about CRE.

For more information, including our CRE toolkit, please see <http://public.health.oregon.gov/DiseasesConditions/DiseasesAZ/Pages/disease.aspx?did=108>.

Chlamydia

Chlamydia is primarily a sexually-transmitted infection caused by *Chlamydia trachomatis*. Most infections don't cause any symptoms and can persist unrecognized for months. When symptoms do occur, they commonly include painful urination, vaginal discharge, and pelvic pain, among others. Untreated chlamydial infection in women can cause pelvic inflammatory disease (PID) and infertility or tubal pregnancy. If detected, chlamydia can be treated successfully with antibiotics, preventing transmission to partners and preventing PID and other long-term health consequences. Unlike the case with gonorrhea, resistance to antibiotics has not been a problem with chlamydial infections.

Oregon law requires health care providers and laboratories to report chlamydia infections to the local health department. The reporting occurs primarily through automatic electronic reporting by laboratories. Due to lack of resources, with some local exceptions, public health investigation of reported chlamydial infections, and efforts to provide assistance with partner notification and treatment have become rare.

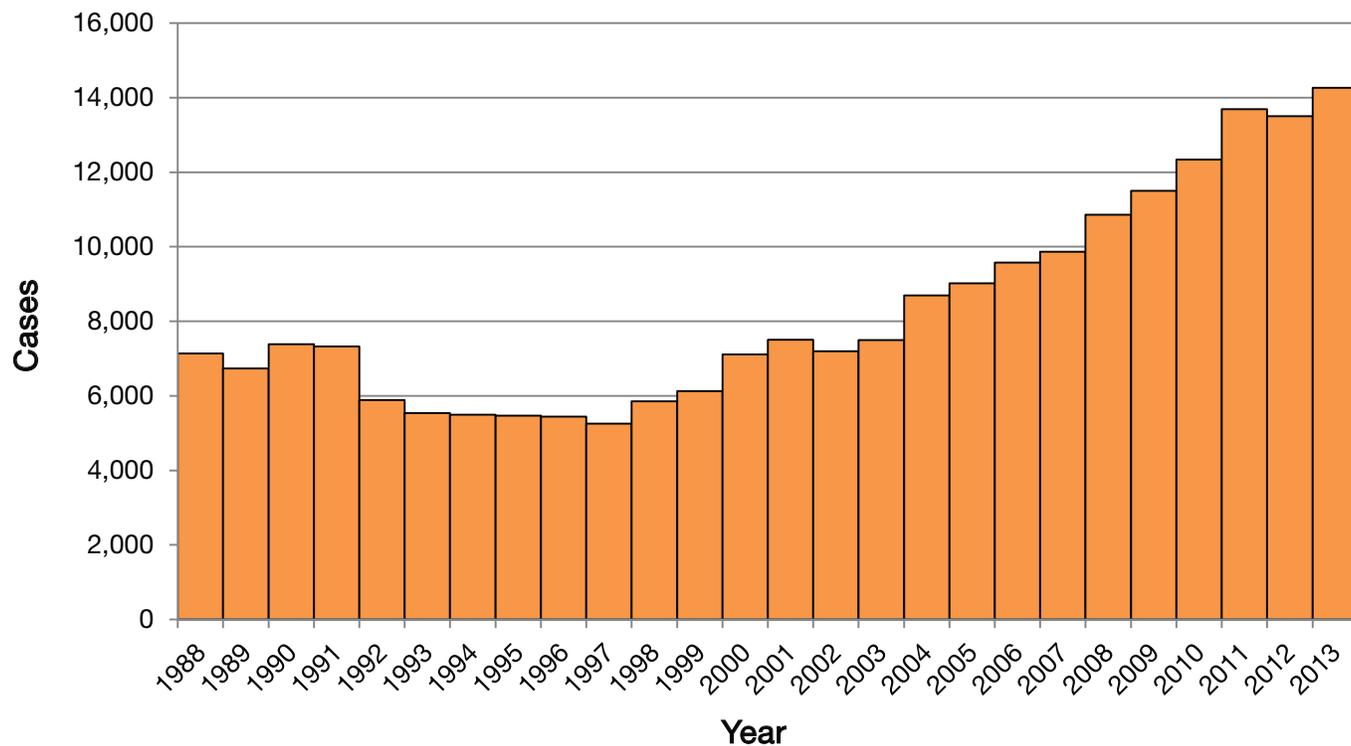
The Infertility Prevention Program (IPP), sponsored by the federal Centers for Disease Control and Prevention (CDC) through grants to the Oregon Health Authority (OHA), supports screening and treatment of chlamydial infections for more than

50,000 young women and men in more than 100 clinics around Oregon each year. Approximately 5,000 reported chlamydia cases are identified and treated in IPP clinics in Oregon annually. The OHA and local public health authorities use IPP data to help direct chlamydia control efforts to locations and activities that are most likely to be effective. In recent years, testing of urine with nucleic acid amplification tests has made screening for chlamydial infection better and more convenient.

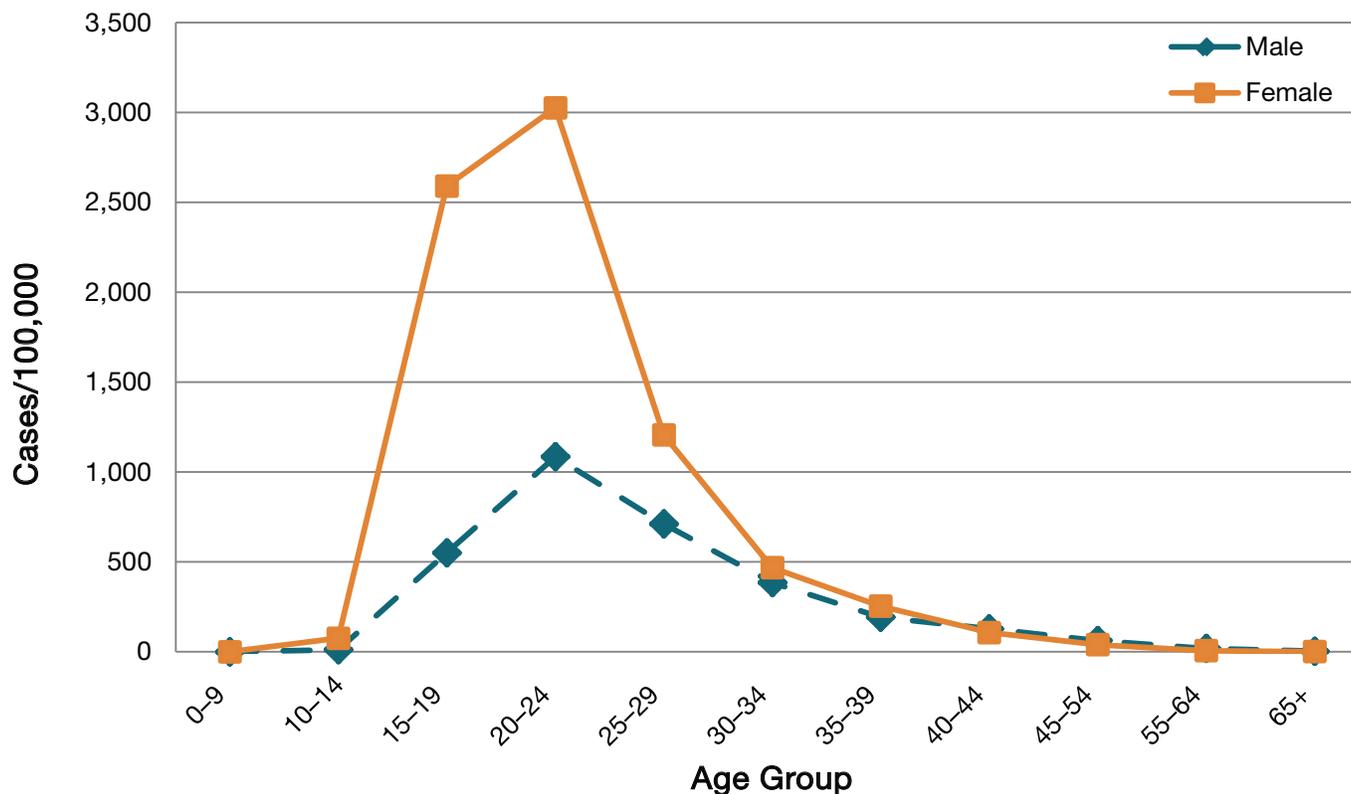
During 2013, 14,263 cases of chlamydia were reported in Oregon residents (364/100,000). Chlamydial infections occurred in residents of every Oregon county in 2013 with the highest rates found in Multnomah (520/100,000), Marion (421/100,000), and Klamath (406/100,000) counties. While the number of Oregon cases has increased steadily during the past 10 years, Oregon's rate remains below that of the United States.

Reported rates of chlamydia are twice as high in women compared to men, probably a result of guidelines that recommend screening of asymptomatic women, but not of asymptomatic men. By age, the highest rates among women are among 15–24 year-olds and among men is 20–29 year-olds. Chlamydial infection rates are higher in blacks and African Americans (720/100,000) and Hispanics (397/100,000) than whites (264/100,000).

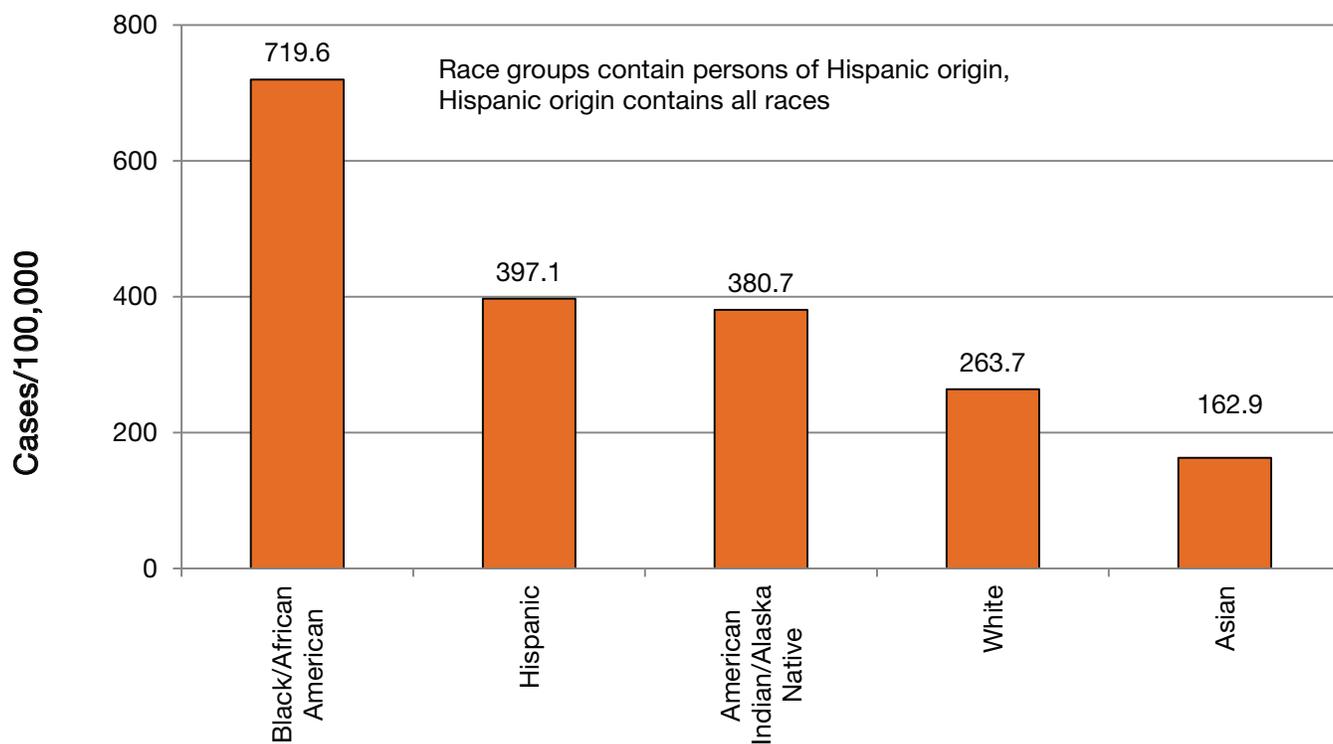
Incidence of reported chlamydial infection by year: Oregon, 1988–2013



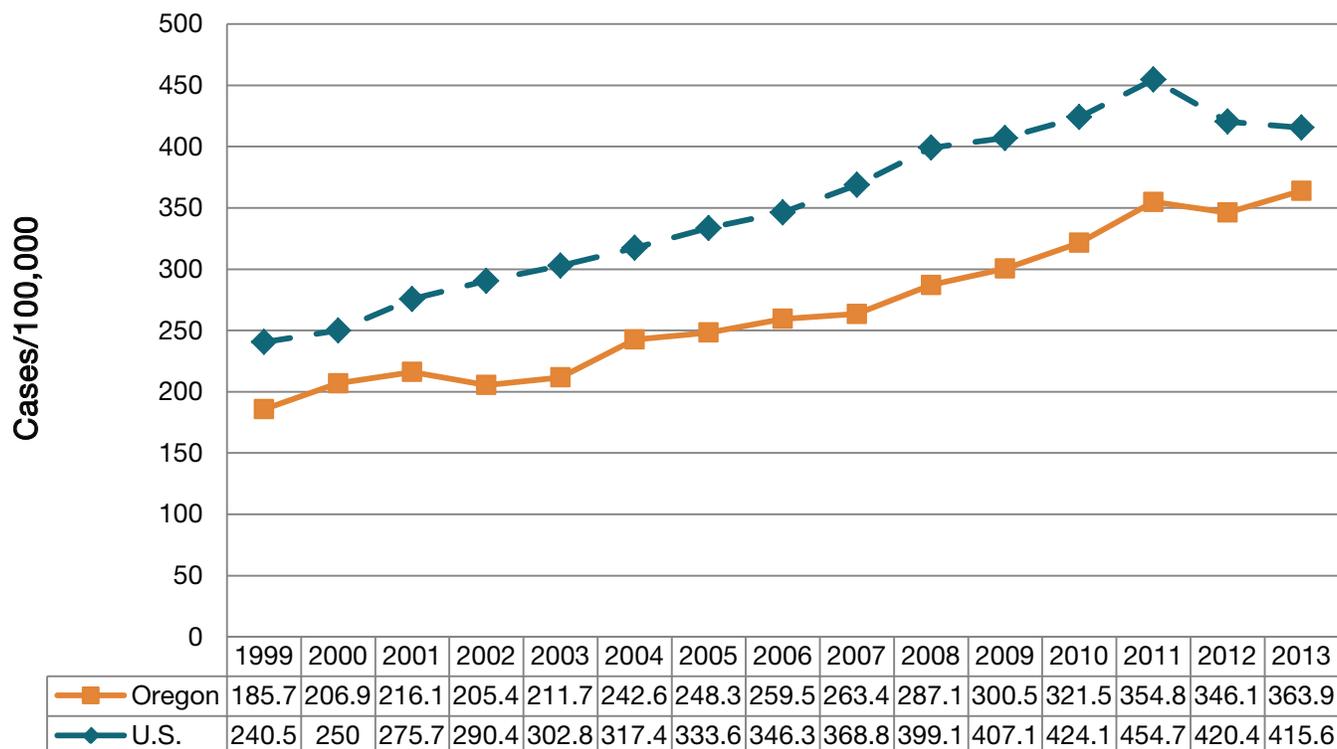
Incidence of reported chlamydial infection by age and sex: Oregon, 2013



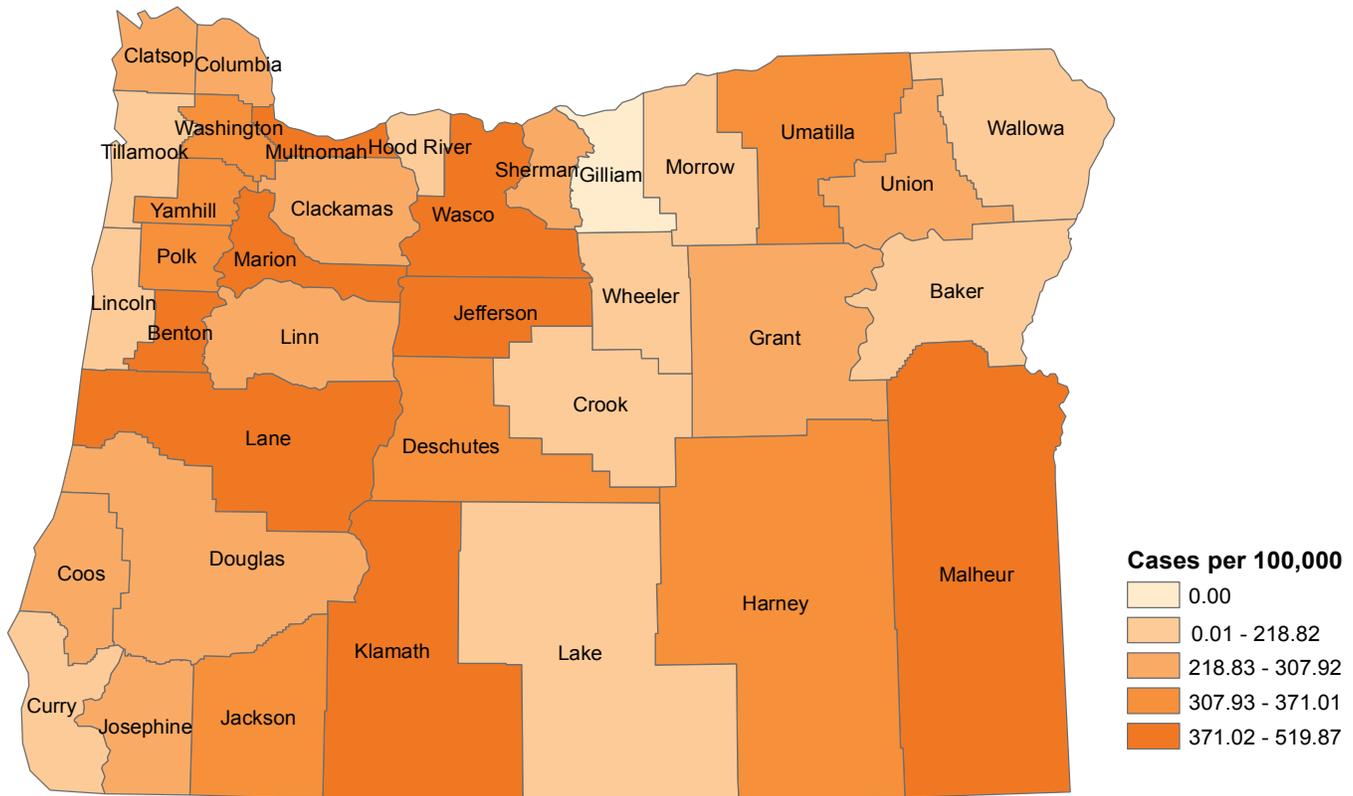
Incidence of reported chlamydial infection by race and ethnicity: Oregon, 2013



Incidence of reported chlamydial infection by year, Oregon vs. nationwide: 1999–2013



Incidence of reported chlamydial infection by county of residence: Oregon, 2004–2013



Prevention

Primary prevention strategies aim to prevent a person from becoming infected in the first place by:

- Delaying age at onset of sexual intercourse;
- Decreasing the number of sex partners;
- Increasing condom use;
- Rapid identification and treatment of new cases can also be considered primary prevention when it results in averting transmission to a sex partner.

Secondary prevention strategies aim to eradicate existing infections by:

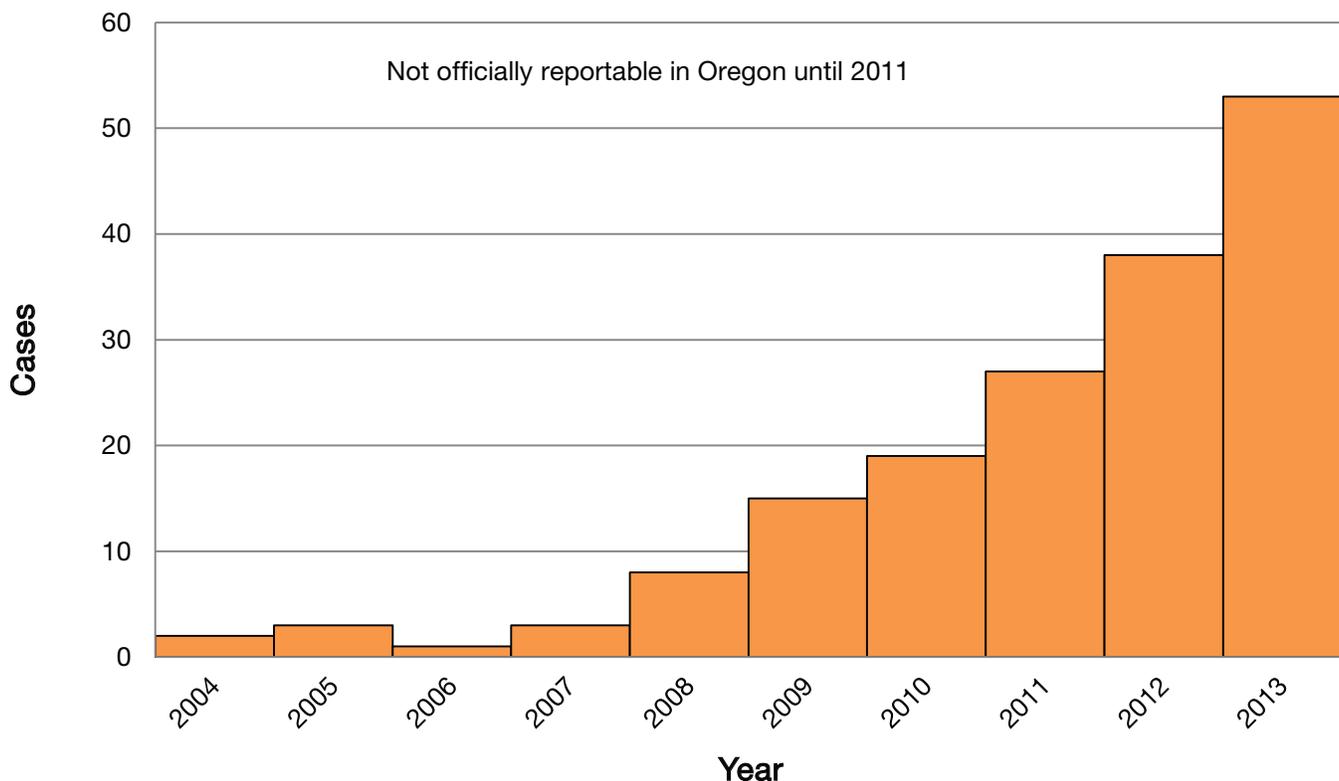
- Treating asymptomatic chlamydial infections;
- Treating sex partners of people who have chlamydia;
- Retesting people with recent chlamydia;
- Annual screening of all sexually active women aged ≤ 25 years and older women with additional risk factors for chlamydial infection.

Cryptococcosis

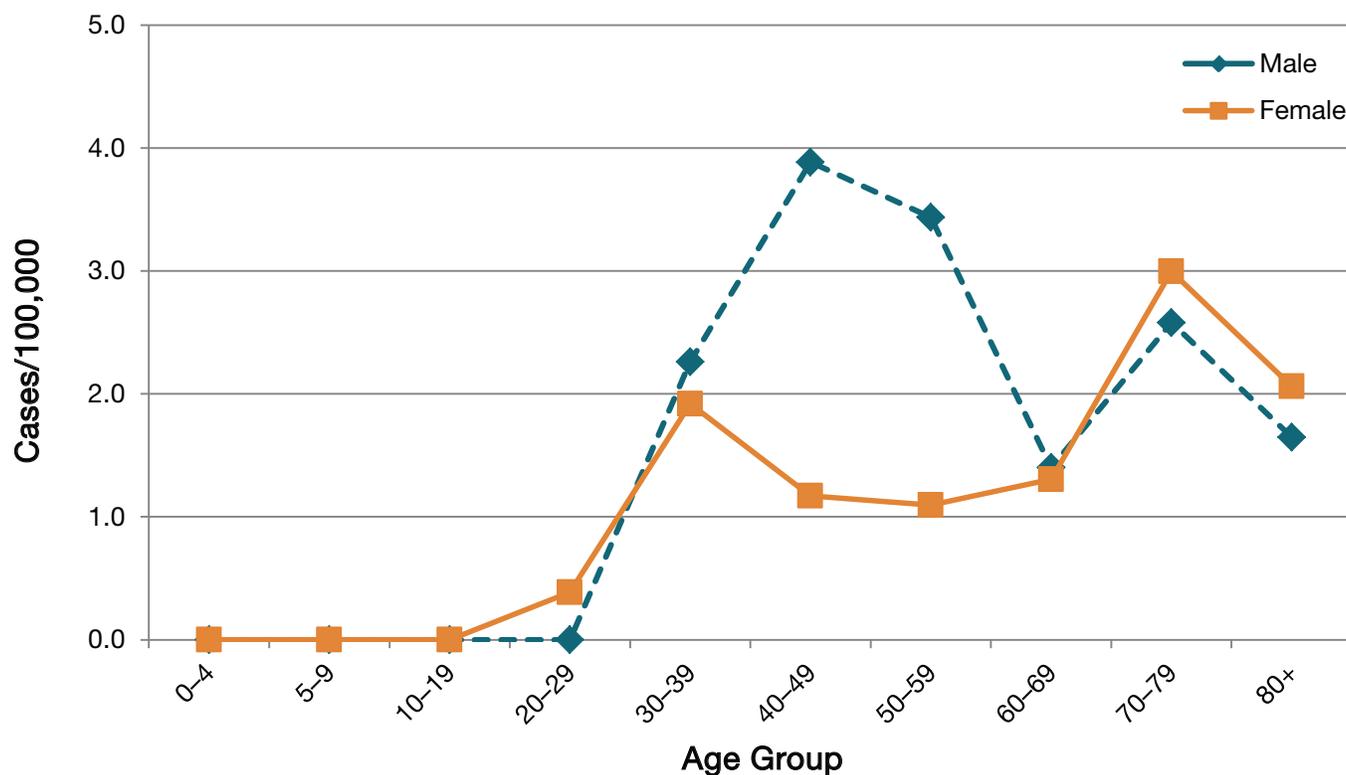
Cryptococcus neoformans has long been identified in humans with immunosuppressive conditions, especially AIDS. Before 1999, *C. gattii* infection seemed to be pretty much limited to the tropics. During 1999, *C. gattii* began appearing in animals and humans on Vancouver Island, British Columbia, Canada. Beginning in 2004, it started appearing among mainland British Columbia residents who had no exposure to Vancouver Island. In December 2004, a case of human *C. gattii* infection was reported in Oregon, associated with an outbreak on Vancouver Island and in mainland British Columbia. From 2006–2010, 46 additional cases were reported. *Cryptococcus* became officially reportable in Oregon on August 19, 2011.

Studies from British Columbia and elsewhere showed a median incubation period of 6–7 months, with a range of 2–13 months. In addition to testing human specimens, we also test animals and environments where animals are infected with *C. gattii* to localize the environmental reservoirs (they travel less than humans). The bottom line is that *Cryptococcus gattii* appears to be established in Oregon. Previously healthy persons appear to be at some risk, but most human cases of infection with either cryptococcal species have been immunocompromised or otherwise suffered from chronic illness. Treatment with extended use of antifungal agents (six months or longer) is recommended. For current treatment information, see guidelines published by the Infectious Disease Society of America: www.idsociety.org/Index.aspx.

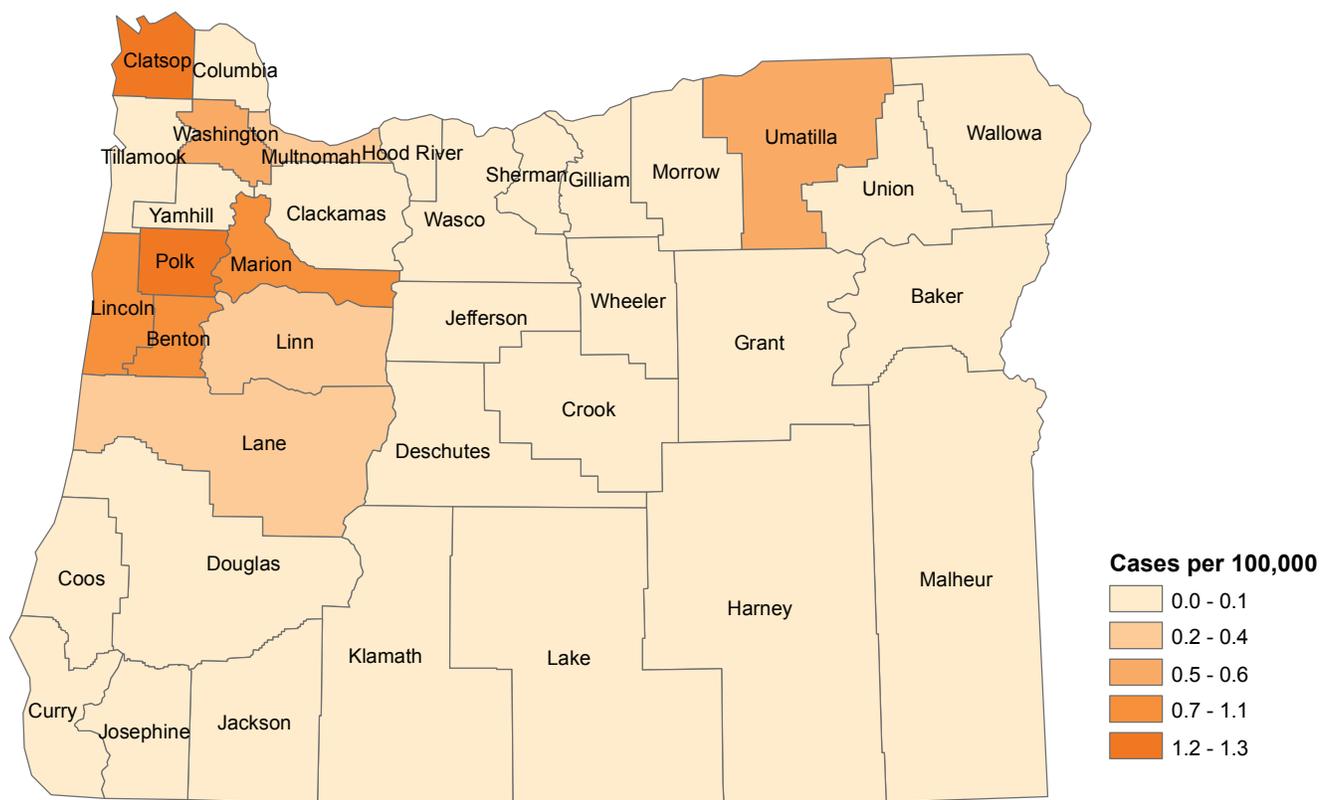
Cryptococcosis by year: Oregon, 2004–2013



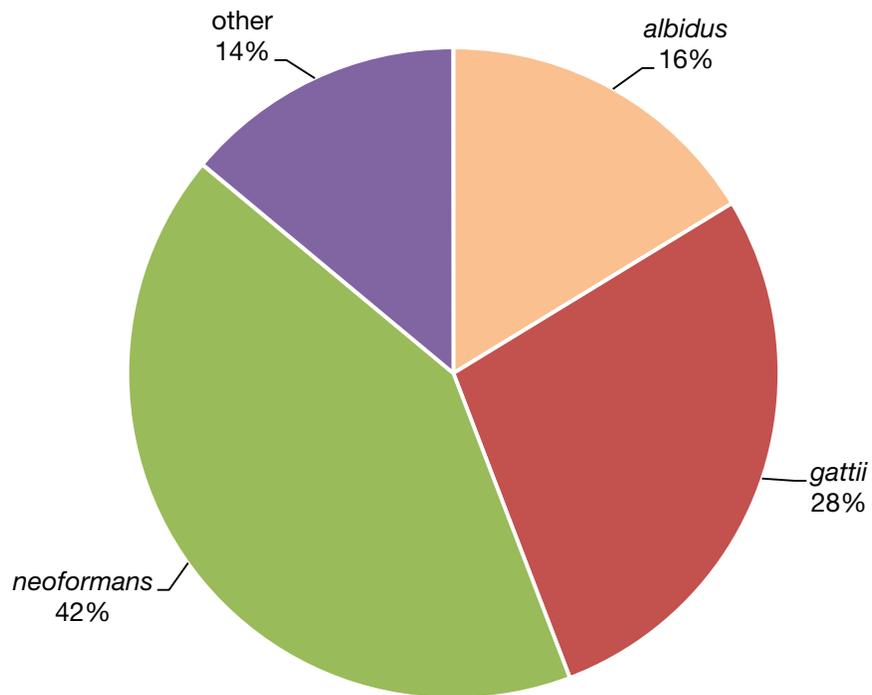
Cryptococcosis by age and sex: Oregon, 2013



Incidence of *Cryptococcus gattii* by county of residence: Oregon, 2011-2013



Cryptococcus by species, Oregon, 2013



Prevention

Regrettably, practical methods for preventing cryptococcosis have not been identified. Patients with cryptococcosis can be helped with early diagnosis and treatment with antifungal drugs.

Cryptosporidiosis

Cryptosporidiosis in humans results from infection with protozoal parasites of the genus *Cryptosporidium* — most commonly *C. hominis* or *C. parvum*. Symptomatic infections are characterized by watery diarrhea and abdominal cramps. Symptoms typically resolve in one to four weeks in immunocompetent persons, but infections in immunocompromised persons can be difficult or impossible to cure. Studies suggest that the prevalence of cryptosporidiosis among young children, particularly those in large child-care facilities, is surprisingly high. Many of these infections are asymptomatic.

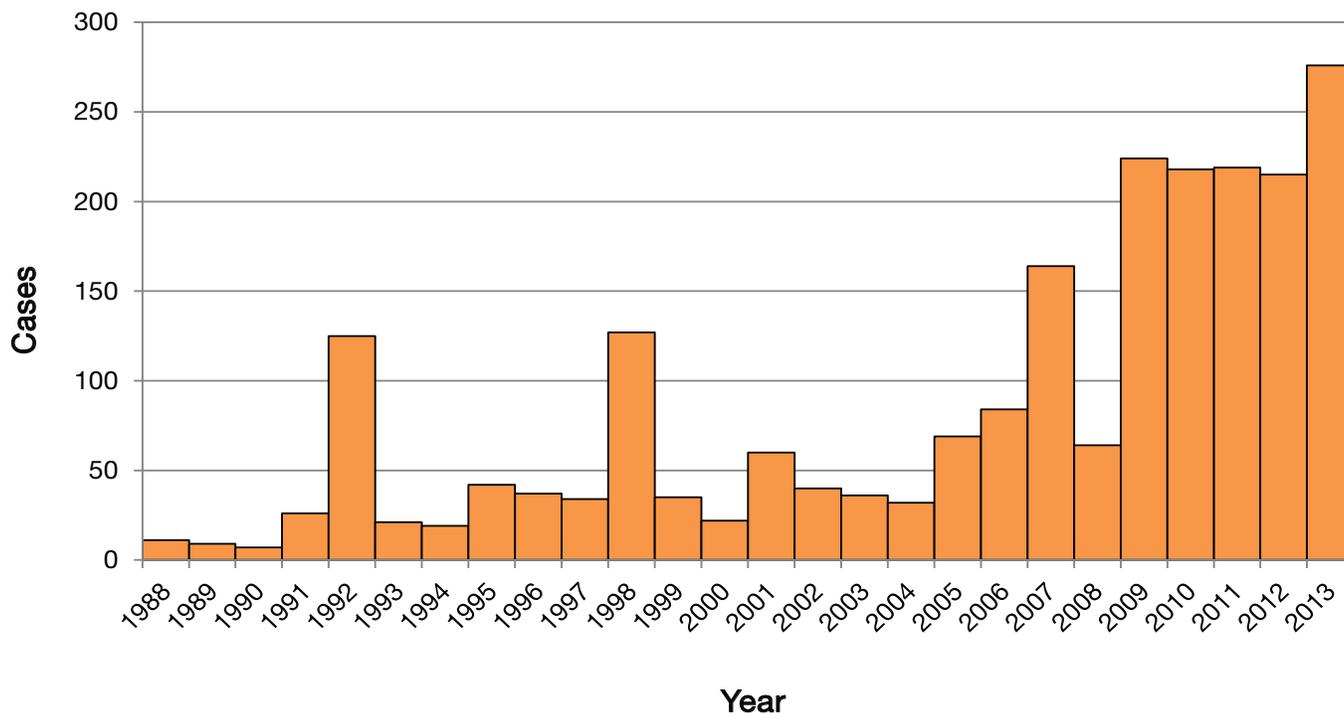
In Oregon, the rate of infection with *Cryptosporidium* remains elevated from rates observed at the millennium. Nationally, infections began to rise in the early millennium, but incidence has stabilized since 2009. Cases occur year-round with peaks in August, coincident with increases in exposure to recreational water.

New antigen tests for *Cryptosporidium* might be playing a role in the apparent increase in incidence. In 2013, 276 cases were reported, the highest number of cases reported since we began officially counting in 2005. Many (119) of these were isolated with an outbreak in a municipal water system in Baker County. In 2007, the Oregon investigative guidelines were changed to reflect the increasing numbers of cases; previously, investigations had been required only for abnormally high case counts. All cases are now routinely investigated to identify the source of infection.

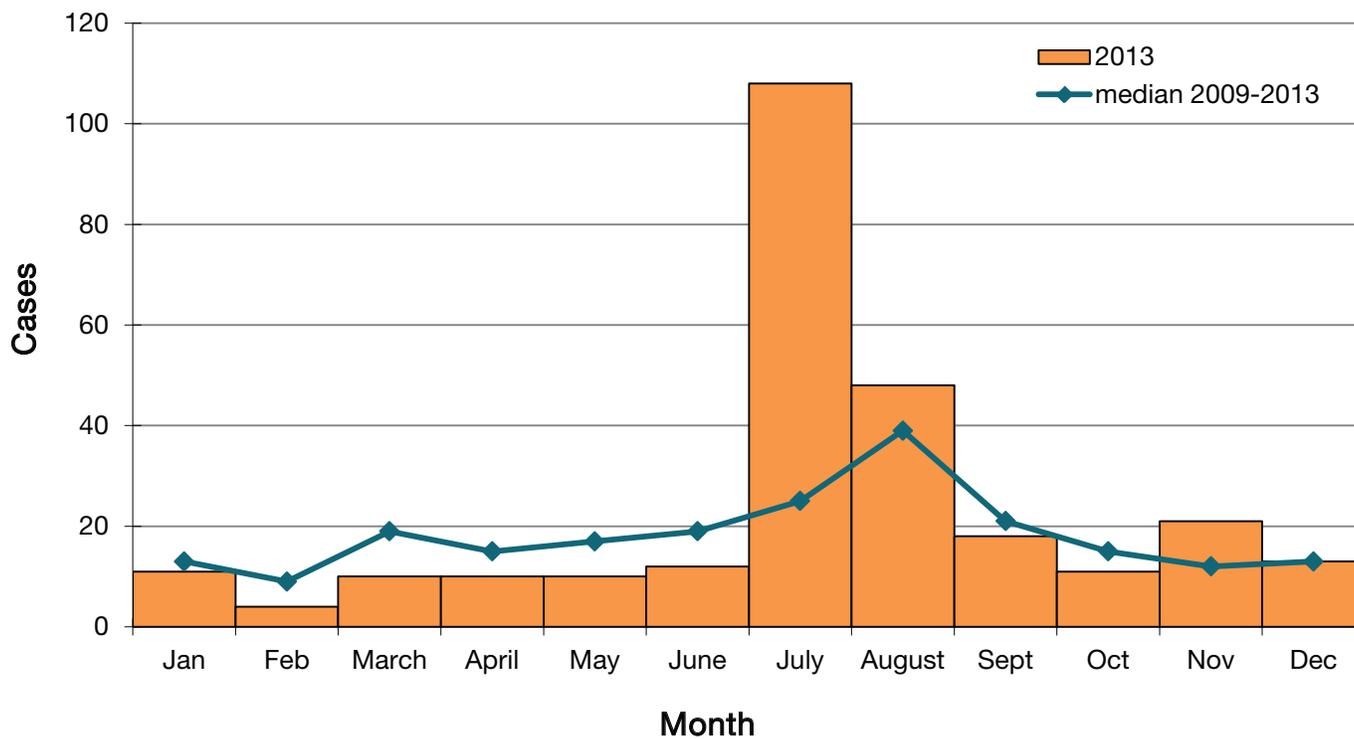
Treatment with an antiprotozoal agent has been shown effective in immunocompetent persons; however there are no proven effective treatments in immunocompromised hosts.

Given the number of asymptomatic and undiagnosed infections, surveillance data can be difficult to interpret. However, these data have been used to identify a number of outbreaks over the years, most commonly associated with child care or water (both drinking and recreational).

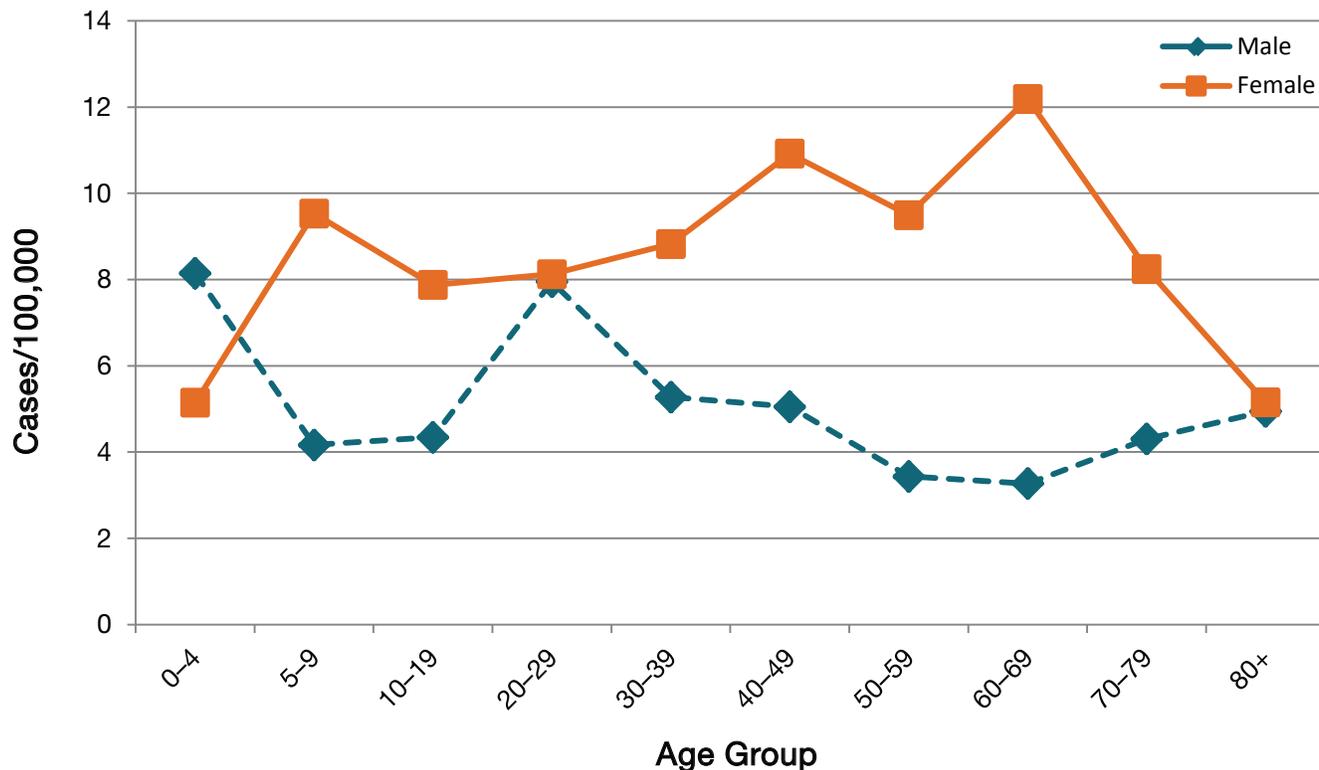
Cryptosporidiosis by year: Oregon, 1988–2013



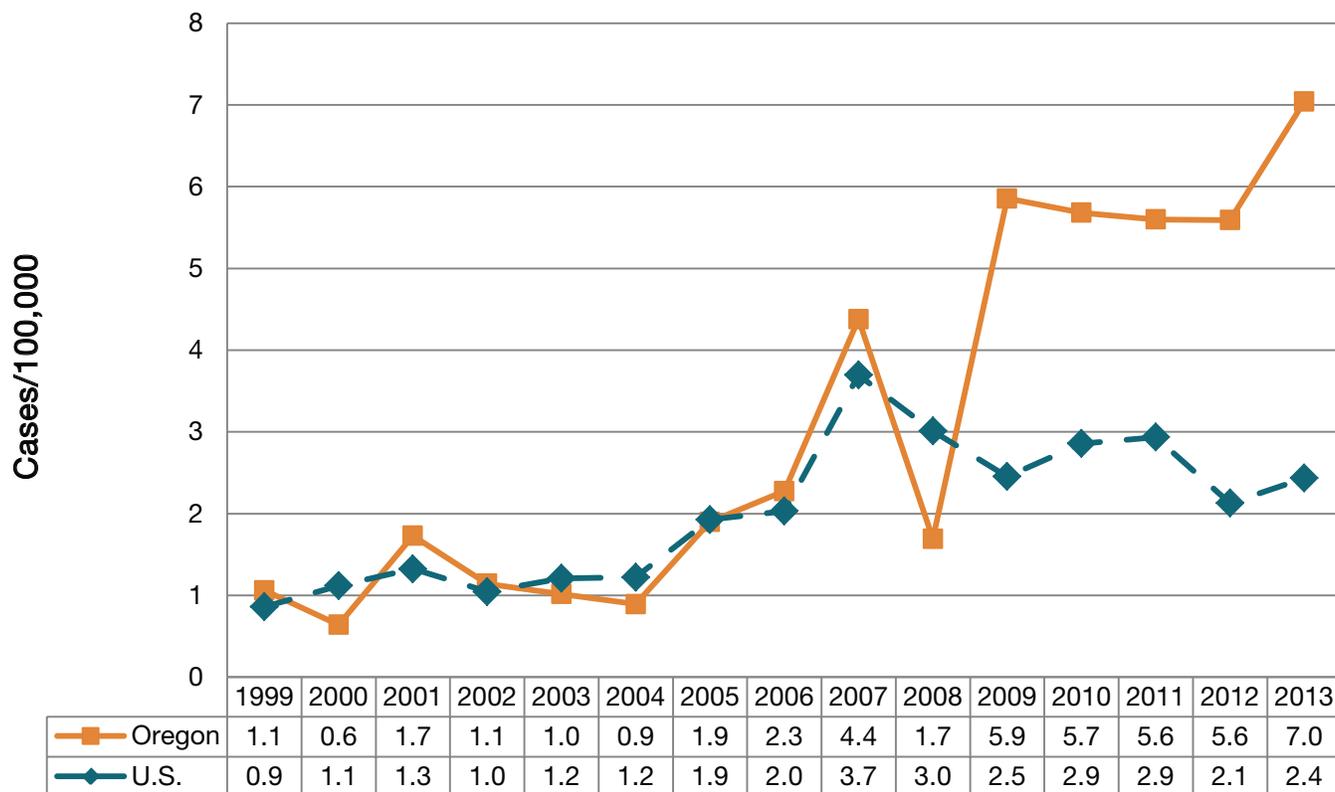
Cryptosporidiosis by onset month: Oregon, 2013



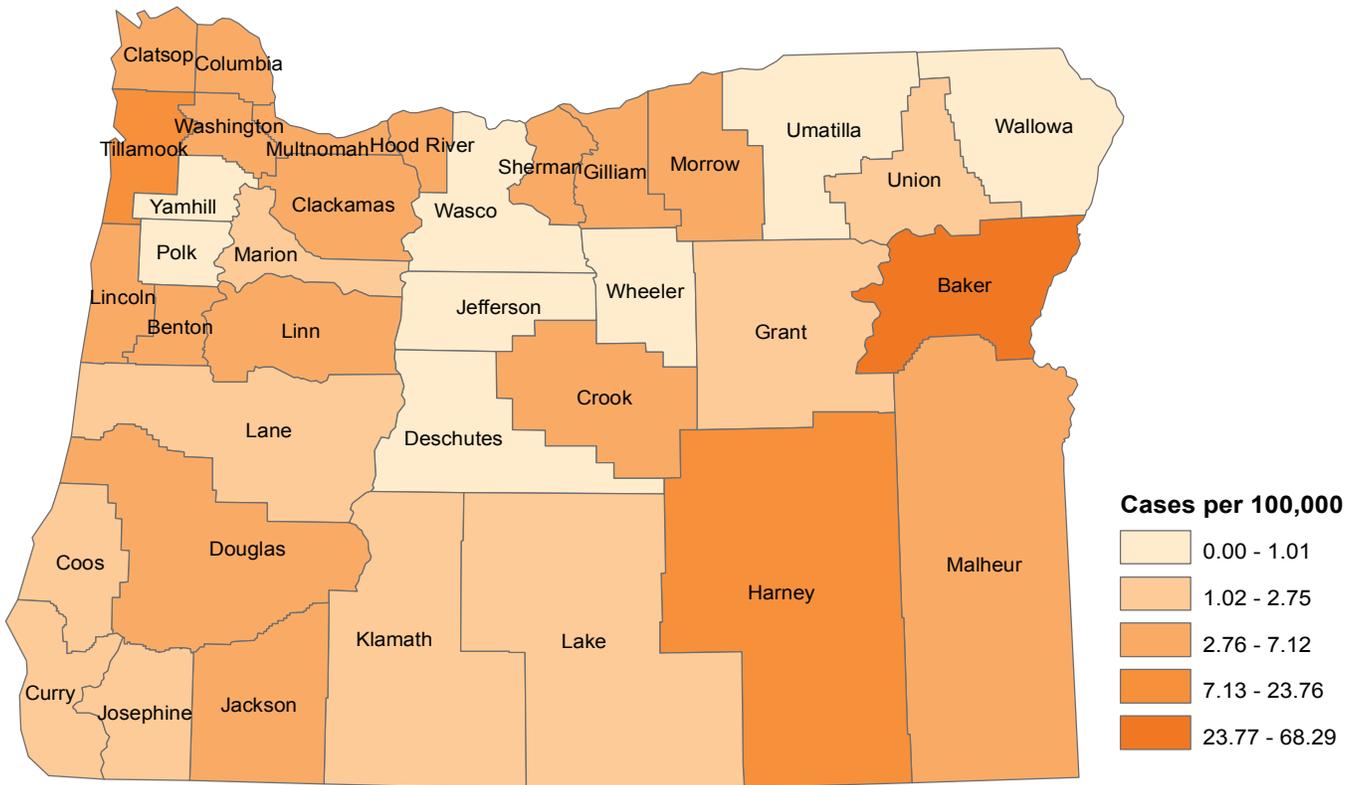
Incidence of cryptosporidiosis by age and sex: Oregon, 2013



Incidence of cryptosporidiosis: Oregon vs. nationwide, 1999–2013



Incidence of cryptosporidiosis by county of residence: Oregon, 2004–2013



Prevention

- Wash hands with soap carefully and frequently, especially after going to the bathroom, after changing diapers, or after touching livestock. Supervise hand washing of toddlers and small children after they use the toilet.
- Do not work or attend daycare, serve or prepare food, or work in health care while ill with diarrhea.
- Refrain from recreational water activities (pools, hot tubs, splash pads) for 2 weeks after symptoms from a bout of cryptosporidiosis subside.
- Do not drink untreated surface water.

Dengue fever

Dengue is a mosquito-borne viral infection. It is caused by a *Flavivirus* (the same genus as West Nile and yellow fever viruses); there are four serotypes identified as DENV 1–4. The disease is limited primarily to the tropics and sub-tropics although occasionally, imported cases occur.

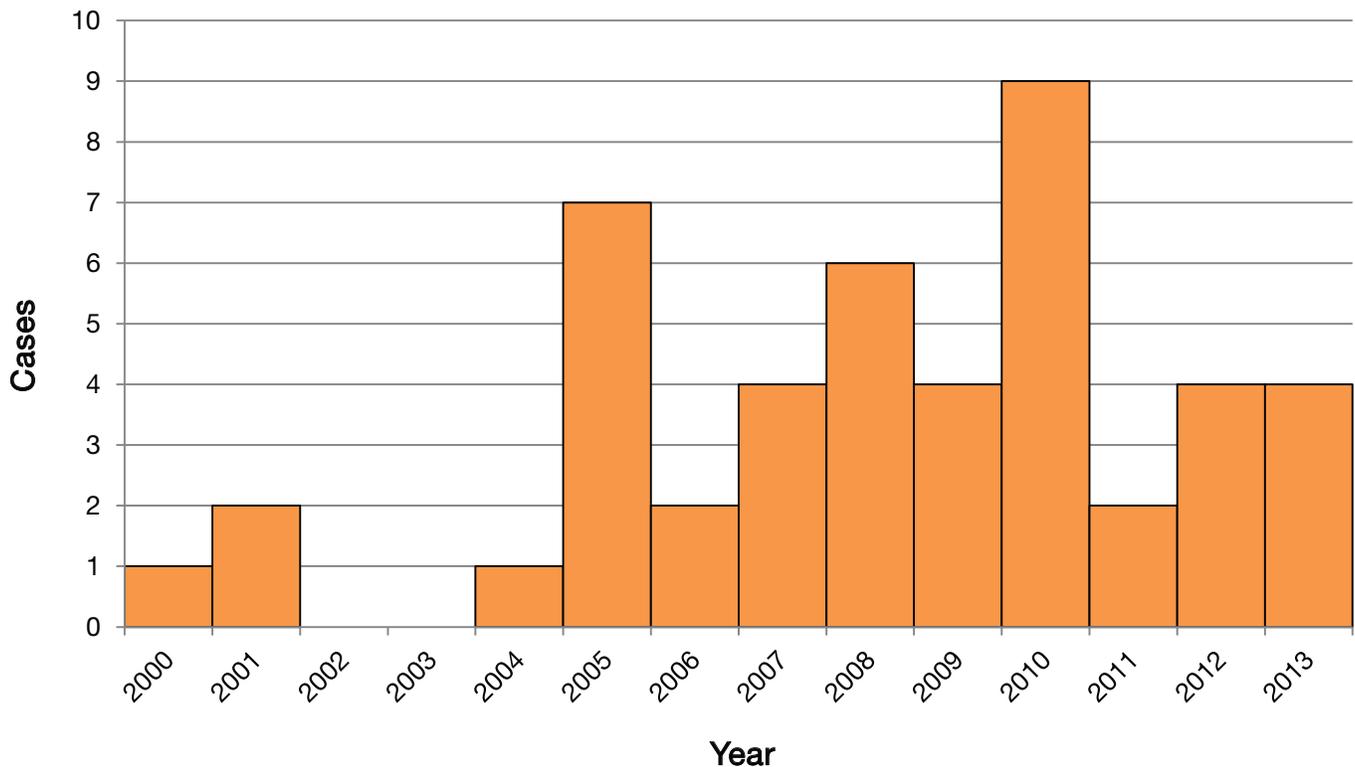
Symptom severity ranges from subclinical, asymptomatic infections (the norm) to high fever, headache, muscle aches, and rash. A subset of patients may develop hemorrhagic

fever, with bleeding and shock. Treatment for dengue is supportive. There is, alas, no vaccine as yet that protects against dengue fever.

We don't have evidence of transmission here in Oregon. The typical vectors, *Aedes albopictus* and *Aedes aegypti*, are not native to Oregon, although there have been some reports of the former getting a foothold in California.

Four cases in Oregon residents were reported in 2013. All had a history of recent travel, two to Central America and two to Asia.

Dengue infection by year: Oregon, 2000–2013



Prevention

Primary prevention measures are geared to avoiding mosquito bites when visiting areas where dengue is circulating:

- Use mosquito repellent.
- Wear long sleeves, long pants, shoes and socks when out and about.
- Avoid outdoor activities at dawn, dusk, and early evening, when more mosquitoes are out.
- Check screens on doors and windows where you're staying to make sure they're intact.
- Sleep under a treated mosquito net when nighttime exposure to mosquitoes could occur.
- Additionally, persons acutely ill with dengue should avoid exposure to domestic mosquitoes. (We don't want to find out the hard way that local species can harbor and transmit the virus, after all.)

***Escherichia coli* O157 and other Shiga toxin-producing *Escherichia coli* (STEC) infections**

Escherichia coli O157 (O157) is one of the most dreaded causes of infectious gastroenteritis. Bloody diarrhea is a hallmark of this pathogen, but the real danger is post-diarrheal hemolytic uremic syndrome (HUS). Oregon has been the setting for many O157 outbreaks, and the investigations of those outbreaks, combined with the analysis of other surveillance data, have contributed greatly to our understanding of this pathogen. Spread by the fecal-oral route, O157 has a number of animal reservoirs, the most important of which are ruminants: cattle, goats, sheep, deer, elk, etc. Transmission often occurs from consumption of contaminated food or water, as well as direct person-to-person spread and environmental exposures. Mid-to-late summer is the peak season for O157 infections.

With increasing deployment of diagnostic kits that identify Shiga toxin-producing *E. coli* (rather than O157 per se) comes an appreciation of the significant role that other STEC play as human pathogens. In the U.S. (and in Oregon), O26, O45, O103, O111, O121, and O145 are the most common “other” serogroups of the enterohemorrhagic *E. coli* making p about half of the reported cases. O157 infections are much more likely to result in HUS than is infection by STEC.

Over the past 10 years, the number of O157 cases reported statewide has ranged between 61 and 149 annually. After being relatively steady during 2008–2011, the number increased to 111 in 2012 and remains elevated with 106 cases reported in 2013.

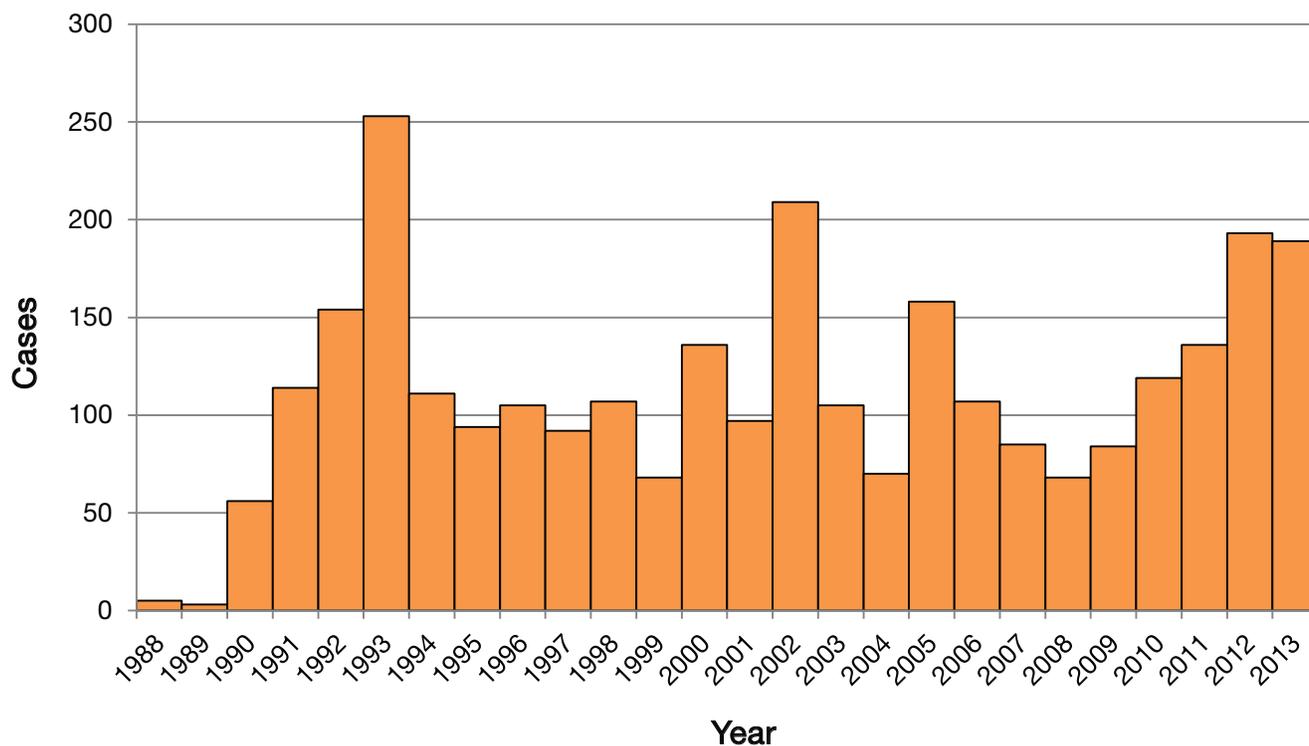
As for the non-O157 serogroups, those case counts have increased steadily from single digits in 2007 and 2008 to 59 confirmed cases in 2013. Of the 165 confirmed STECs serotyped in 2013, 106 were O157, 59 were non-O157, including O26 (N = 25), O103 (13), O121 (7) and 12 other serogroups.

Several STEC outbreaks were investigated in 2013; two outbreaks were associated with county fairs. One O157 outbreak affected two children who were handling farm animals at a county fair. The other fair-related outbreak was caused by O26. Three children attended a county fair and had farm animal exposures, and a fourth child developed illness while attending day care with one of the initial cases. No source was confirmed for either outbreak, although environmental exposure to farm animals was likely the cause of both.

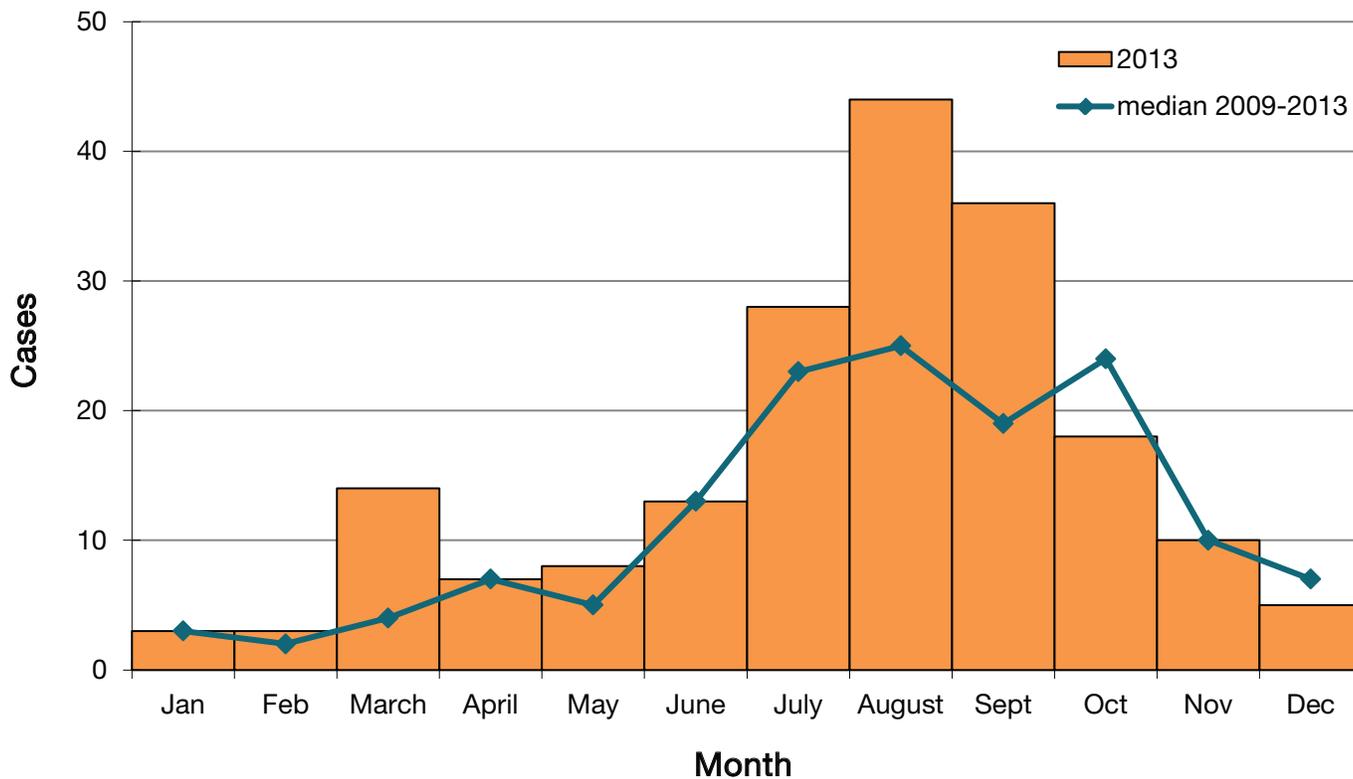
More labs are testing for the presence of Shiga toxin rather than just O157. Unfortunately, at the same time, many labs are dropping culture-based methods, leaving clinicians (and epidemiologists) in the dark as to the specifics of the etiologic agent, and putting more of the diagnostic burden on the public health reference lab.

Much of the heavy lifting for prevention must be done upstream, with plans to minimize contamination of crops and processing equipment. Hazard Analysis and Critical Control Points (HACCP) practices focus on documenting and controlling risks during food processing and commercial food preparation, as well as efforts to control water and other potential environmental sources of infection.

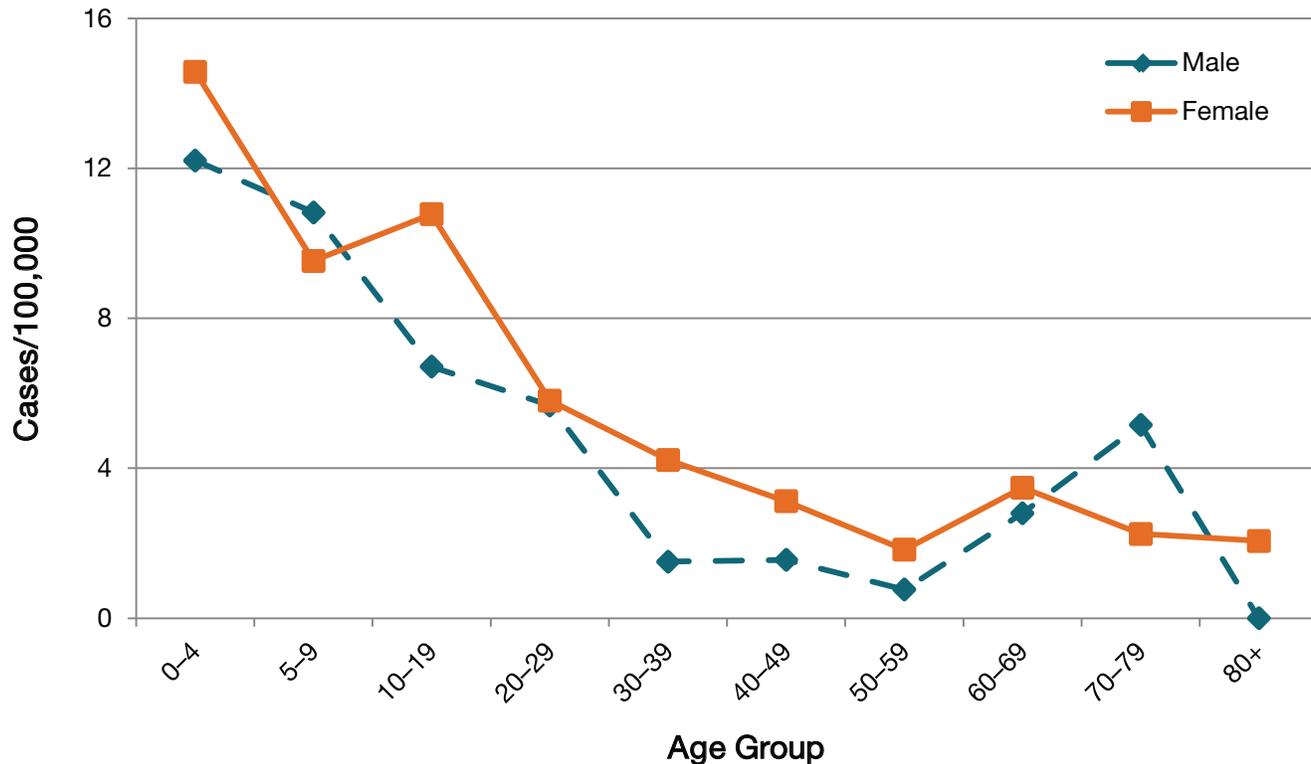
STEC infection (including *E. coli* O157) by year: Oregon, 1988–2013



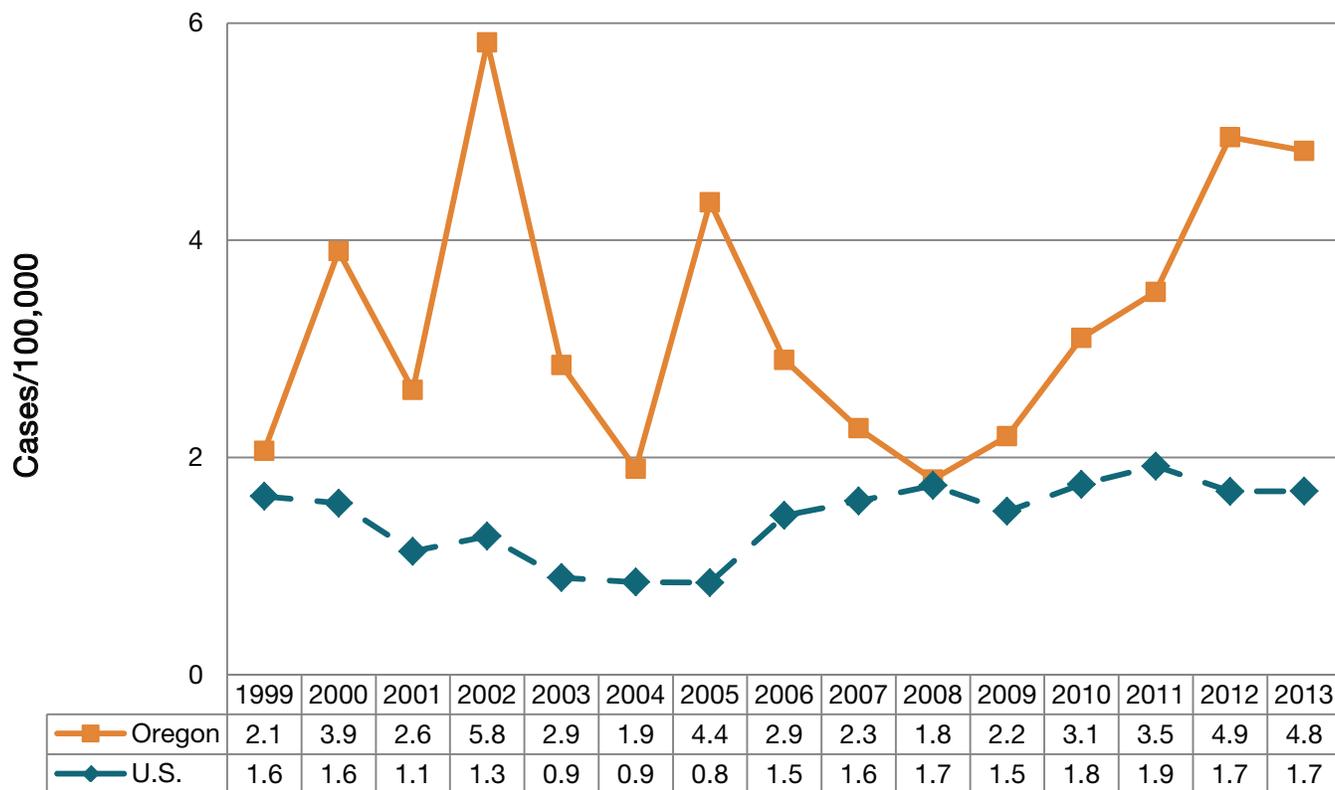
STEC infection by onset month: Oregon, 2013



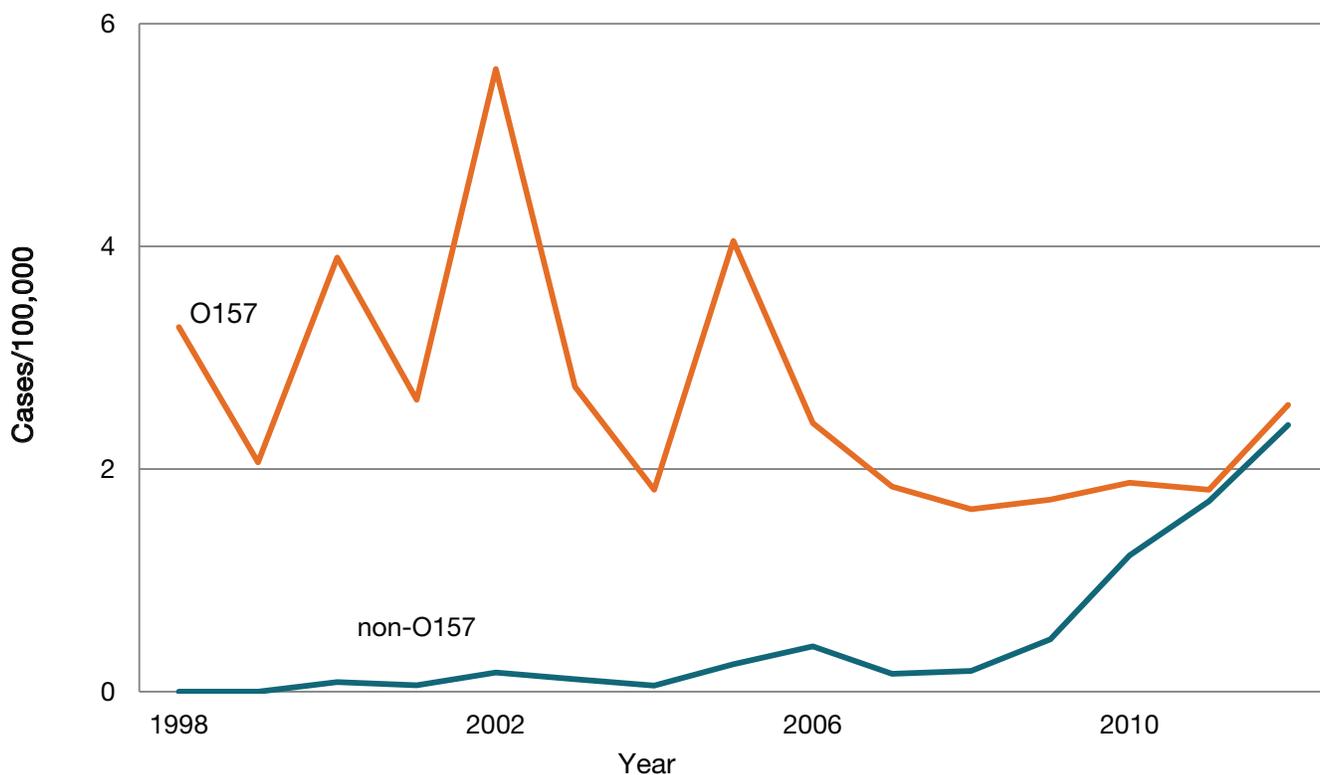
Incidence of STEC infection by age and sex: Oregon, 2013



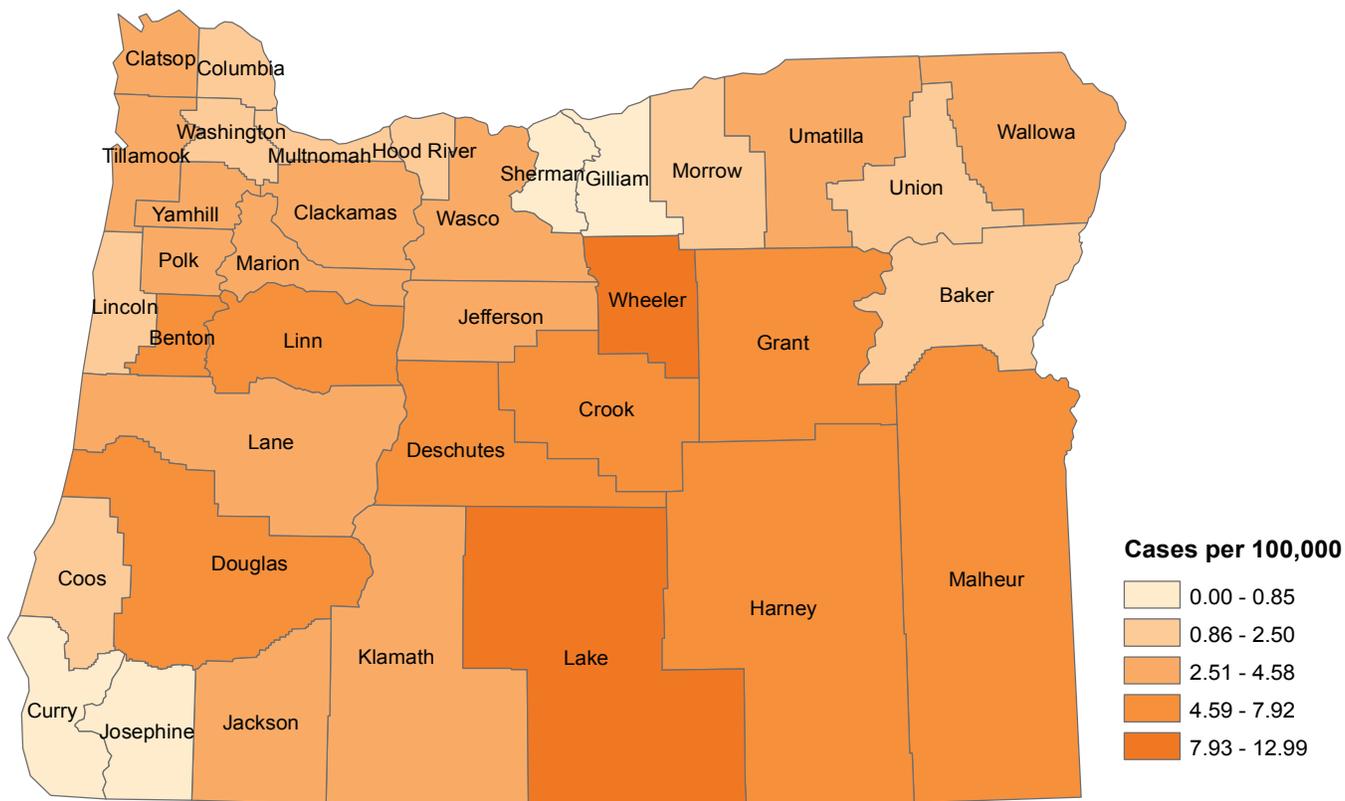
Incidence of STEC infection: Oregon vs. U.S., 1999-2013



Incidence of STEC infection, O157 vs. non-O157 type, Oregon, 1999–2013



Incidence of STEC infection by county of residence: Oregon, 2004–2013



Prevention

- Wash hands with soap carefully and frequently, especially after going to the bathroom, after changing diapers, or after touching livestock. Supervise hand washing of toddlers and small children after they use the toilet.
- Do not work or attend daycare, serve or prepare food, or work in healthcare while ill with diarrhea.
- Practice safe food handling: Rinse raw produce thoroughly under running tap water; separate uncooked meats from vegetables, cooked foods, and ready-to-eat foods; and cook meat to the proper temperatures.
- Do not drink raw milk and do not eat foods that have unpasteurized milk in them.

Giardiasis

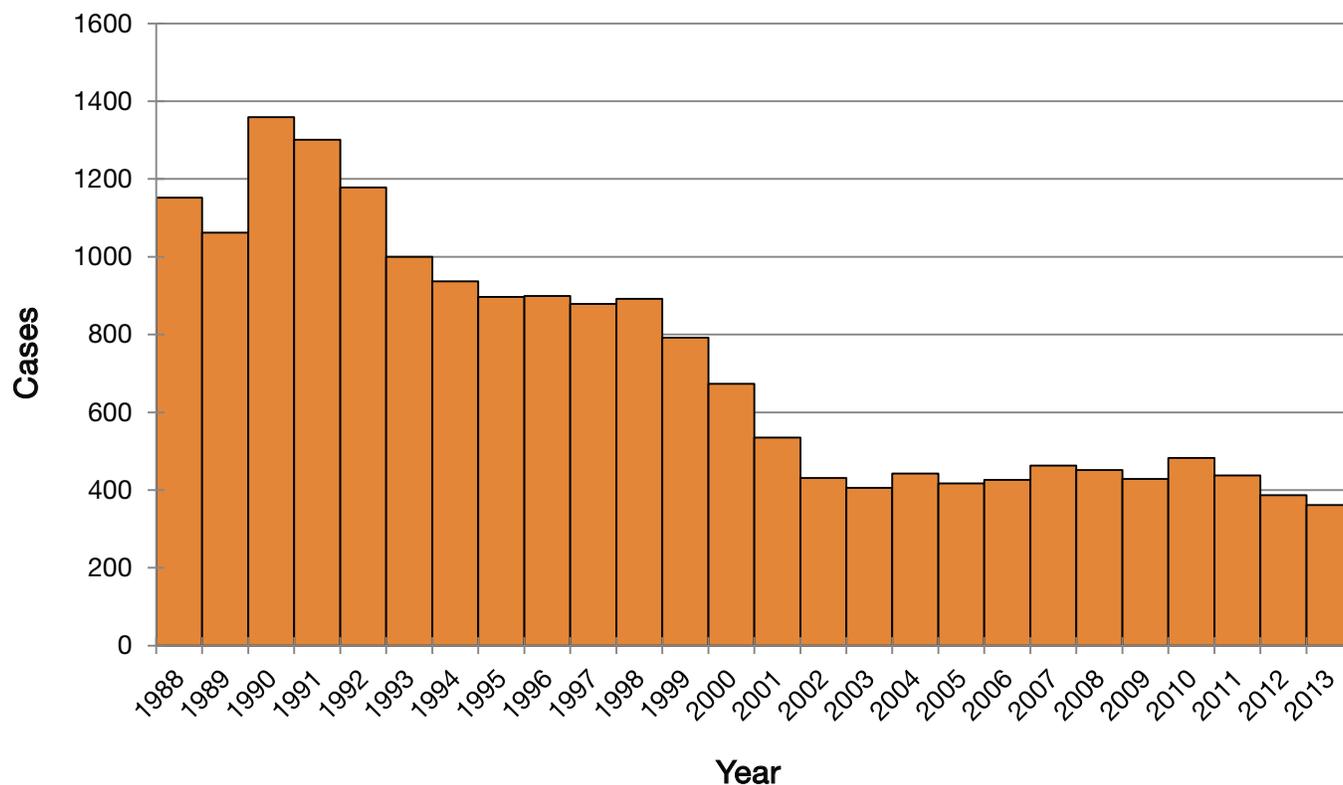
Giardia intestinalis, the flagellated protozoan originally named *G. lamblia*, is the most commonly identified parasitic pathogen in the United States. Children in daycare and their close contacts are at greatest risk, as are backpackers and campers (from drinking unfiltered, untreated water), persons drinking from shallow wells, travelers to disease-endemic areas, and men who have sex with men. *Giardia* cysts can be excreted in the stool intermittently for weeks or months, resulting in a protracted period of communicability. Transmission occurs when as few as 10 cysts are ingested through person-to-person or animal-to-person contact, or by ingesting fecally contaminated water or food. Because most human cases follow person-to-person transmission, identification and treatment of giardiasis as well as management of their contacts should prevent further spread of infection.

Most *Giardia* infections occur without symptoms. When symptomatic, patients report chronic diarrhea, steatorrhea, abdominal cramps, bloating, frequent loose and pale, greasy stools, fatigue, and weight loss.

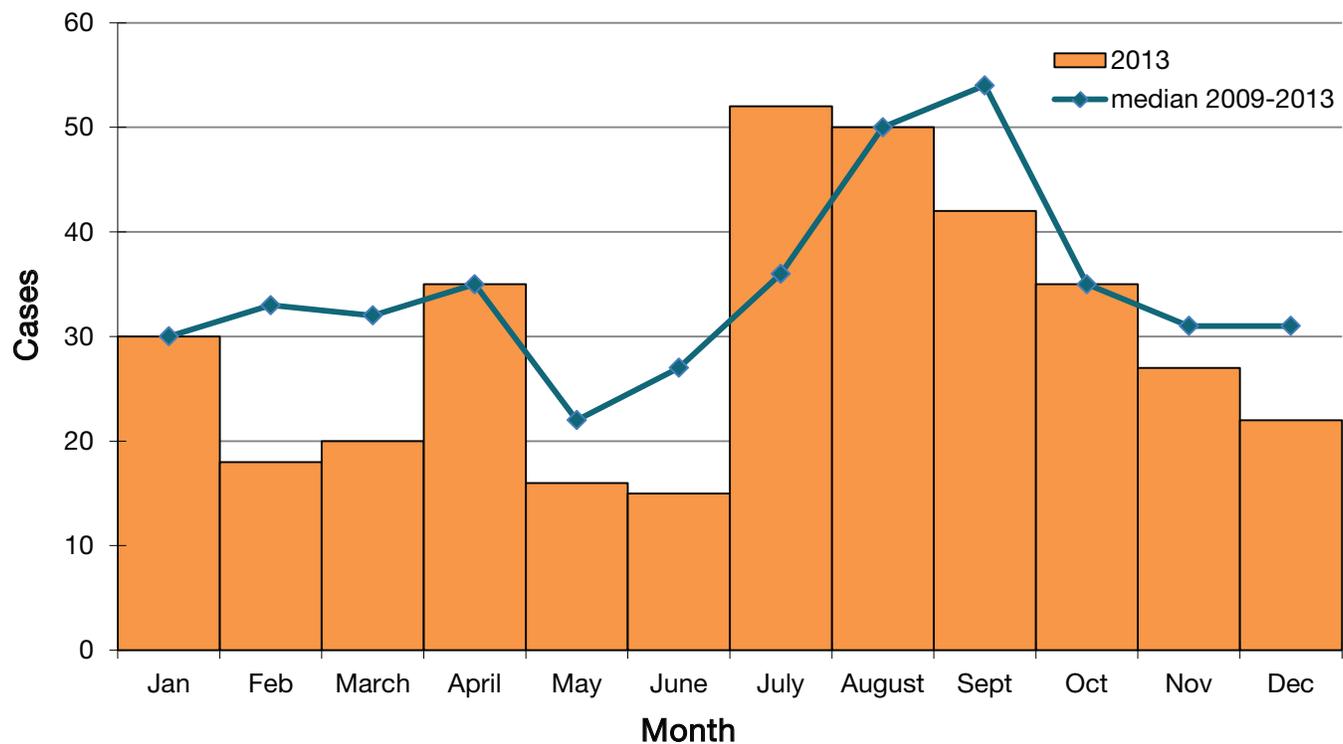
In 2013, the reported incidence of giardiasis in Oregon remained twice that of the rest of the U.S., with 9.2 cases per 100,000 persons. During 2013, 96% of the cases were reported as “sporadic” and 2% as household-associated; one outbreak was reported. Children less than 5 years of age continue to have the highest incidence, with 19 cases per 100,000 population. Rates of infection tend to be higher in the summer months with transmission related to outdoor activities in or near untreated water.

Giardiasis is treatable, though treatment fails ~10% of the time. Treatment failure, however, is not thought to indicate resistance. A repeat course of the same or a different medication may work.

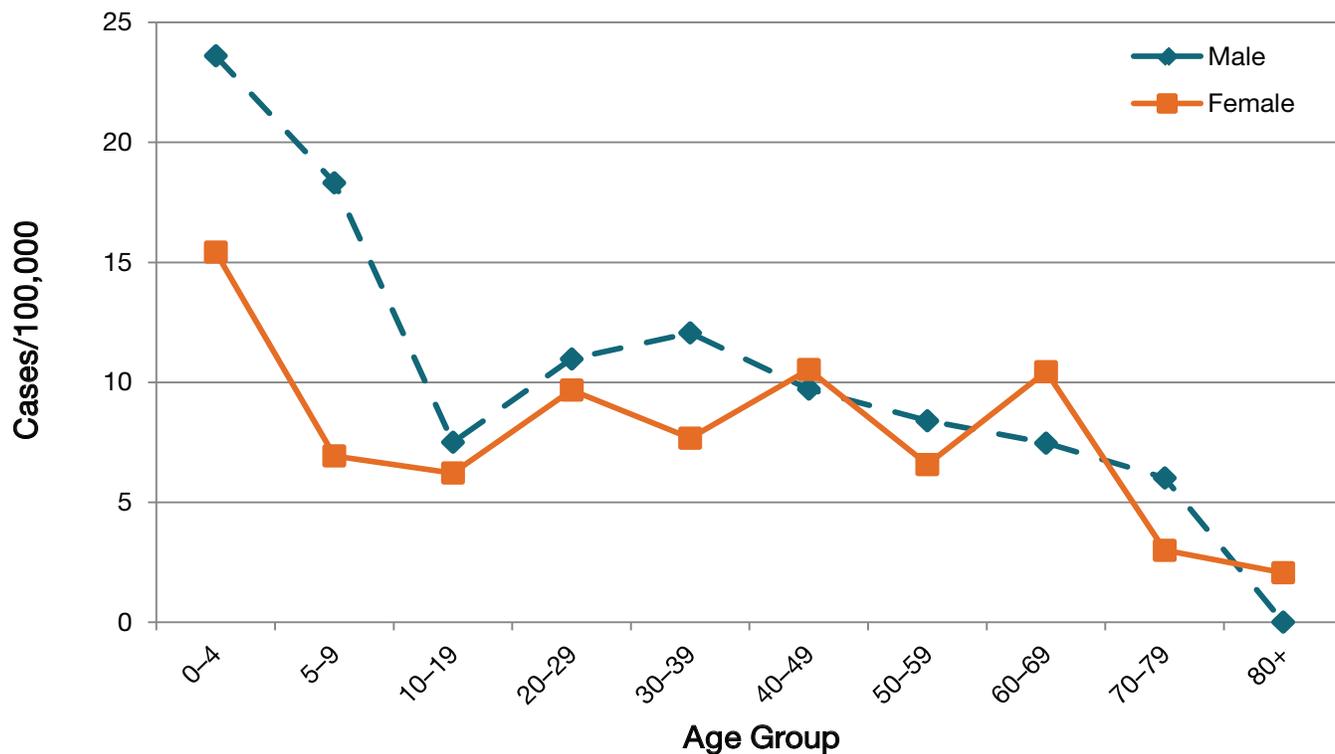
Giardiasis by year: Oregon, 1988–2013



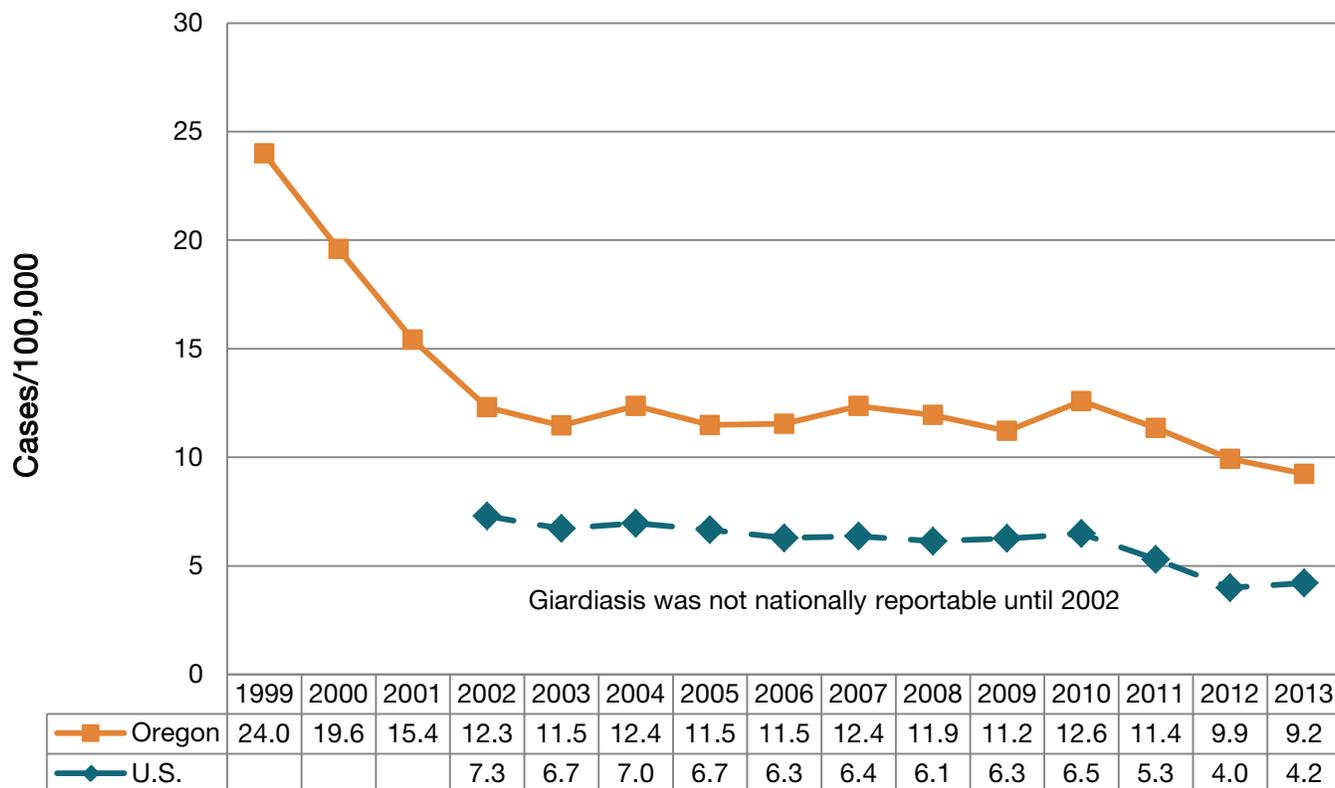
Giardiasis by onset month: Oregon, 2013



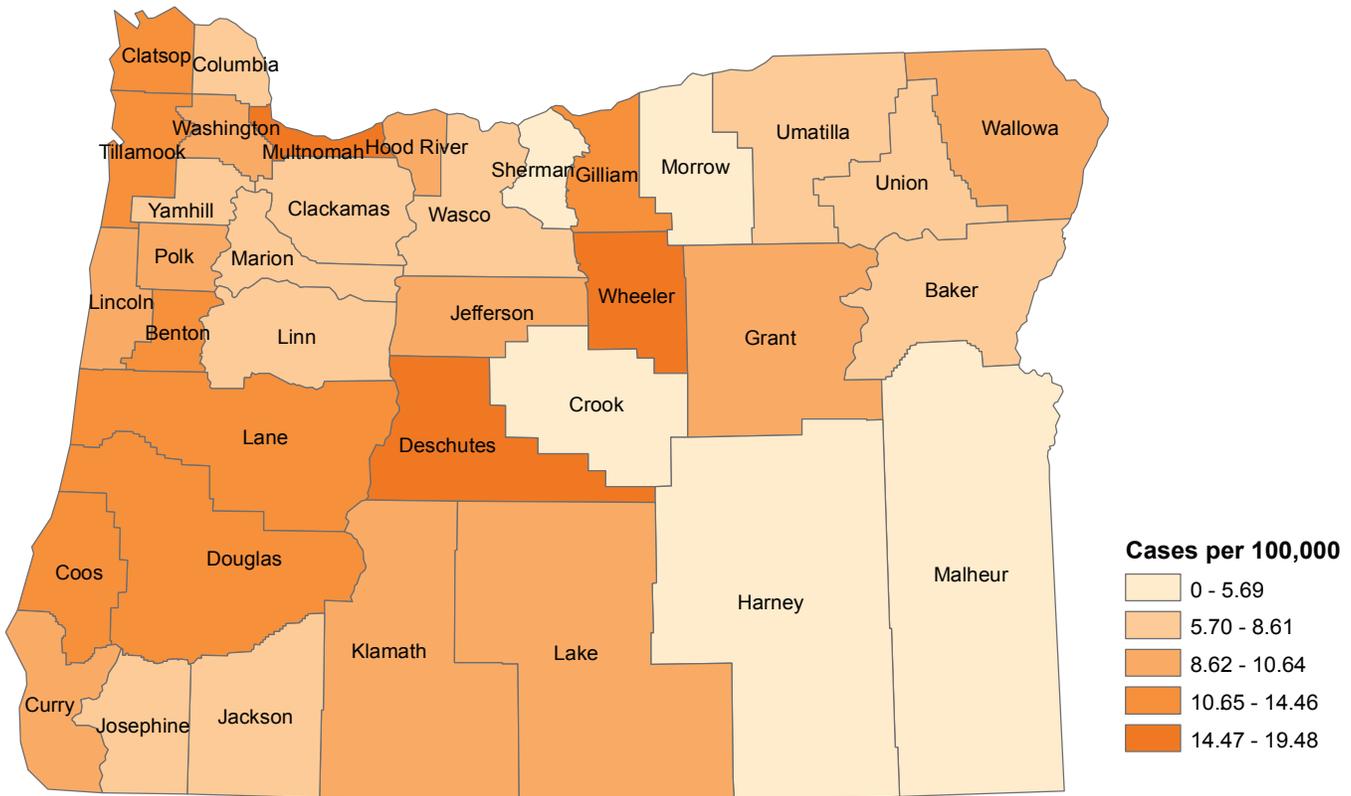
Incidence of giardiasis by age and sex: Oregon, 2013



Incidence of giardiasis: Oregon vs. nationwide, 1999–2013



Incidence of giardiasis by county of residence: Oregon, 2004–2013



Prevention

- Wash hands with soap carefully and frequently, especially after going to the bathroom, after changing diapers, or after touching livestock. Supervise hand washing of toddlers and small children after they use the toilet.
- Do not work or attend daycare, serve or prepare food, or work in health care while ill with diarrhea.
- Refrain from recreational water activities (pools, hot tubs, splash pads) for 2 weeks after symptoms from a bout of giardiasis subside.
- Do not drink untreated surface water.

Gonorrhea

Gonorrhea is primarily a sexually transmitted bacterial infection affecting the genital tract, rectum, mouth or throat of men and women. Women are more likely to become infected after exposure to the causative bacterium *Neisseria gonorrhoeae*, but they are less likely than men to develop symptoms after infection. The proportion of infections that is symptomatic among women ranges from 20% to as high as 75%, but 95% of men with gonorrhea are symptomatic. Local symptoms of gonorrhea among women include painful urination, painful menses and pelvic pain, or discharge from the vagina and cervix or from the rectum. Men usually experience painful urination and discharge from the penis. Local complications among men include epididymitis and prostatitis. Both men and women who acquire gonorrhea through oral sex can experience sore throat and oral discharge. Gonorrhea can also be transmitted from mother to infant during childbirth, causing eye infections and sometimes disseminated infection.

Gonorrhea can cause serious complications, including pelvic inflammatory disease that sometimes leads to infertility or tubal pregnancy in women. Disseminated infections can cause arthritis and blisters on the skin in either sex, but such infections are rare. Untreated gonorrhea during pregnancy can cause premature delivery. Sometimes symptoms caused by gonorrhea can be difficult to differentiate from those caused by chlamydial infection. Simultaneous gonorrhea and chlamydia infections are not uncommon.

Oregon law requires health providers and laboratories to report cases of gonorrhea to the local health department. To the extent that resources allow, local public health personnel interview persons with gonorrhea to assure that they have received treatment and to assist with notification and treatment of sexual partners.

Treatment

Usually, gonorrhea can be treated successfully with antibiotics, preventing transmission to partners and long-term health consequences. Unfortunately, resistance to antibiotics tends to appear rapidly among circulating strains of *Neisseria gonorrhoeae*. Since 2007, the only class of antibiotics that has reliably been effective against gonorrhea is the cephalosporins, and within the past year or two, microbiologists have begun to notice diminished susceptibility to cephalosporins in the laboratory. In Asia, but not yet in the United States, some cases have proved resistant to treatment with cephalosporins. Unfortunately, no clear alternative to cephalosporins exists for routine treatment of gonorrhea.

During 2013, 1,741 cases of gonorrhea were reported in Oregon residents (44/100,000 residents). Rates in men (60/100,000) exceeded rates among women (29/100,000). The rate was highest in Multnomah County (104/100,000 residents). Since 2002, Oregon rates have fluctuated in the range of 25 to 45 per 100,000 residents and remain well below those of the U.S. as a whole (99/100,000 residents during 2013.)

By age, the highest rates of reported gonorrhea occur among men 25–29 years old and women 20–24 years of age. Rates of gonorrhea remain higher in men starting at age 20 and above 70 cases per 100,000 residents through age 44 years. Many of these cases occur among those who acknowledge sex with other men; during 2013 at least 26% of cases occurred among men who acknowledged sex with other men. By race and ethnicity, African Americans were much more likely to have a reported case of gonorrhea (208/100,000 residents) than whites, Hispanics or people of other races (<50/100,000 residents).

A disproportionate number of gonorrhea cases occur in men who are infected with HIV. In Oregon, annual rates of gonorrhea among men with HIV have been more than 30 times higher than the rate among the general population; approximately 70 cases of gonorrhea each year occur in men with HIV.

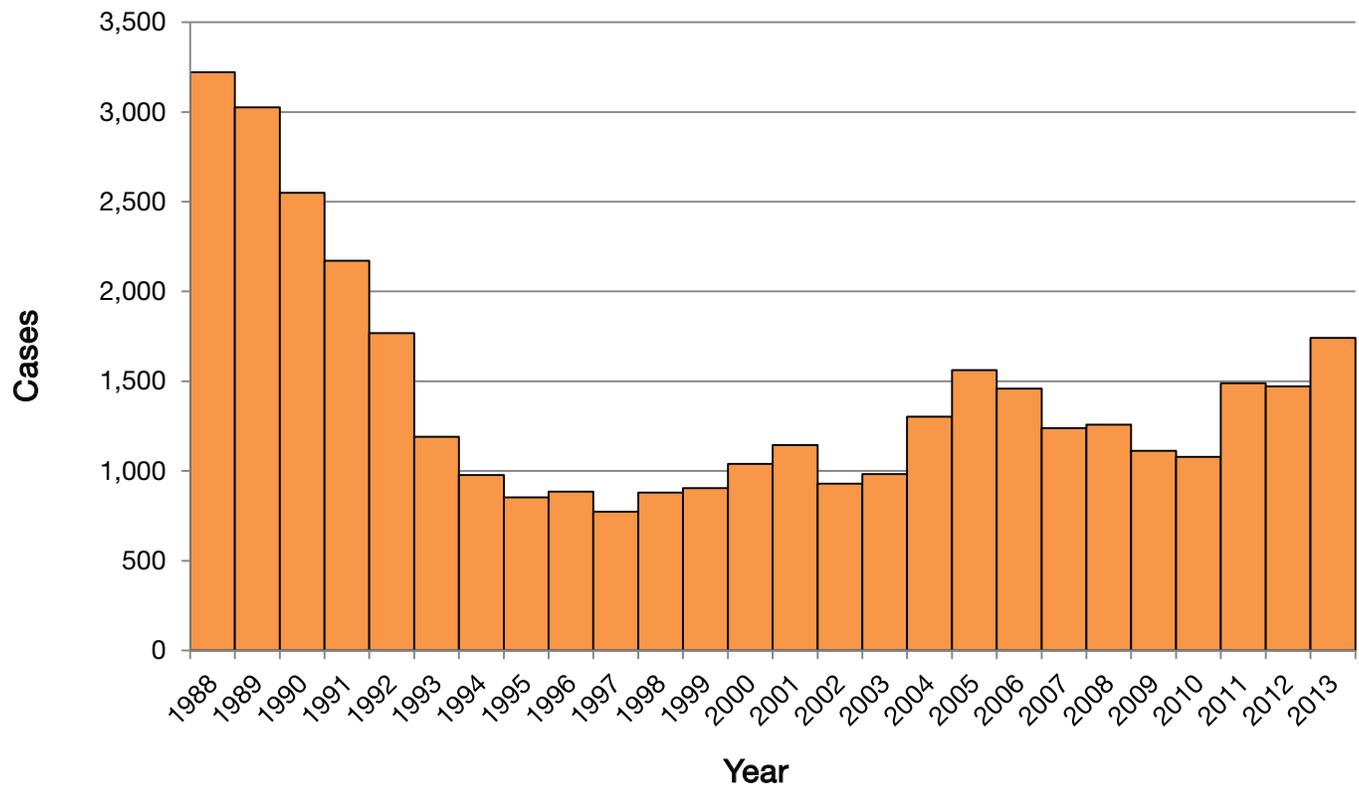
Use of NAATs

In recent years, urine testing with nucleic acid amplification tests (NAATs) has made screening for gonorrhea much more convenient for clinicians and for patients. The use of NAATs, frequently

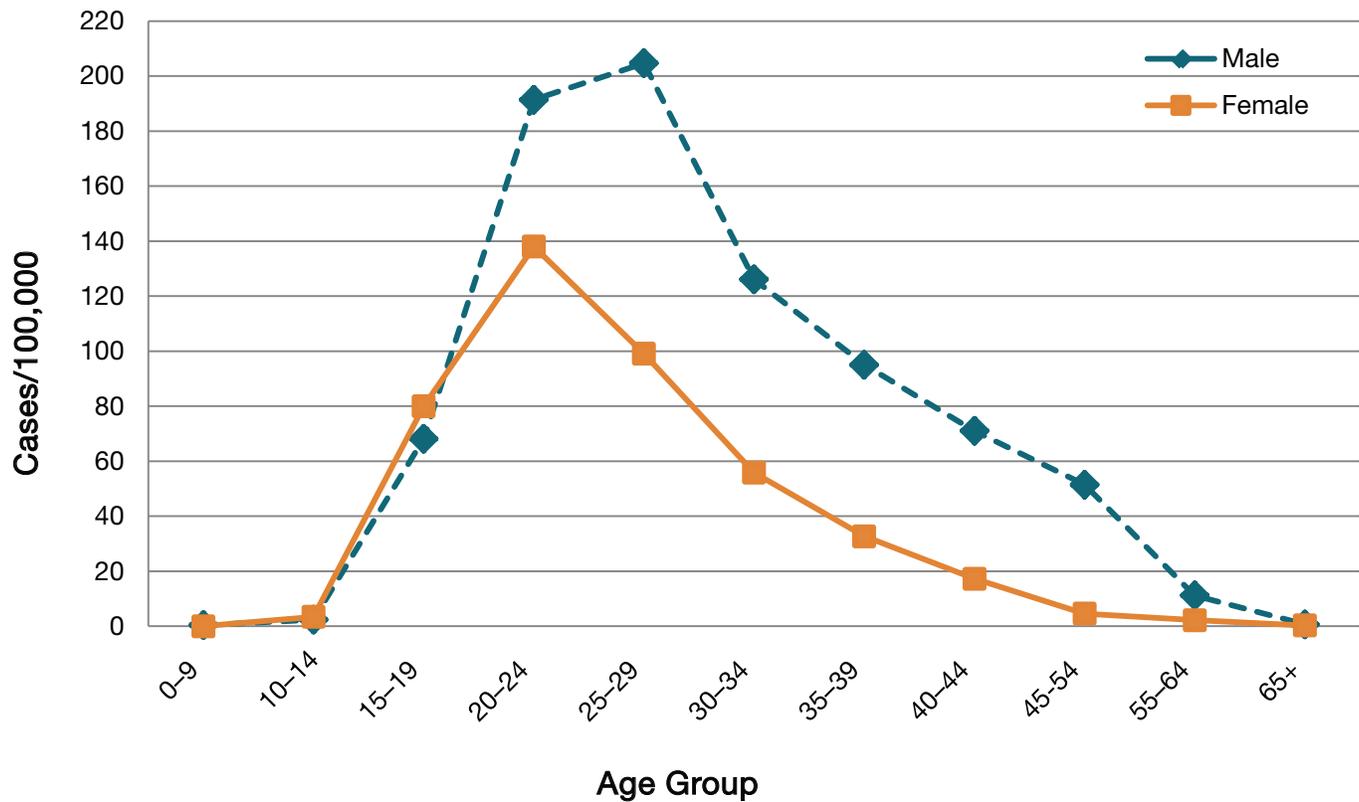
testing simultaneously for chlamydia and gonorrhea, has all but eclipsed culture for screening and diagnostic testing of gonorrhea. NAATs are very convenient and accurate. However, an unintended consequence may be the loss of laboratory capacity to culture *Neisseria gonorrhoeae* and test it for susceptibility to antibiotics. Such testing might become needed again if *N. gonorrhoeae* should become widely resistant to cephalosporins.

Guidance from the Centers for Disease Control and Prevention and the U.S. Preventive Services Task Force on screening for asymptomatic infections recommends that clinicians screen all sexually active women <25 years of age, including those who are pregnant, for gonorrhea if they have any of the following risk factors: a history of previous gonorrhea or other sexually transmitted infection, new or multiple sexual partners, inconsistent condom use, sex work, or drug use. Broader screening is recommended for groups with a higher incidence of infection than the general population. These groups include Multnomah County residents, African Americans and other blacks, and men who have sex with men.

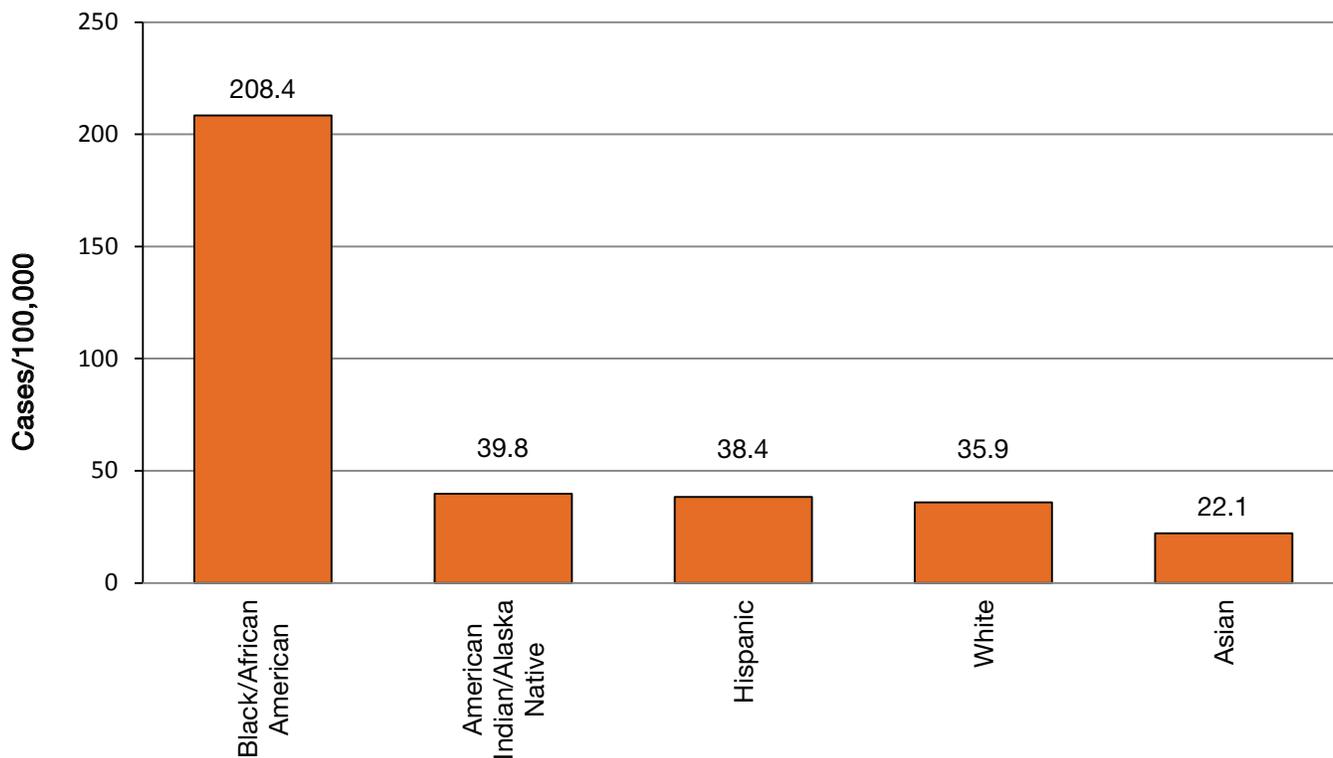
Gonorrhea by year: Oregon 1988–2013



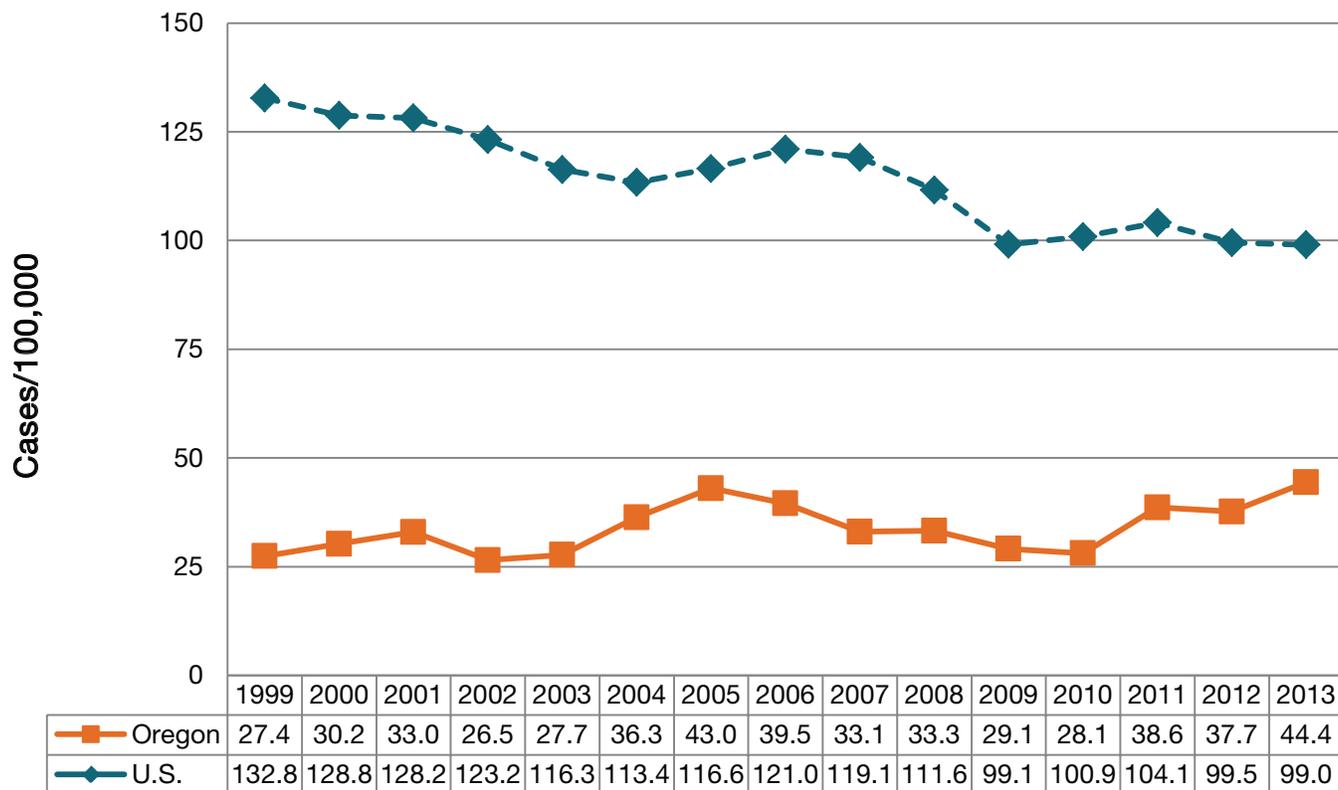
Incidence of gonorrhea by age and sex: Oregon, 2013



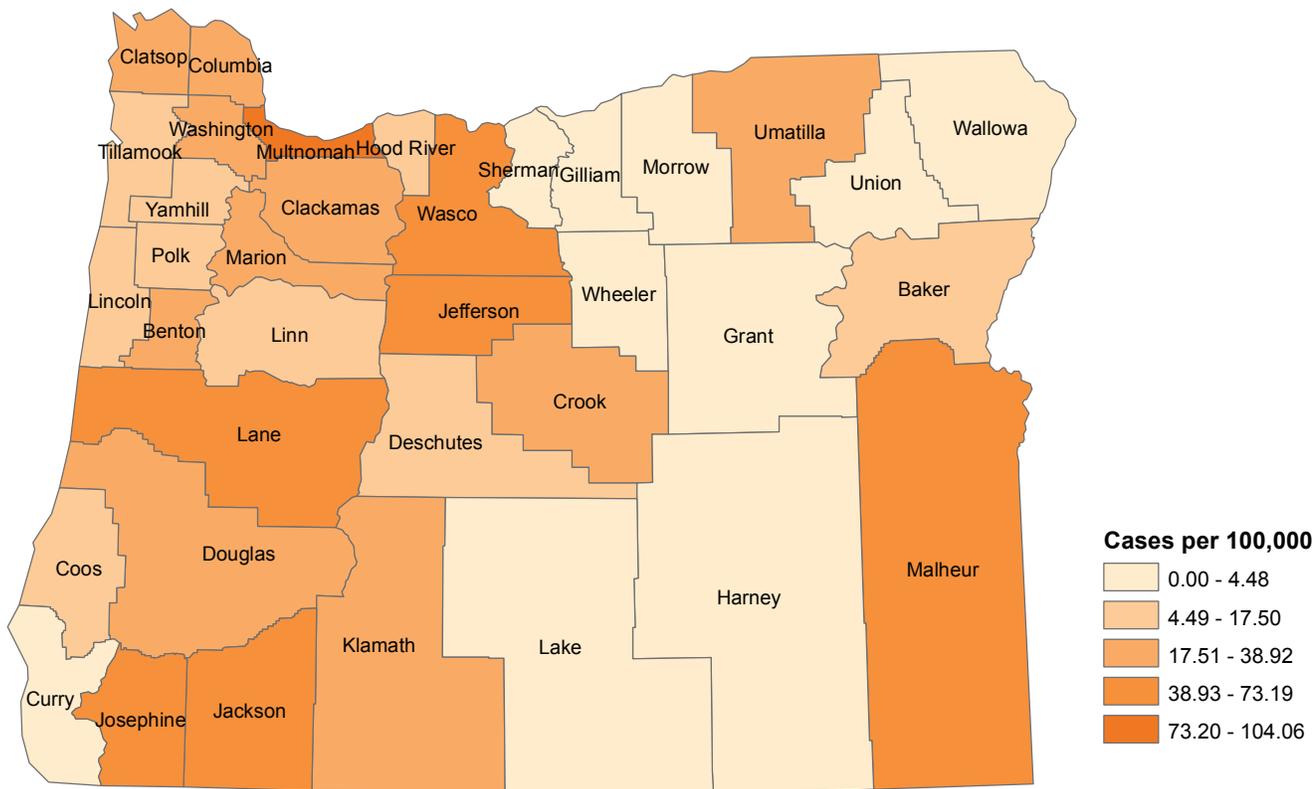
Incidence of gonorrhea by race and ethnicity, Oregon, 2013



Incidence of gonorrhea by year: Oregon vs. nationwide, 1999–2013



Incidence of reported gonorrhea by county of residence, Oregon, 2013



Prevention

Primary prevention strategies aim to prevent a person from becoming infected in the first place by:

- Delaying age at onset of sexual activity;
- Decreasing the number of sex partners;
- Using condoms properly from start to finish when having sex.
- Rapid identification and treatment of new cases can also be considered primary prevention when it results in averting transmission to a sex partner.

Secondary prevention strategies aim to eradicate existing infections by:

- Treating asymptomatic gonorrhea cases;
- Treating sex partners of people with gonorrhea;
- Periodic screening among high-risk populations, including women aged ≤ 25 years with new or multiple sex partners and inconsistent condom use, recent history of commercial sex work, and membership in demographic groups or residence in communities with high prevalence of gonorrhea.

Haemophilus influenzae infection

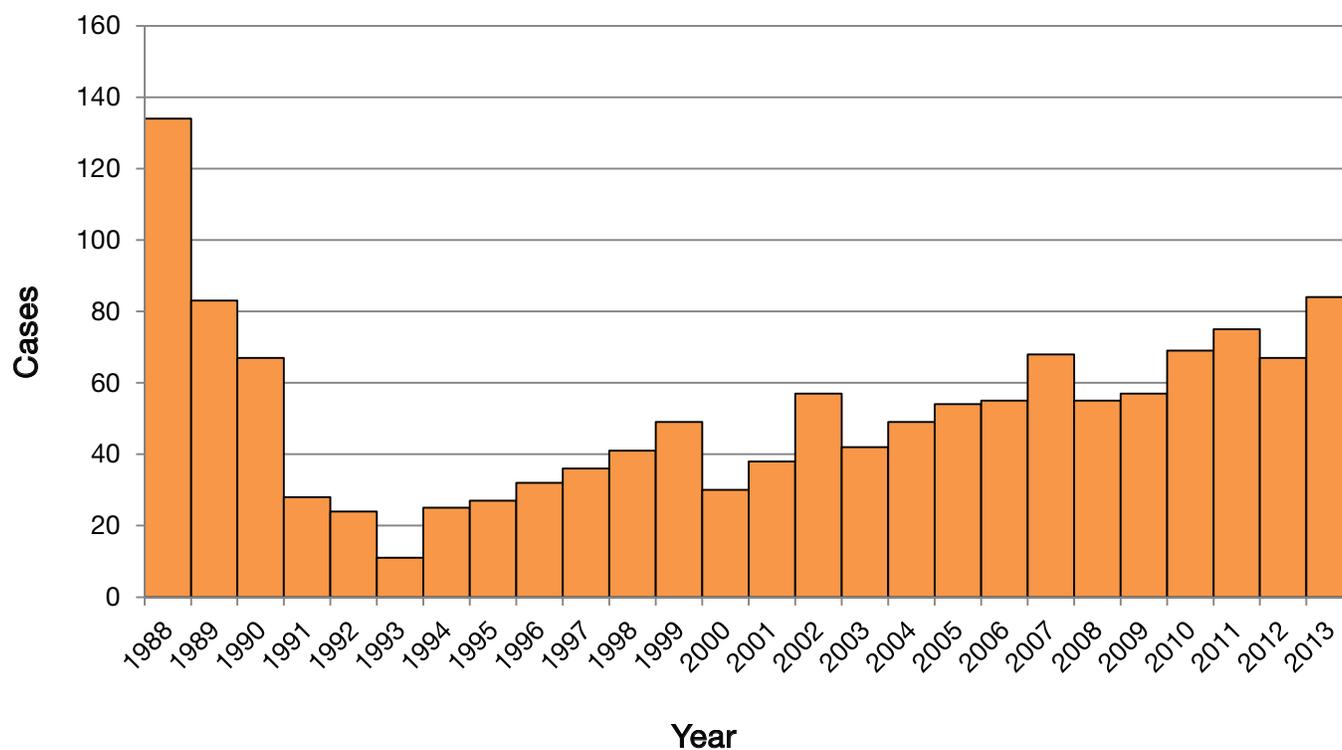
Until the advent of an effective vaccine against *Haemophilus influenzae* serotype b (Hib) organisms, *H. influenzae* was the leading cause of bacterial meningitis in children <5 years of age in Oregon and elsewhere. It plummeted in the rankings, and *Streptococcus pneumoniae* is now in the lead. In 2013, Hib was cultured from sterile body fluids of four Oregonians. One of the Hib cases was a child that was not fully immunized. The remaining three cases were among persons >60 years of age. Appropriate use of conjugate vaccine will help ensure that Hib infection remains minimal well into the future. All sterile-site *H. influenzae* isolates must be sent to the Oregon State Public Health Laboratory for additional typing.

Eighty-four cases of invasive *H. influenzae* disease (IHiD, all serotypes) were reported

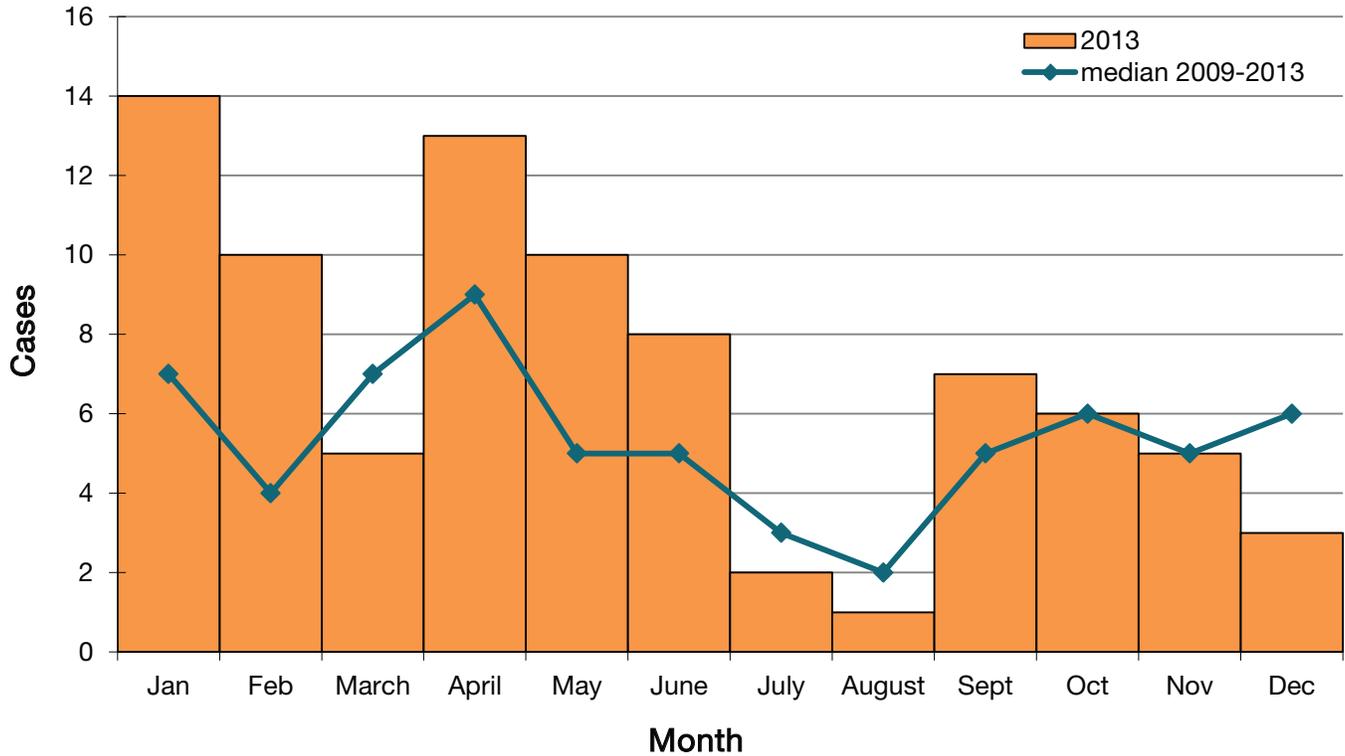
in 2013. With the decline in invasive Hib disease in children, there has been increased recognition of nonserotype b and nontypeable cases in persons >5 years of age, especially among those >65 years of age. In 2013, 68% of cases were nontypeable, 17% were identified as serotype f, 8% serotype a and the remaining cases were other serotypes. The burden of IHiD in 2013 was highest (12.3/100,000 persons) among those >80 years of age, followed by those 60–69 years of age (5.5/100,000 persons). *Haemophilus influenzae* is treated with antibiotics. In 2013, the top two clinical syndromes of invasive IHiD reported in Oregon were bacteremia (55%) and pneumonia (43%). Ninety-four percent of cases were hospitalized. There were 11 deaths related to IHiD infection.

Peak incidence tends to occur in late winter and early spring.

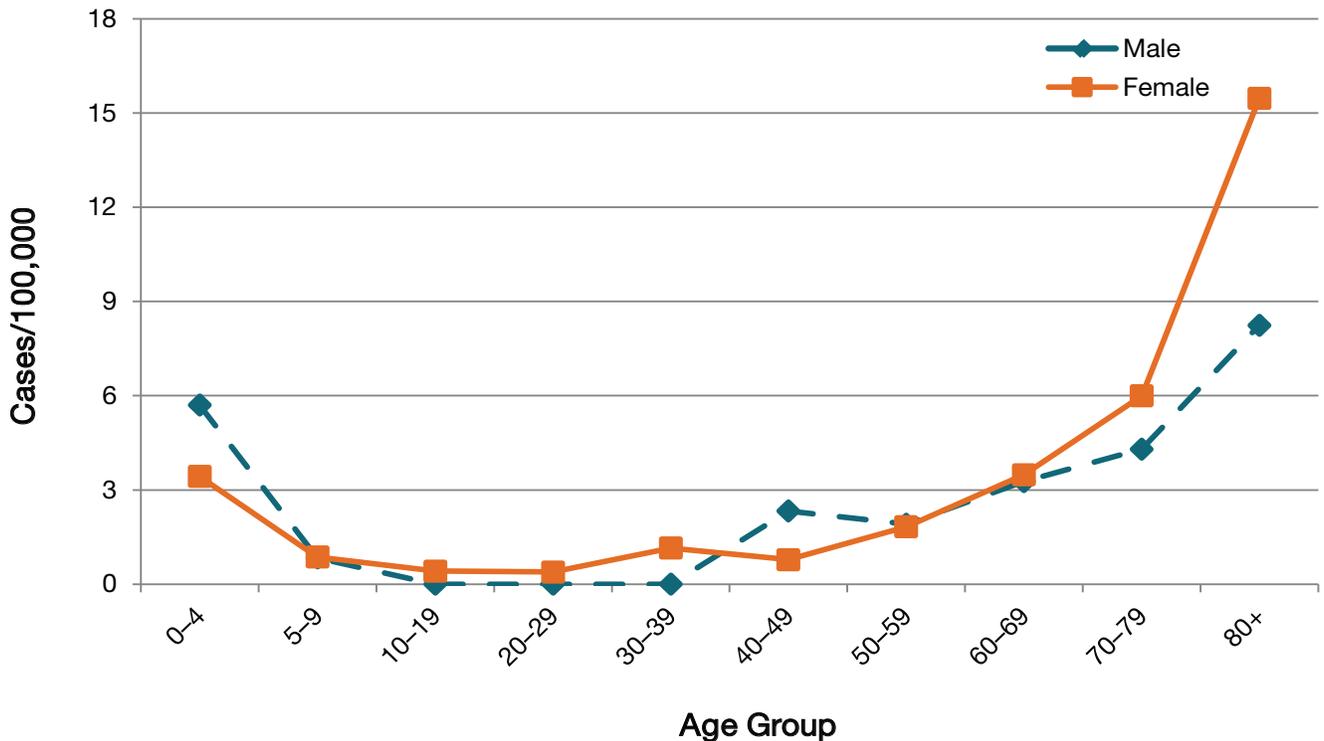
H. influenzae infection by year: Oregon, 1988–2013



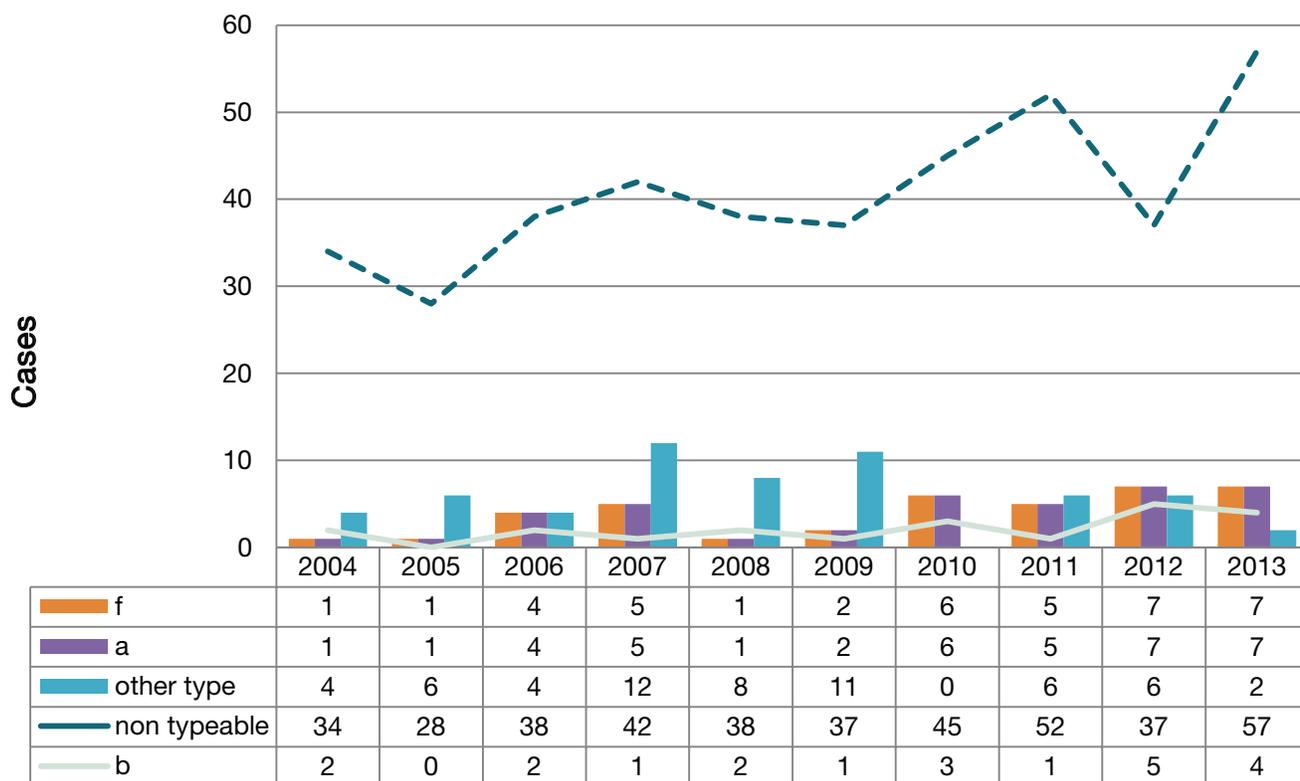
H. influenzae infection by onset month: Oregon, 2013



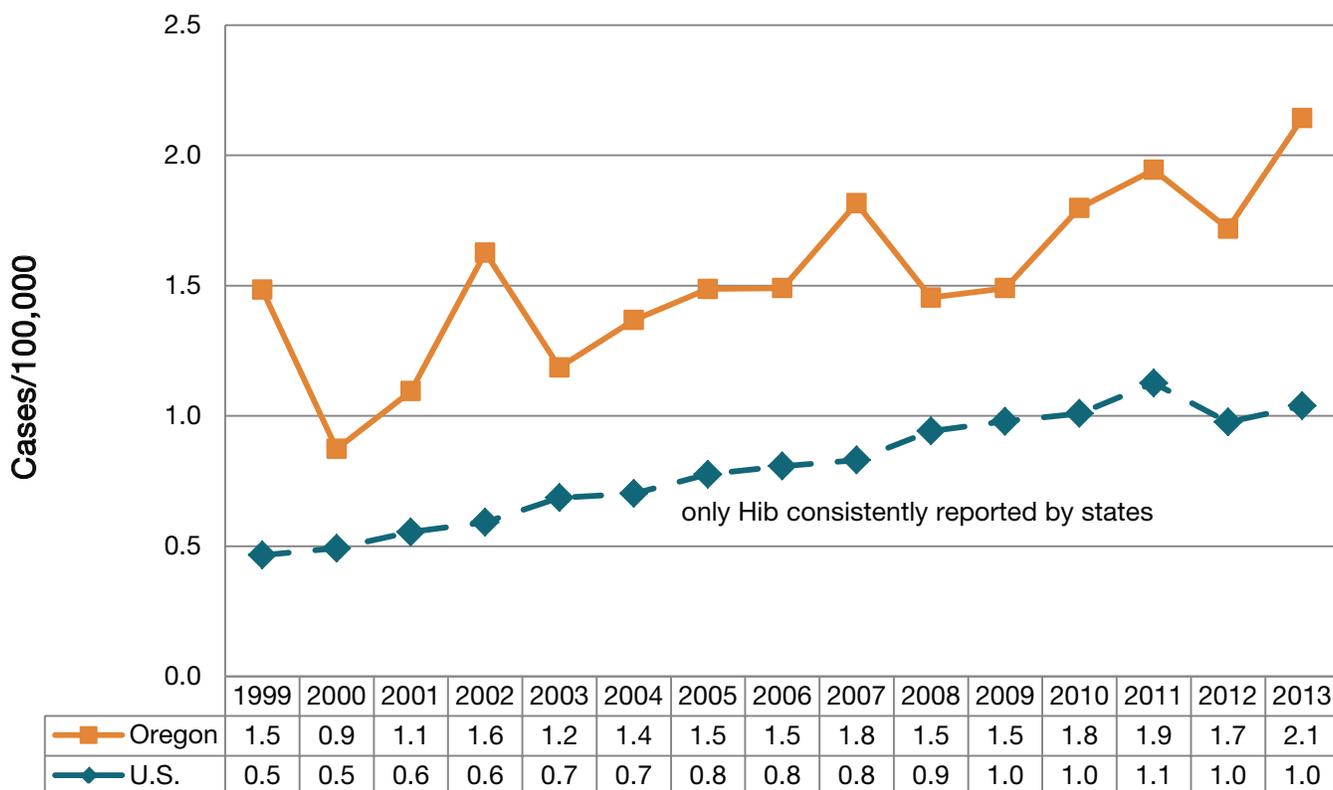
Incidence of *H. influenzae* infection by age and sex: Oregon, 2013



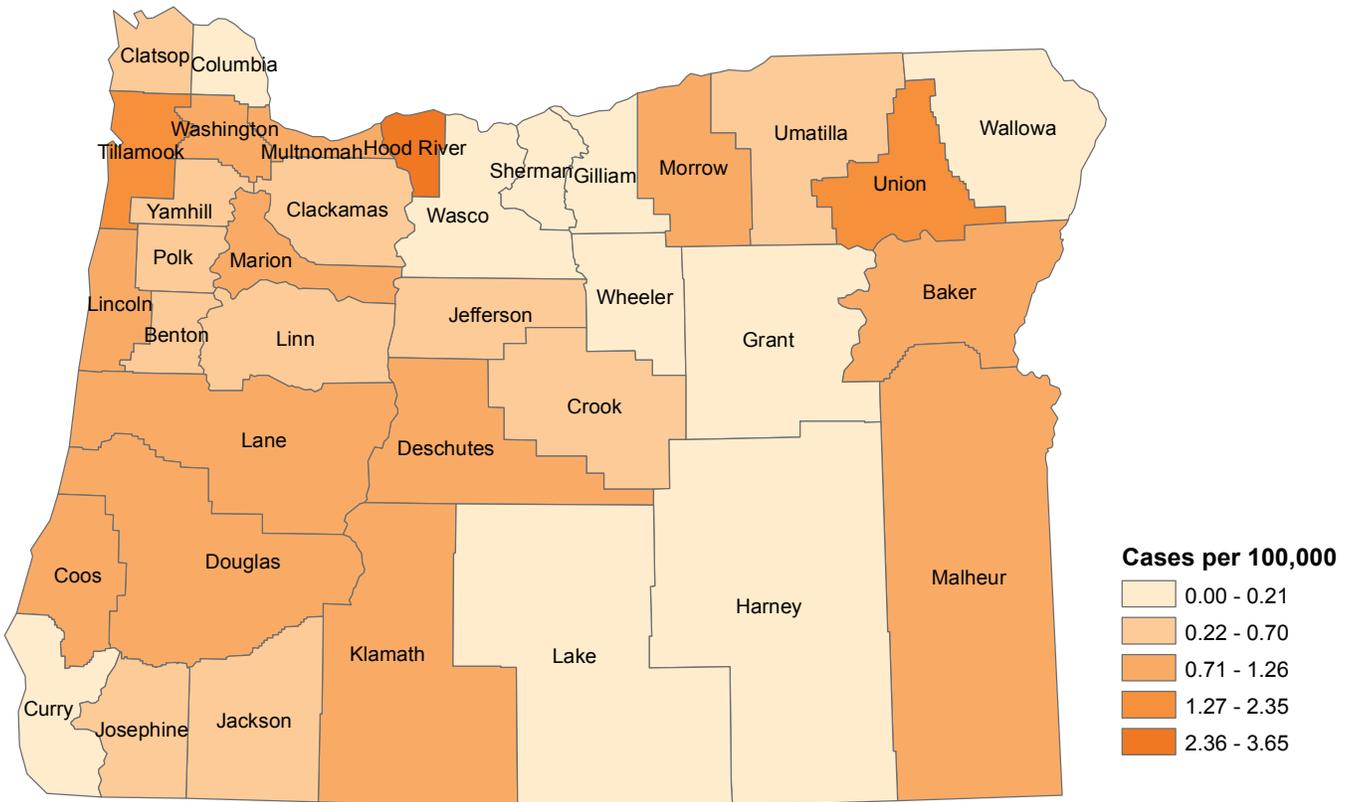
H. influenzae infection by year and serotype: Oregon, 2004–2013



Incidence of H. influenzae infection: Oregon vs. nationwide, 1999–2013



Incidence of *H. influenzae* infection by county of residence: Oregon, 2004–2013



Prevention

- Vaccinate all children against Hib at 2, 4, 6, and 12–15 months of age.
- Cover your cough and wash your hands.
- Close contacts of Hib cases can be treated prophylactically to prevent infection.

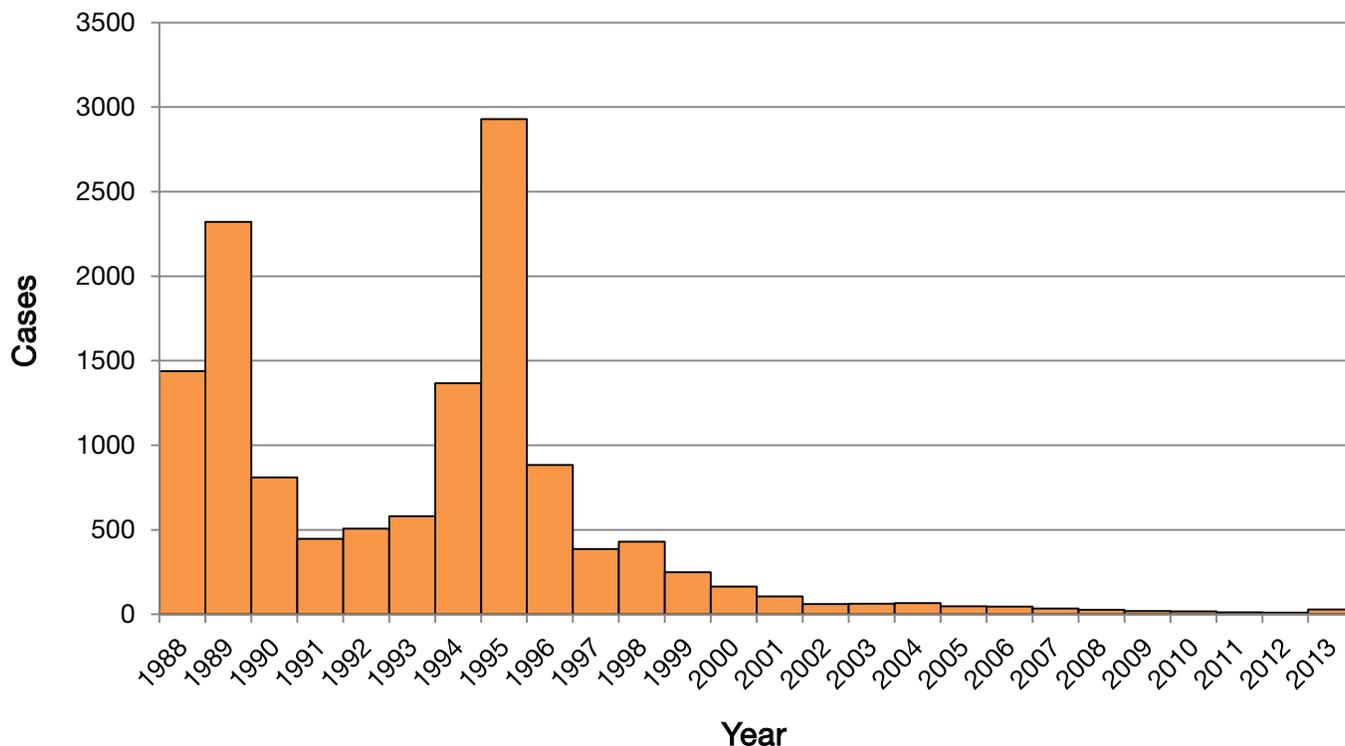
Acute hepatitis A

Hepatitis A is a liver disease caused by the hepatitis A virus, which infects humans via fecal-oral transmission. Hepatitis A can occur in situations ranging from isolated cases of disease to statewide outbreaks. However, since the licensure of the hepatitis A vaccine in 1995–1996, rates of infection have declined nationally as well as in Oregon, which had been one of the higher-incidence states. Most cases in Oregon are “sporadic” and occur mainly in persons who travel outside the United States. Oregon has seen small clusters of hepatitis A infections among injection drug users and jail inmates. There were no outbreaks of hepatitis A in Oregon

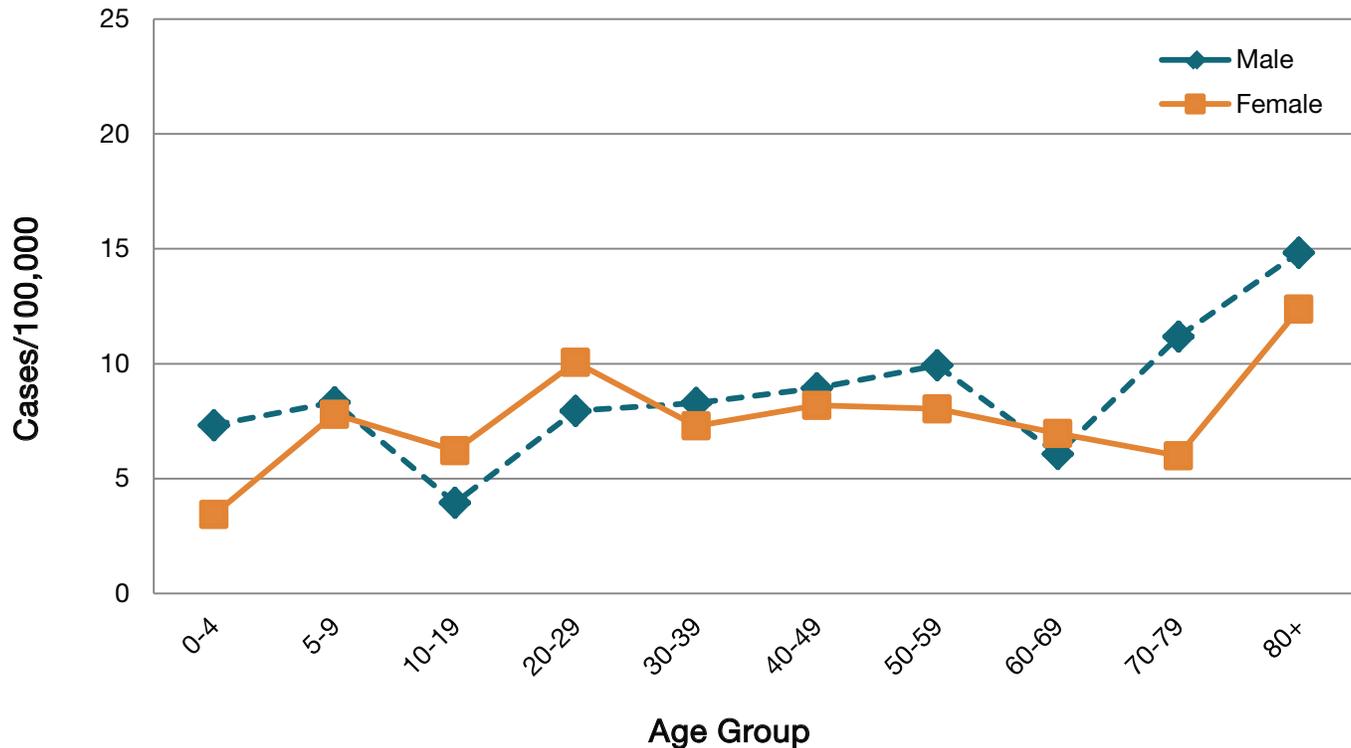
in 2013. The last outbreak of hepatitis A in Oregon occurred in 2006.

In 2013, Oregon logged 29 cases of acute hepatitis A — more than three times the number of cases reported in the previous year. Eight of the 29 cases were acquired by venturing outside of Oregon or from household members with foreign travel, often to countries with high rates of hepatitis A, such as Mexico. Seven cases had no identifiable risk for factor hepatitis A. Seventy percent of cases were >40 years of age.

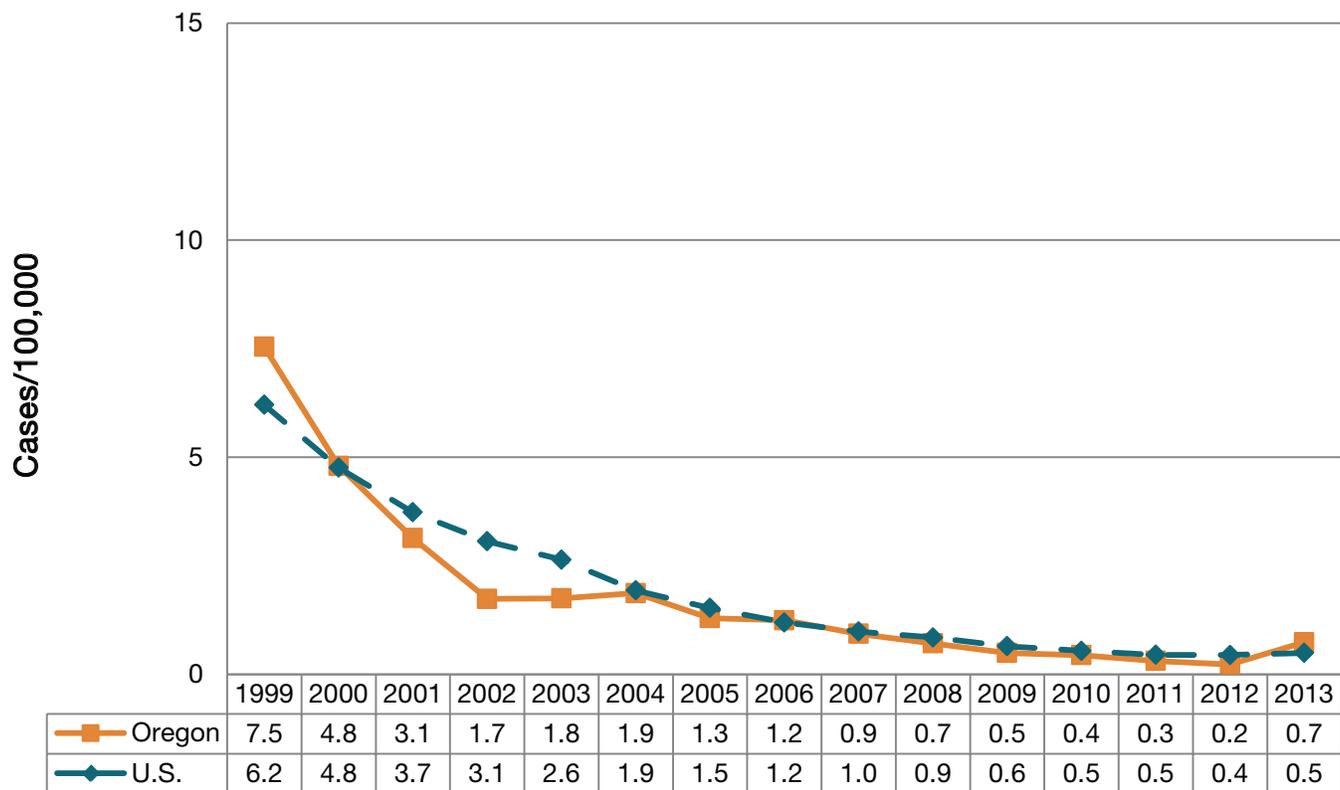
Hepatitis A by year: Oregon, 1988–2013



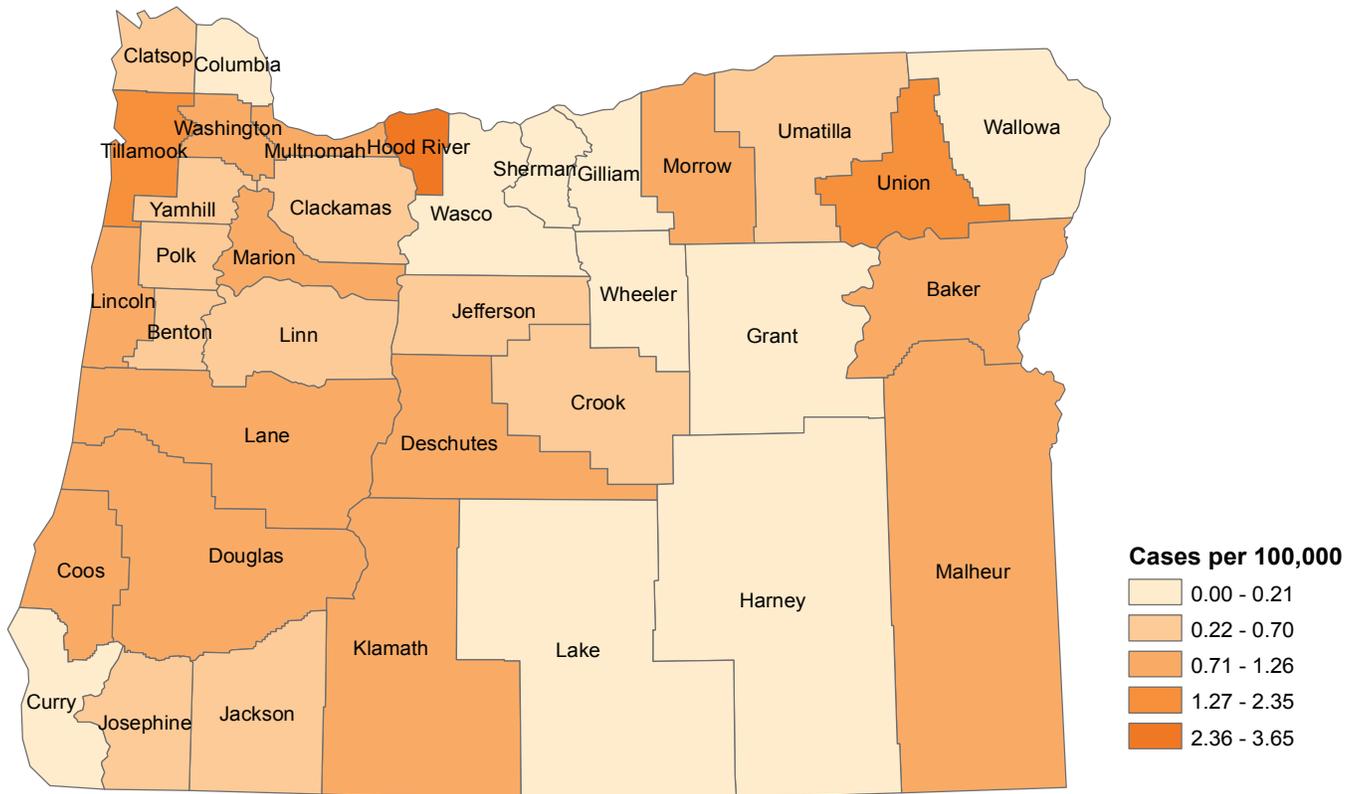
Incidence of hepatitis A by age and sex: Oregon, 2004–2013



Incidence of hepatitis A: Oregon vs. nationwide, 1999–2013



Incidence of hepatitis A by county of residence: Oregon, 2004–2013



Prevention

- Vaccinate children >1 year of age against hepatitis A.
- Wash hands with soap and warm water carefully and frequently, especially after going to the bathroom, after changing diapers, and before preparing food or beverages.
- Supervise hand washing of toddlers and small children after they use the toilet.
- Do not work or attend daycare, serve or prepare food, or work in healthcare while ill with diarrhea.
- Provide post exposure prophylaxis to close contacts of acute hepatitis cases.

Acute hepatitis B

Hepatitis B is a vaccine-preventable viral disease of the liver that occurs when the virus of an infected person passes (through blood, semen or saliva) into the bloodstream of a non-immune person. Percutaneous or permucosal exposures take place when hypodermic needles are shared; when blood splashes into an eye; during sex; by biting; from lapses in hygiene involving glucometer and other fingerstick devices to test blood sugar levels; from breaches in infection control in health care settings; and when a baby is born whose mother is a hepatitis B carrier.

Acute hepatitis B virus (HBV) infection (diagnosed by the presence in serum of IgM antibody to the hepatitis B core antigen [IgM anti-HBc] or hepatitis surface antigen [HBsAg]) usually, but not always, causes jaundice. Some infections are mild, even asymptomatic, and may go undetected. Hepatitis B has been preventable by vaccination since 1982 and, to promote universal vaccination and hence protection, was added to the recommended childhood immunization schedule in 1992 with the series starting at birth.

Acute hepatitis B rates continue to decline in Oregon — a decline that started here after the hepatitis B vaccine was licensed in 1982.

Local health departments investigated and reported 34 acute cases in 2013. Seventy-nine percent of the cases were male. The

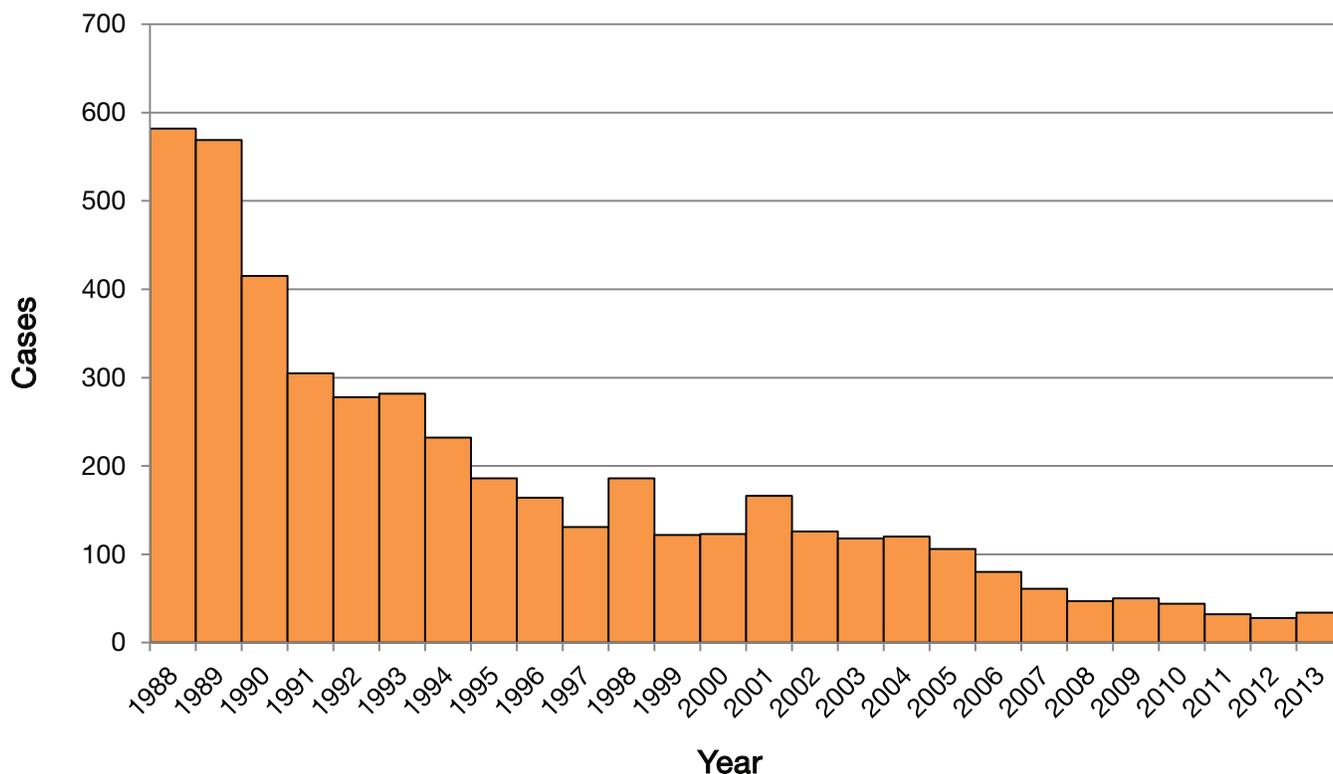
most commonly reported risk factors include injection drug use (IDU) and sexual risk factors (history of multiple sexual partners; men who have sex with men [MSM]). No risk factor was identified for 24% of cases. There were no outbreaks of hepatitis B in 2013.

HBV is not spread through food or water, sharing eating utensils, breastfeeding, hugging, kissing, hand holding, coughing, or sneezing.

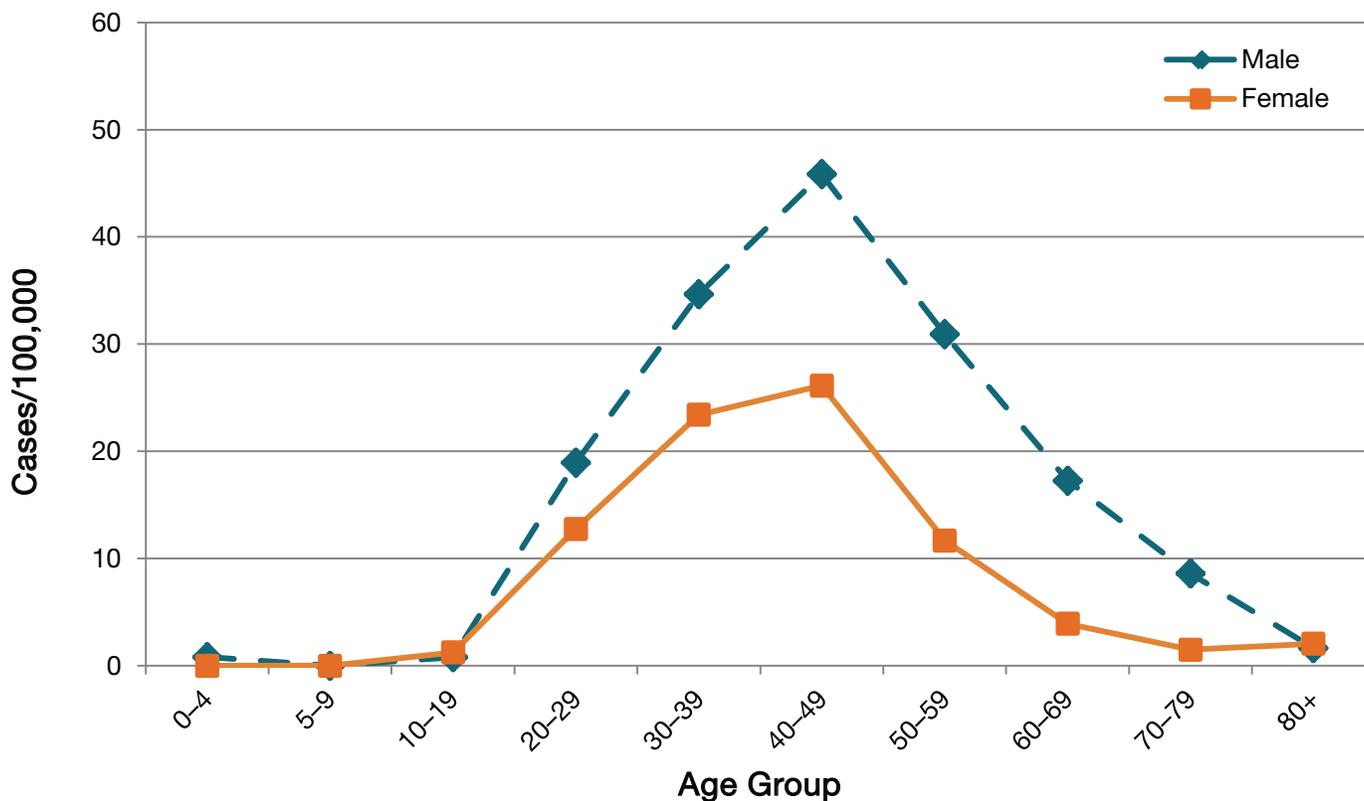
No cure is available for hepatitis B, so prevention is crucial. The best way to be protected from hepatitis B is to be vaccinated with hepatitis B vaccine. Vaccines can provide protection in 90% to 95% of healthy persons. The vaccine can be given safely to infants, children, and adults in three doses over a period of 6 months.

Nationwide, the successful integration of hepatitis B vaccine into the immunization schedule has contributed to a 96% decline in the incidence of acute hepatitis B in children and adolescents. Approximately 95% of new infections occur among adults and unvaccinated adults with behavioral risk factors or who are household contacts or sex partners of HBV-infected people. For this reason the Advisory Committee on Immunization Practices recommends that health care providers implement standing orders to identify adults at risk and to administer hepatitis B vaccine as part of routine practice.

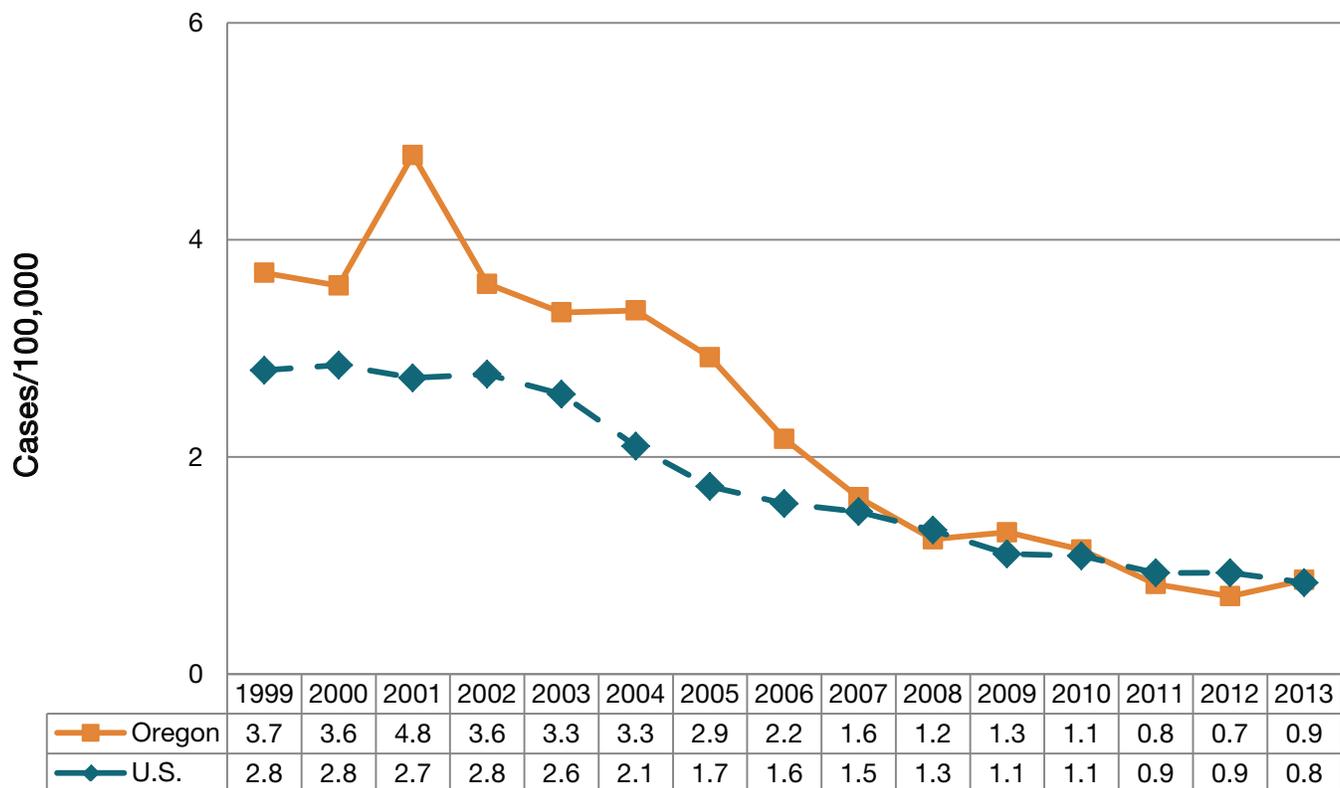
Acute hepatitis B by year: Oregon, 1988–2013



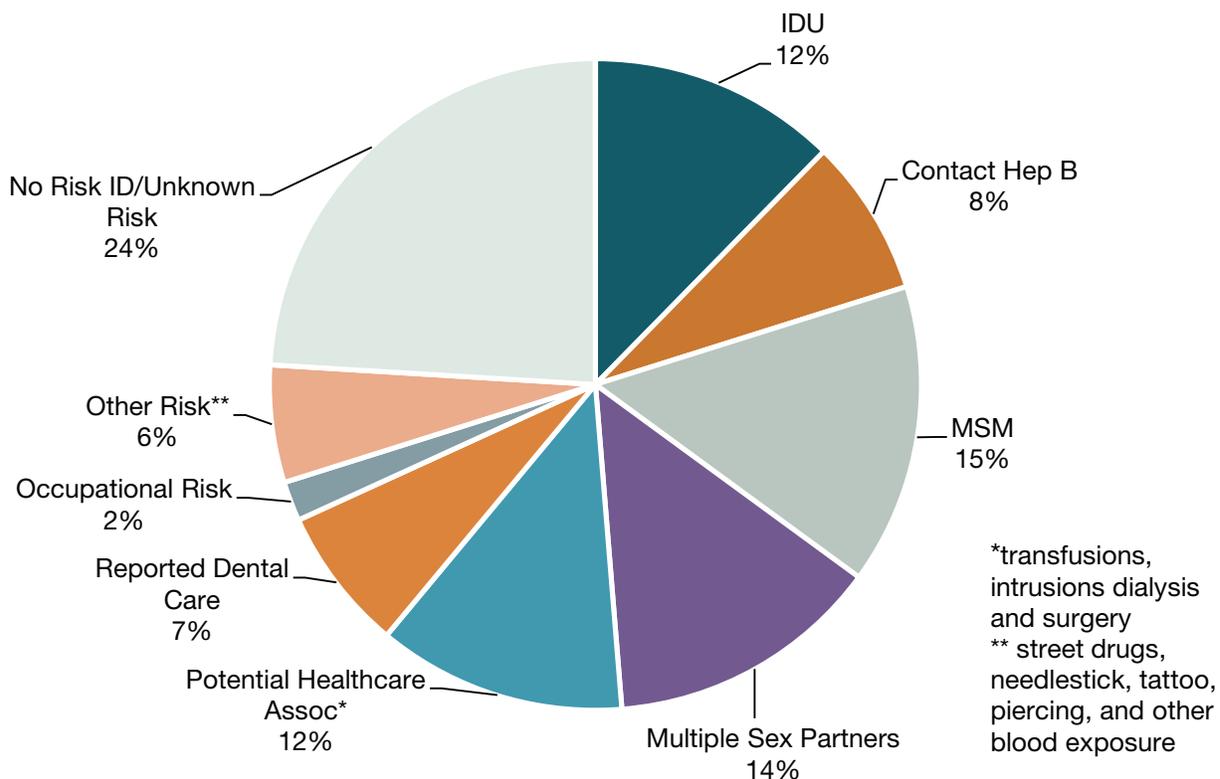
Incidence of acute hepatitis B by age and sex: Oregon, 2004–2013



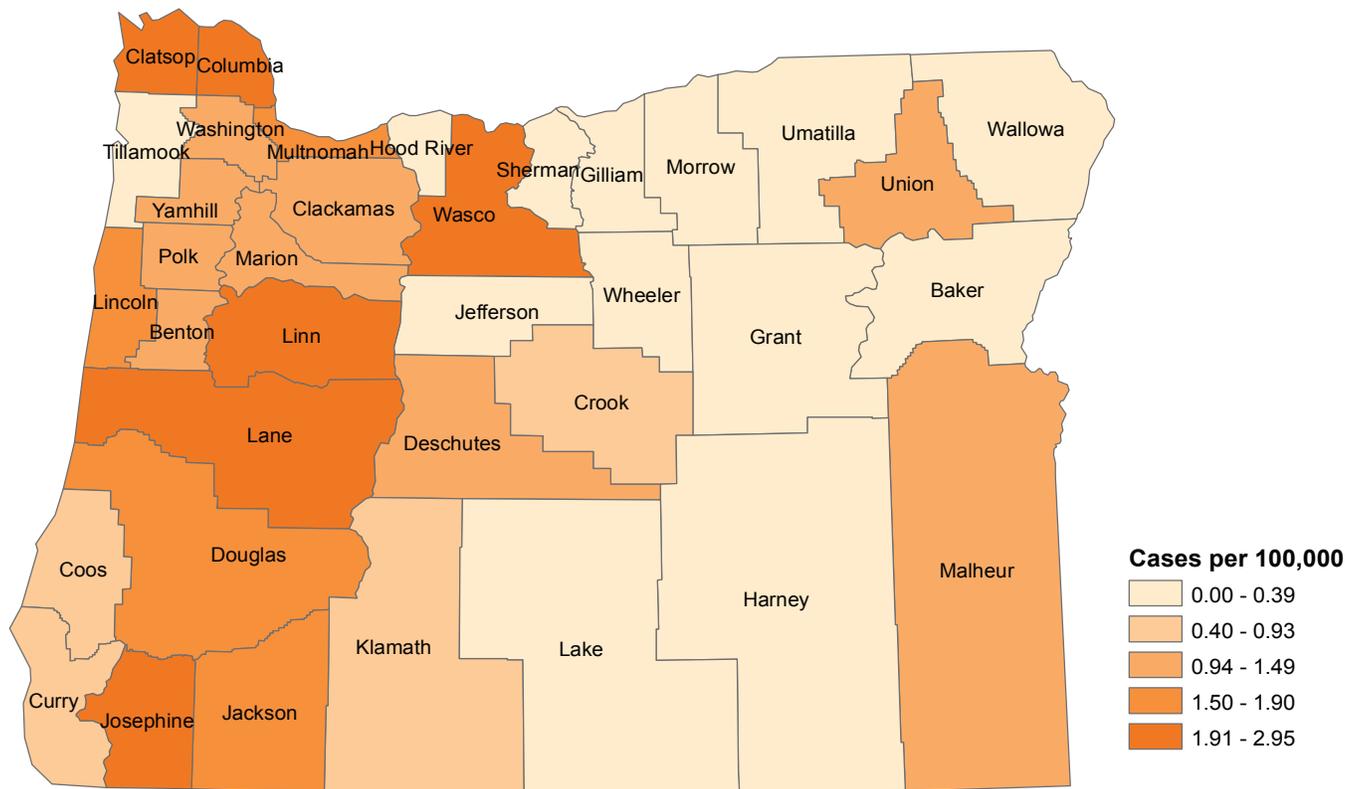
Incidence of acute hepatitis B: Oregon vs. nationwide, 1999–2013



Reported risk factors for acute hepatitis B among interviewed cases, Oregon, 2013



Incidence of acute hepatitis B by county of residence: Oregon, 2004–2013



Prevention

- Get vaccinated.
- Persons who are sexually active can:
 - Limit the number of partners.
 - Use condoms properly from start to finish when having sex.
- Persons who inject drugs can:
 - Avoid sharing needles or works with others.
 - Use only clean needles and works.
 - Purchase new, sterile needles from pharmacies.
- Use universal precautions and best practices to prevent needle stick injuries
- Vaccinate all newborns against hepatitis B.
- Screen all pregnant women for hepatitis B. Infants born to hepatitis B-positive mothers should receive hepatitis immunoglobulin along with vaccine at birth.
- Chronic carriers should not share personal care items such as razors or toothbrushes.

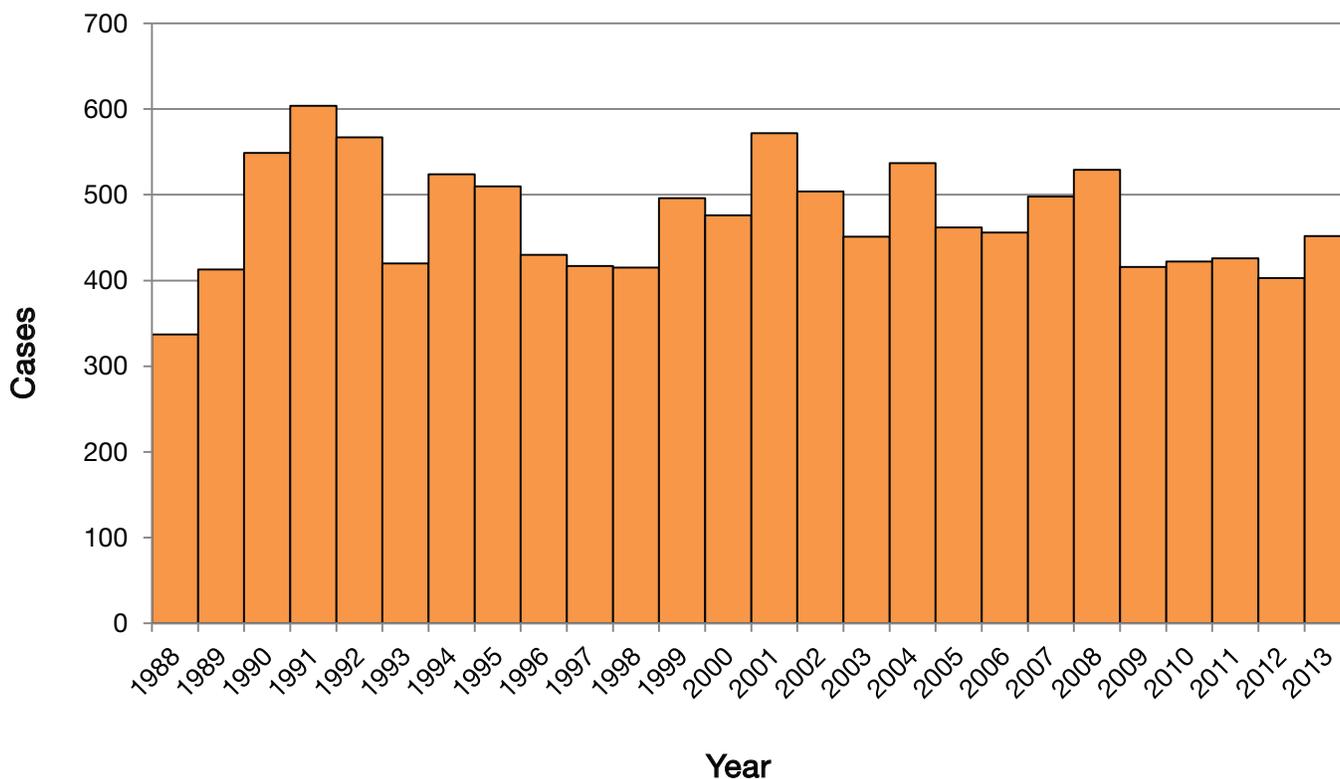
Chronic hepatitis B

Persons with chronic hepatitis B are known as “chronic carriers” — a state of infection defined by the persistence of hepatitis B surface antigen (HBsAg) in the blood for more than six months. The likelihood of becoming a chronic carrier varies by age at infection. Fewer than 6% of acutely infected adults in the U.S. become carriers, compared to 25% (with HBeAg-negative moms) to 90% (with HBeAg-positive moms) of children infected in early childhood or during birth. Perinatal infection can be prevented by prompt administration of hepatitis B immune globulin and initiation of the three-dose hepatitis B vaccination series. This perinatal intervention is widely practiced in the U.S. — all states have federal funding for perinatal hepatitis B prevention programs — but not in other parts of the world, particularly Asia and sub-Saharan Africa, where the prevalence of chronic hepatitis B is higher to begin with. Chronic carriers are at greater risk of developing life-threatening diseases (e.g., chronic active hepatitis, cirrhosis or liver cancer) decades later. Carriers will continue to transmit hepatitis B until vaccine-induced immunity is nearly universal.

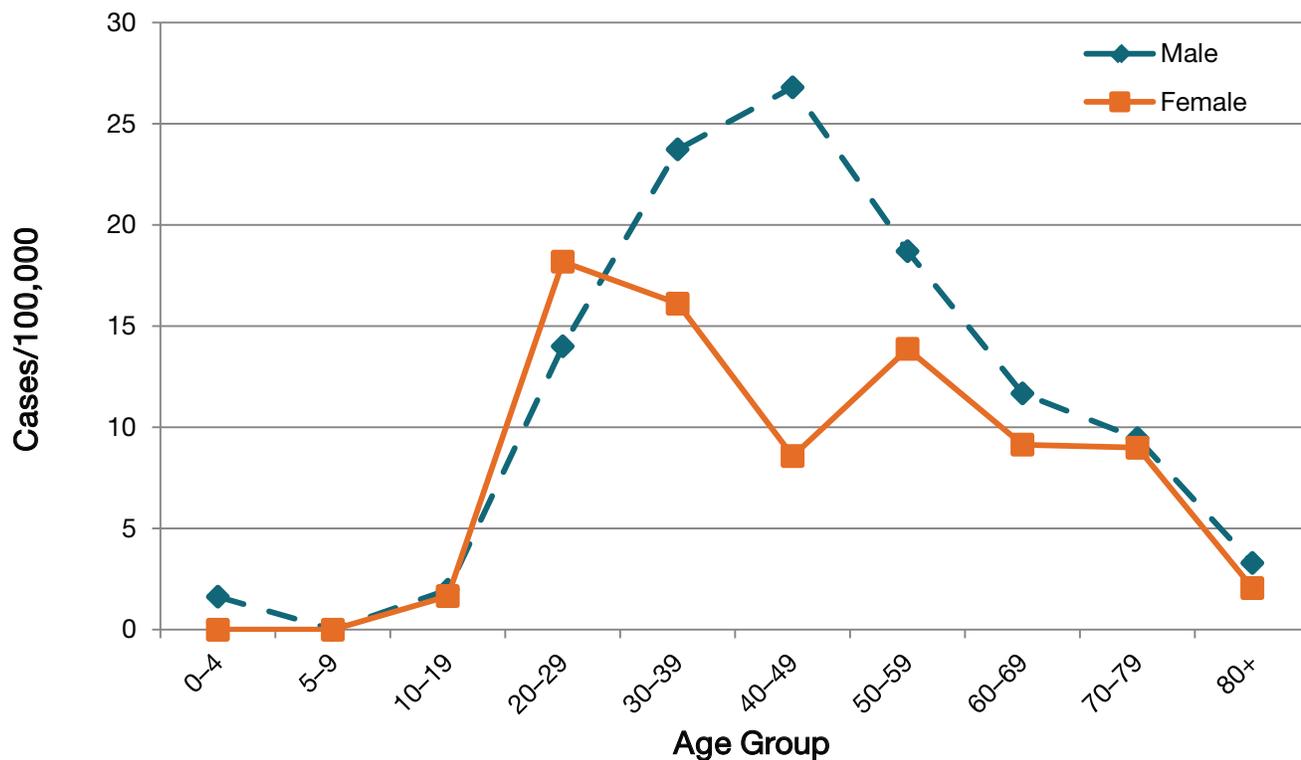
Recommendations and strategies to prevent new cases include the following: routinely vaccinating all infants at birth, screening all pregnant women for hepatitis B, administering hepatitis B immune globulin (HBIG) in addition to hepatitis B vaccine to infants born to HBsAg-positive mothers, and ensuring that all infants complete the hepatitis B vaccine series. When given within 24 hours of birth, HBIG and vaccine are 85%–95% effective in preventing hepatitis B disease in children born to HBV-infected mothers.

In 2013, there were 452 newly reported carriers in Oregon; 42% of these were women. Women tend to be diagnosed earlier than men, perhaps due to prenatal screening. In 2013, two children <5 years of age were reported as chronic carriers. Both children were born in China, a country of high prevalence. Chronic carriers are not reportable in many states, so a table comparing Oregon to the rest of the U.S. is not provided.

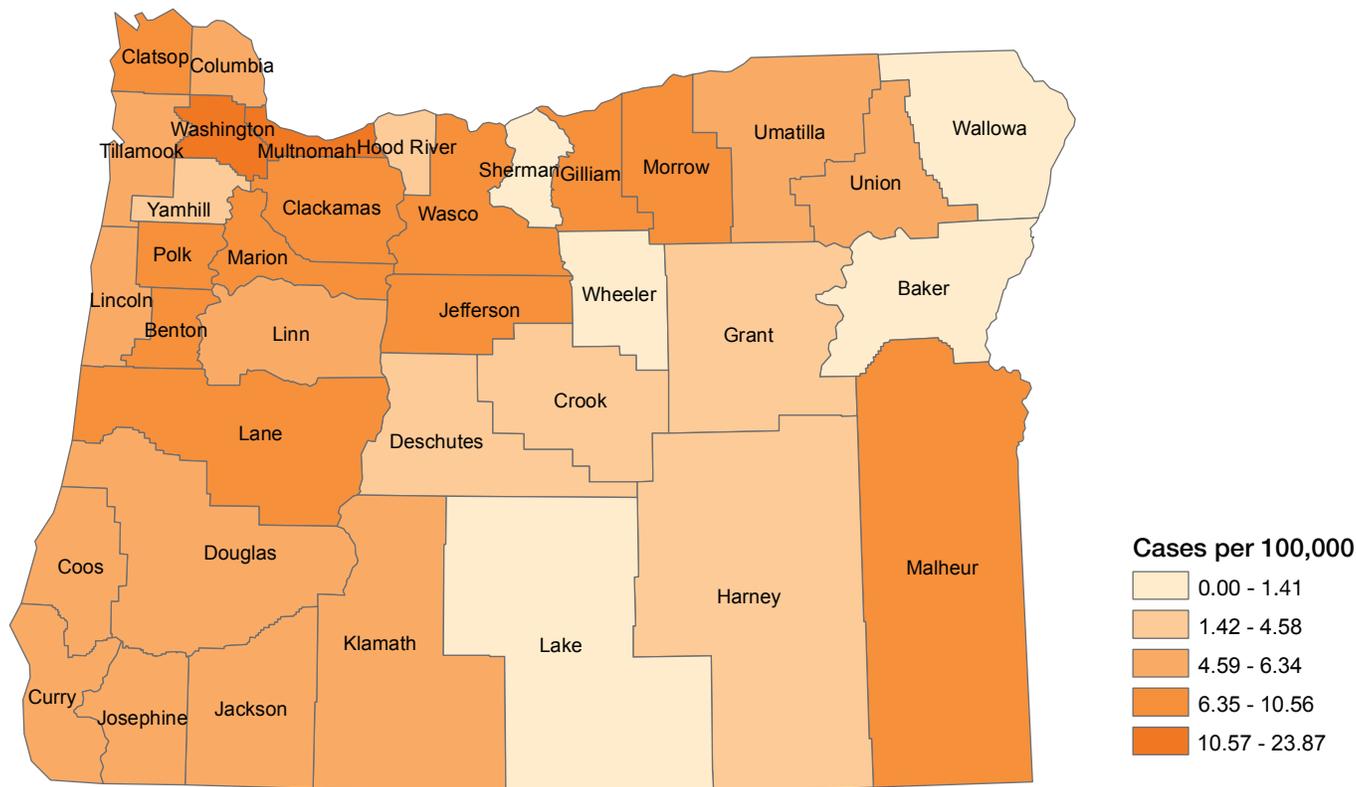
Newly reported chronic hepatitis B by year: Oregon, 1988–2013



Incidence of chronic hepatitis B by age and sex Oregon, 2013



Incidence of newly reported chronic hepatitis B by county of residence: Oregon, 2004–2013



Prevention

- Get vaccinated
- Persons who are sexually active can:
 - Limit the number of partners.
 - Use condoms properly from start to finish when having sex.
- Persons who inject drugs can:
 - Avoid sharing needles or works with others.
 - Use only clean needles and works.
 - Purchase new sterile needles from pharmacies.
- Use universal precautions and best practices to prevent needle stick injuries.
- Vaccinate all newborns against hepatitis B.
- Screen all pregnant women for hepatitis B. Infants born to hepatitis B-positive mothers should receive hepatitis immunoglobulin along with vaccine at birth.
- Chronic carriers should not share personal care items such as razors or toothbrushes.
- Investigation of cases, including the identification of unvaccinated contacts to encourage vaccination.

Hepatitis C

Hepatitis C virus (HCV) is a bloodborne infection that may cause both acute and chronic hepatitis C. The most common signs and symptoms of acute hepatitis C include jaundice, fatigue, dark urine, abdominal pain, loss of appetite and nausea. Acute hepatitis C cases are underreported because 80% are asymptomatic and laboratories cannot distinguish between acute and chronic HCV infection. Chronic hepatitis C can lead to liver damage and sometimes death due to cirrhosis and liver cancer. In the U.S., an estimated 2.7–3.9 million people are infected with HCV. Chronic liver disease develops in up to 70% of chronically infected persons and hepatitis C is the leading indication for liver transplant. Deaths from hepatitis C-related chronic liver disease have been increasing since 1999; in 2007, more than 15,000 people in the U.S. died from it. Mirroring national trends, deaths from HCV in Oregon have risen steadily over the last decade, averaging over 400 deaths annually during the last five years. The mortality rate from HCV is more than four times higher than mortality from

HIV in Oregon. HCV mortality is also higher in Oregon than in the US as a whole; in 2010, the most recent year for which national data are available, the age-adjusted Oregon mortality rate was 8.6 deaths per 100,000 persons, compared to the national mortality rate of 4.7 deaths per 100,000.

There is no vaccine for hepatitis C.

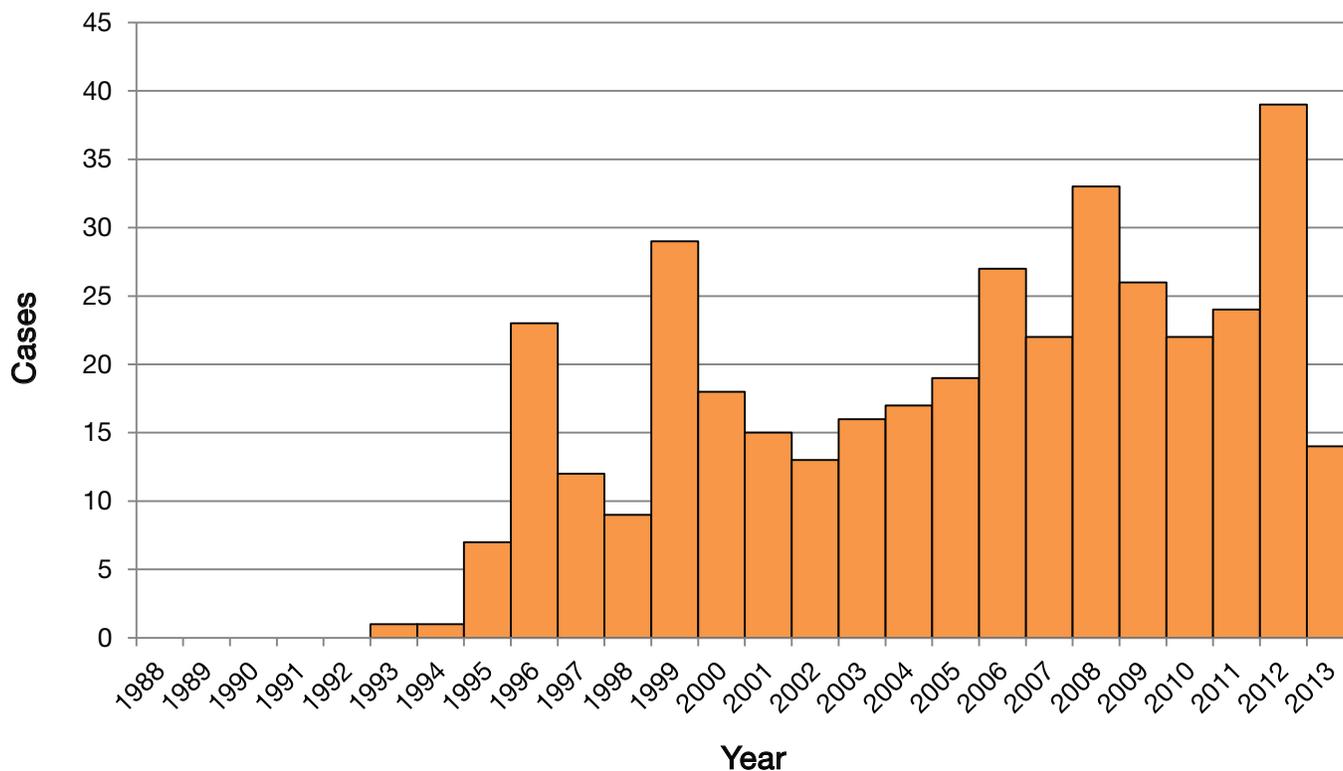
Hepatitis C is spread from one person to another primarily by percutaneous exposure to human blood; most infections are due to injection of illegal drugs. Less commonly, the virus can also be transmitted through sexual contact and from infected mothers to their infants at the time of birth. The risk for perinatal HCV transmission is approximately 4%. If the mother is co-infected with HIV, the risk for perinatal infection increases to approximately 19%. Since the adoption of routine blood donor screening in 1992, HCV is transmitted less than one time for every 2 million units of blood transfused. Cases can occur in health care settings, most commonly related to improper reuse of syringes or multidose vials.

Acute hepatitis C

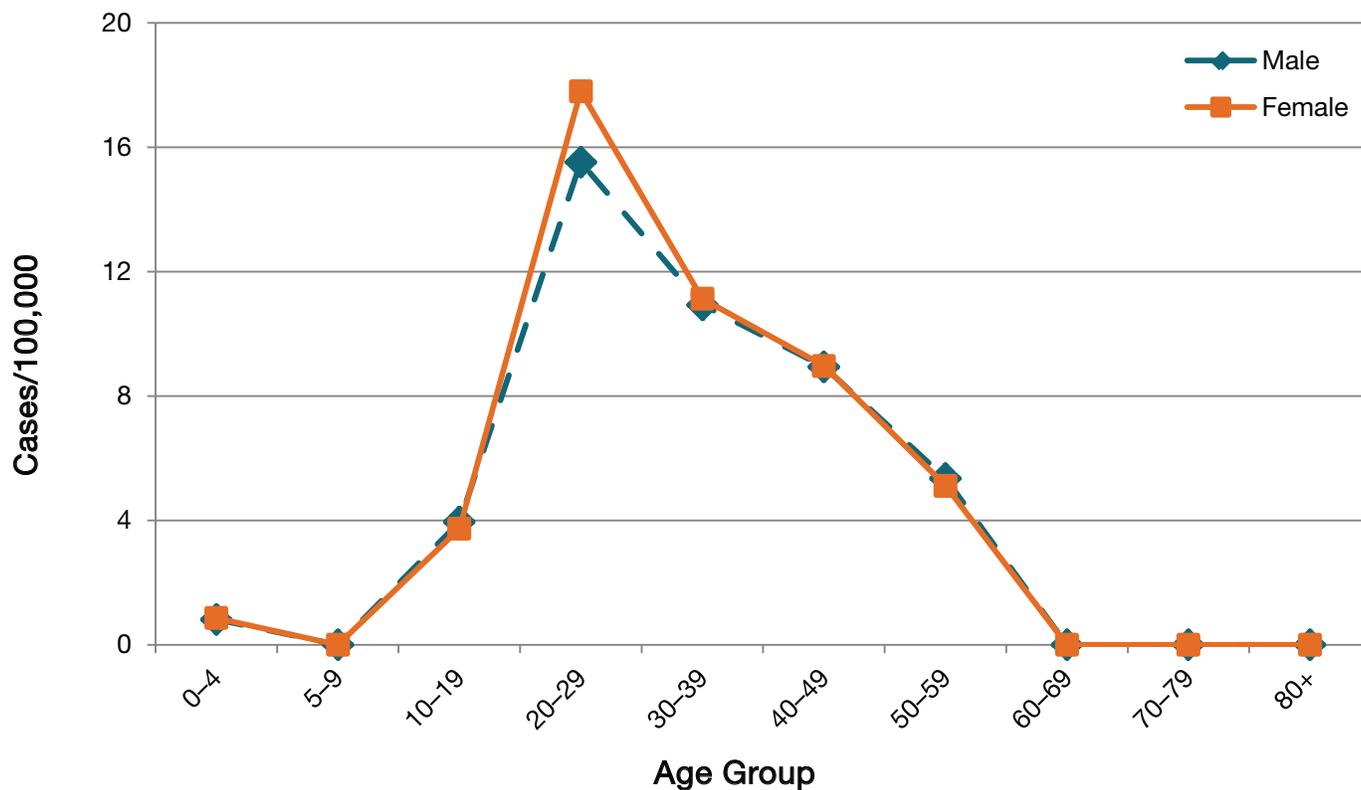
On average during 2001–2013, there were 22 acute hepatitis C cases reported annually in Oregon. In 2013, 14 cases were reported; a sharp decline from the 39 cases reported

in 2012. Eleven (78%) of the cases were <40 years of age and 6 (43%) were female. Injection drug use remains the predominant risk factor reported by cases (71%). There were no health care-associated acute hepatitis C cases in 2013.

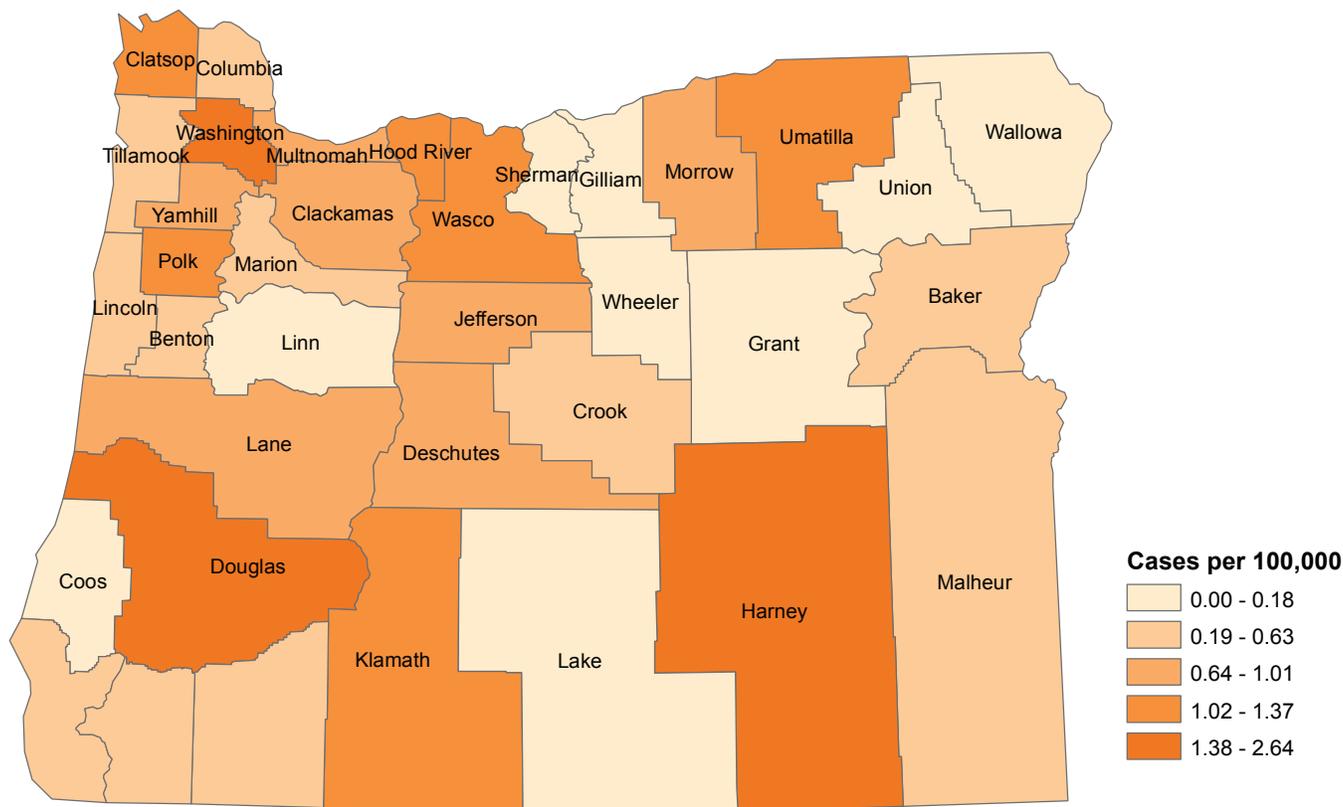
Acute hepatitis C by year: Oregon, 1988–2013



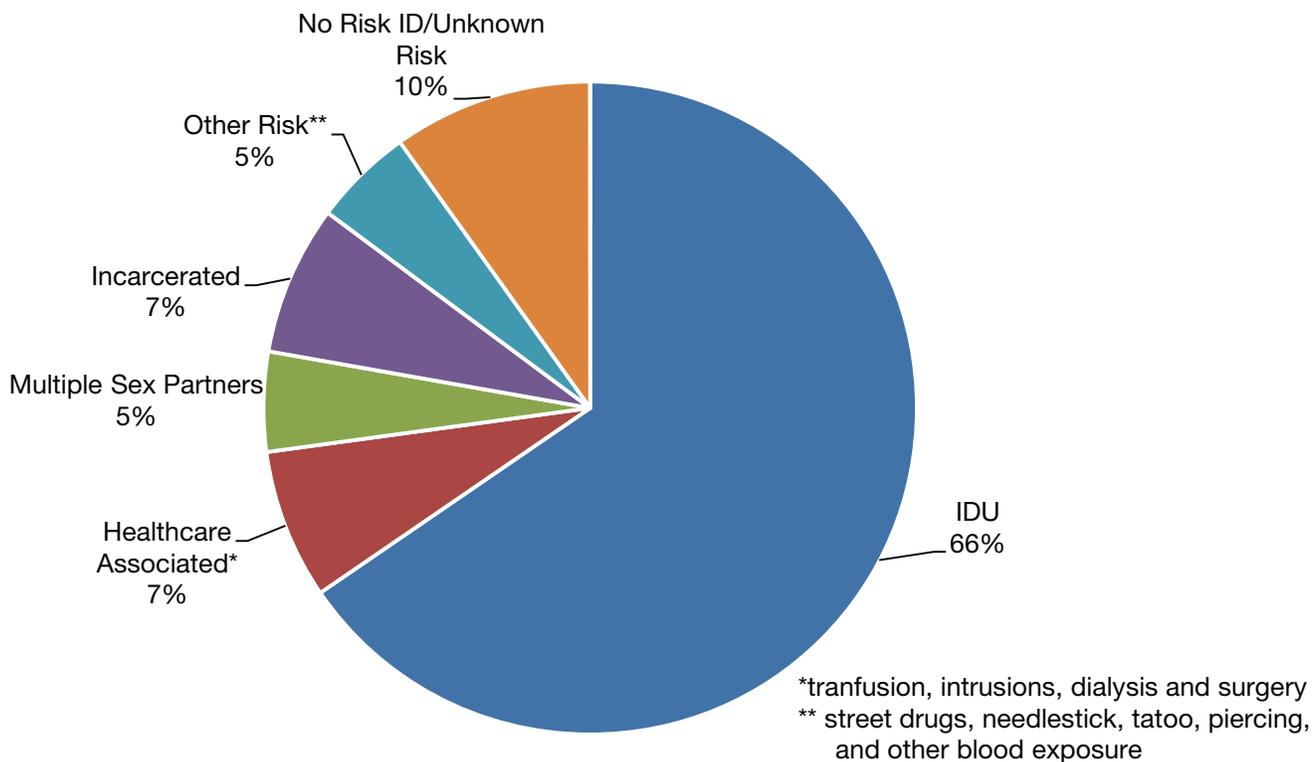
Acute hepatitis C by age and sex: Oregon, 2004–2013



Incidence of acute hepatitis C by county of residence: Oregon, 2004–2013



Hepatitis C-Acute Risk Factors: Oregon, 2013



Prevention

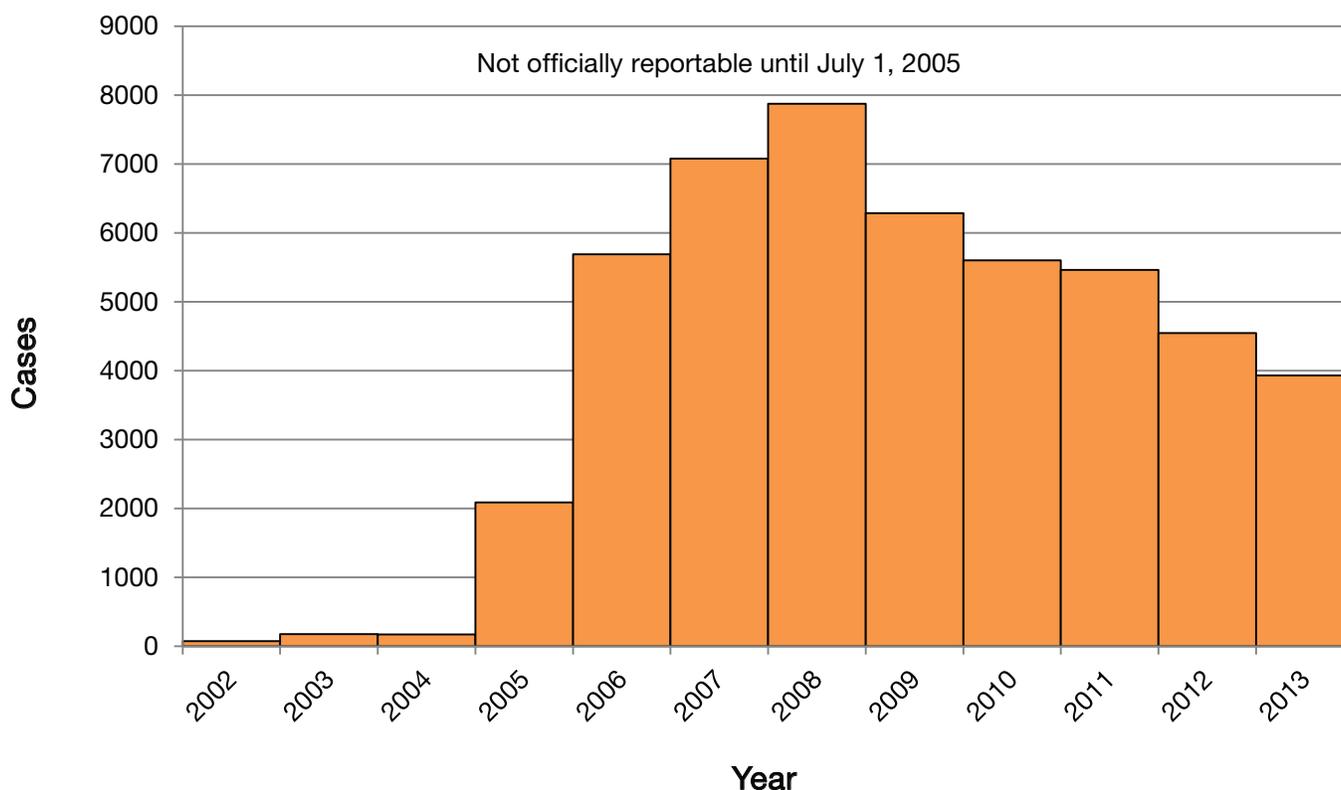
- Health care workers: use universal precautions and best practices to prevent needle stick injuries.
- Persons who inject drugs can:
 - Avoid sharing needles or works with others.
 - Use only clean needles and works.
 - Purchase new sterile needles from pharmacies.

Chronic hepatitis C

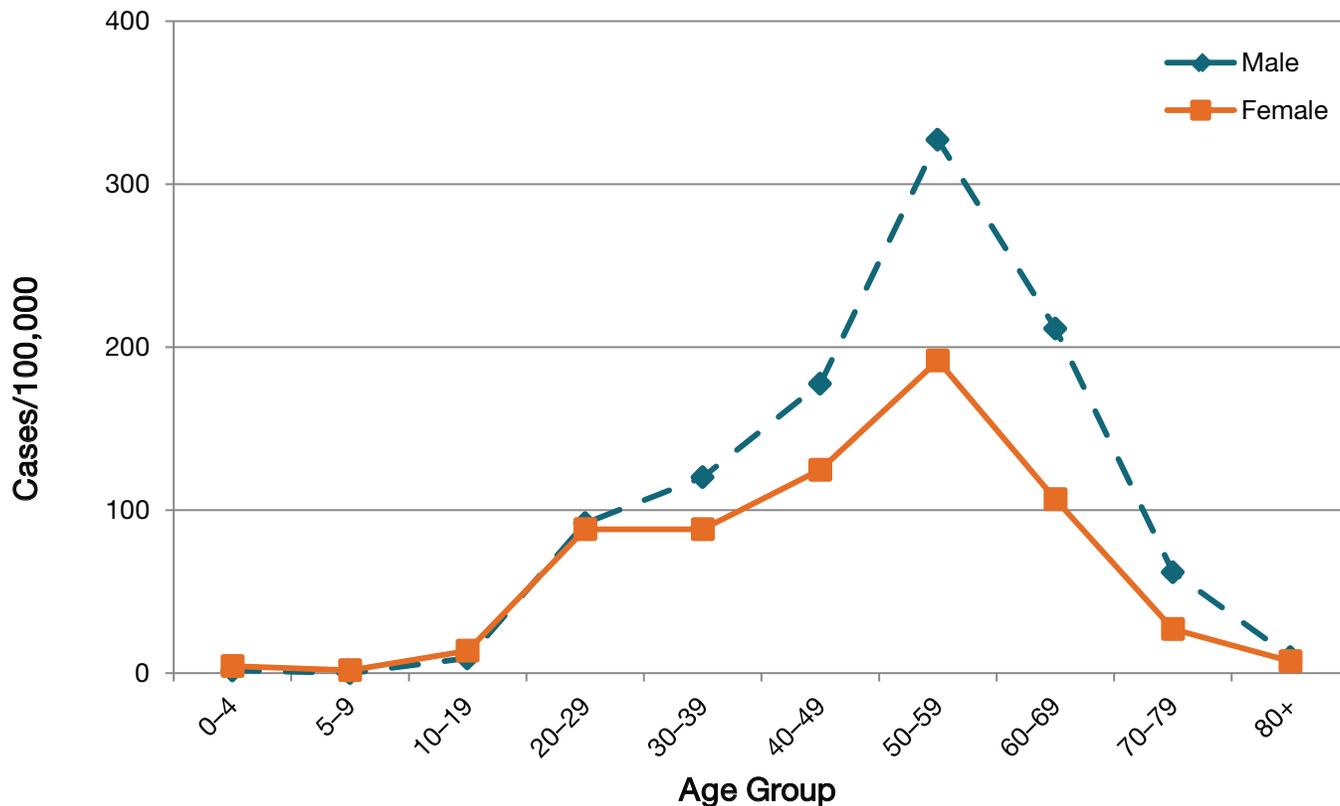
Chronic hepatitis C became reportable in Oregon as of July 1, 2005. In 2013, 4,083 new chronic hepatitis C cases were reported, down slightly from 4,574 reported in 2012. These numbers are likely an underestimate of the true incidence because most infections are asymptomatic and therefore not diagnosed

or reported to public health. Infection in males (127/100,000) is more common than in females (63/100,000). The highest prevalence of HCV infection is among persons born between 1945 and 1965. CDC estimates this age group comprises 75% of chronic hepatitis C cases in the U.S.; among 2013 Oregon cases, 57% belong to this age group.

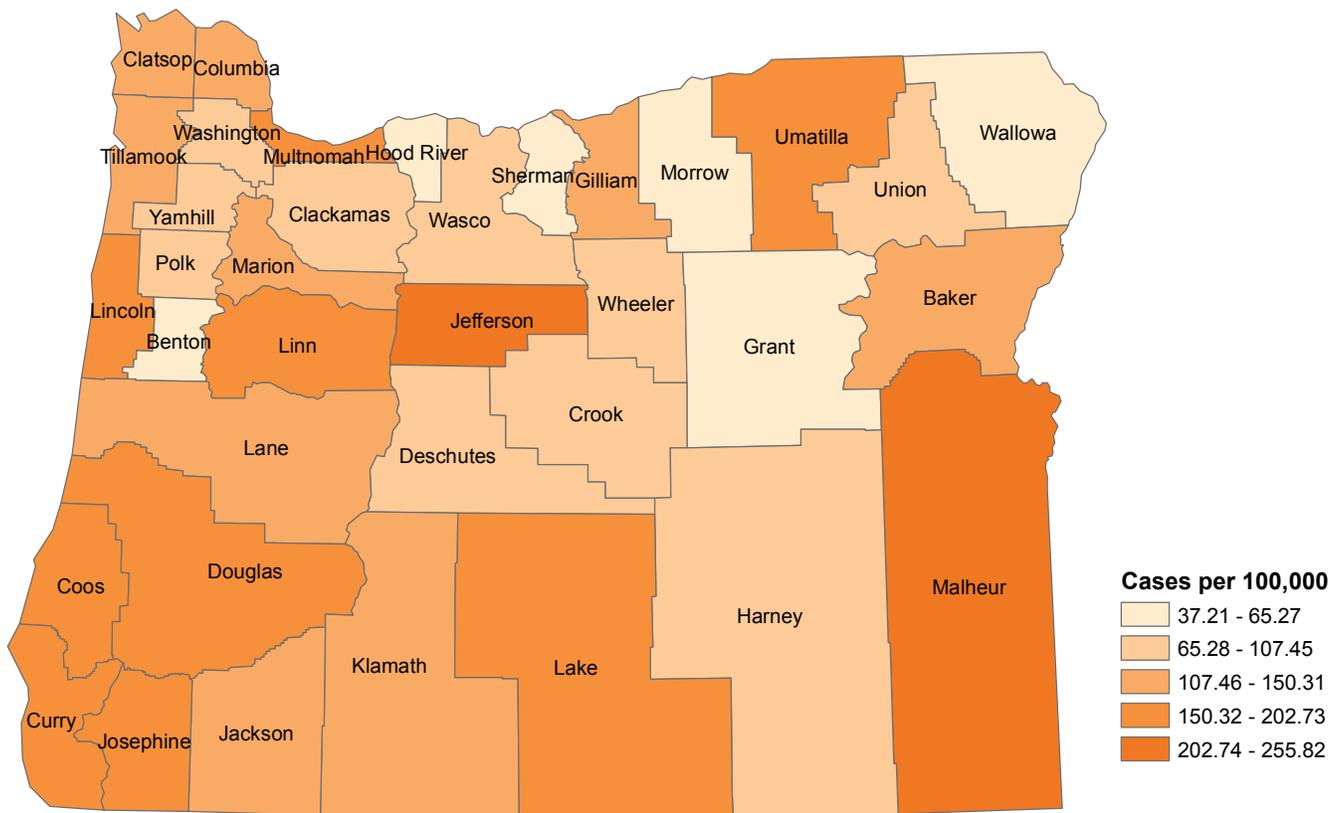
Newly reported chronic hepatitis C by year: Oregon, 2002–2013



Chronic hepatitis C by age and sex: Oregon, 2013



Incidence of chronic hepatitis C by county of residence: Oregon, 2009–2013



Prevention

- Health care workers: use universal precautions and best practices to prevent needle stick injuries.
- Persons who inject drugs can:
 - Avoid sharing needles or works with others.
 - Use only clean needles and works.
 - Purchase new sterile needles from pharmacies.

HIV infection

During 2013, the number of reported newly-diagnosed infections among Oregon residents (215) fell just under 20% from 2012 (263). However, HIV infection remains an important public health problem in Oregon. From 1981 through 2013, 9,430 Oregonians had reported cases of HIV infection; 42% of those died by the end of 2013. Since 1997, an average of 271 new cases were reported each year among Oregon residents. The number of Oregon cases* of people living with HIV has continued to increase each year, nearly doubling from 2,681 in 1997 to 5,525 in 2013.

Recent diagnoses (2009–2013)

About half (49.2%) of those diagnosed with HIV during 2009–2013 were Multnomah County residents at the time of diagnosis. During this period, statewide, men were about eight times more likely than women to be diagnosed with HIV. The average age at diagnosis was 38 years.

Age at HIV diagnosis in Oregon (2009–2013)

The rate of new diagnoses during 2009–2013 was 3.3 times higher among blacks and was 1.7 times higher than for white,

non-Hispanics; other races and ethnicities accounted for roughly 5% of all diagnoses.

Among all reported cases in men, men who acknowledge sex with other men (MSM) accounted for 71% of cases diagnosed during 2009–2013 (762/1,071). Other presumptive transmission categories include men who use injection drugs (4%), MSM who also use injection drugs (10%), and men who likely or possibly[†] acquired their infection from heterosexual transmission (5%). About 10% of recent male diagnoses lacked sufficient information to assign a transmission category. Among female cases, injection drug users accounted for 22% of cases and women who likely or possibly[‡] acquired their infection through heterosexual transmission accounted for two-thirds (74%) of cases. The remainder included cases of maternal-fetal transmission and cases that lacked sufficient information for classification.

Oregonians living with HIV/AIDS

As of Dec. 31, 2013, 5,525 people who resided in Oregon at the time of HIV diagnosis were believed to be living. More than half of those resided in Multnomah County at the time of their diagnosis.

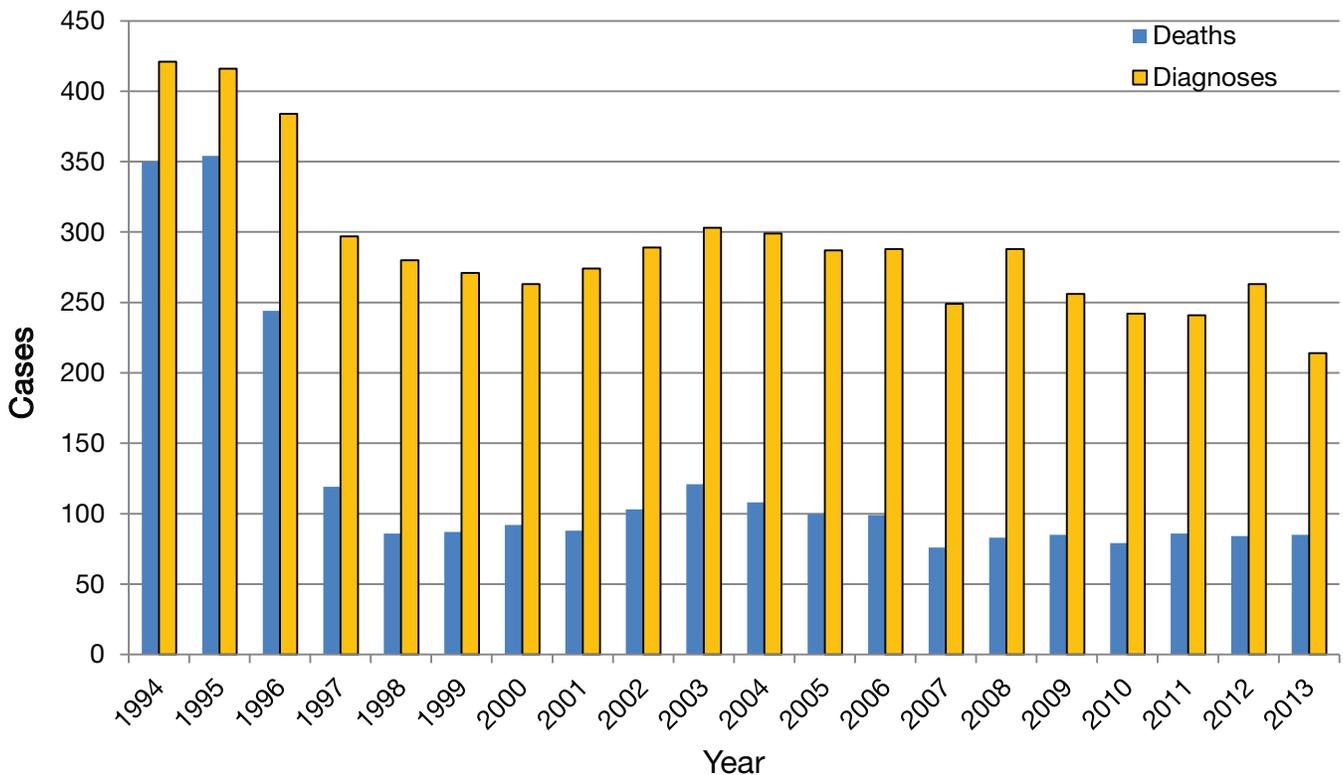
* For this report, a “case” is defined as an Oregon resident diagnosed with HIV infection (including AIDS) before being diagnosed in another state. Only those cases reported to the Oregon Health Authority HIV Program were included. People living with HIV in Oregon not counted in this report include those who resided in another state when they were diagnosed and as many as 1,000 or more people who are thought to be infected but have yet to be tested (Centers for Disease Control and Prevention. Monitoring selected national HIV prevention and care objectives by using HIV surveillance data — U.S. and 6 U.S.-dependent areas — 2010. HIV Surveillance Supplemental Report 2012;17 (No. 3, Part A). Available at www.cdc.gov/hiv/topics/surveillance/resources/reports/. Published June 2012.

** Approximately 29% of black/African American cases are believed to have immigrated to the U.S. after becoming infected in another country

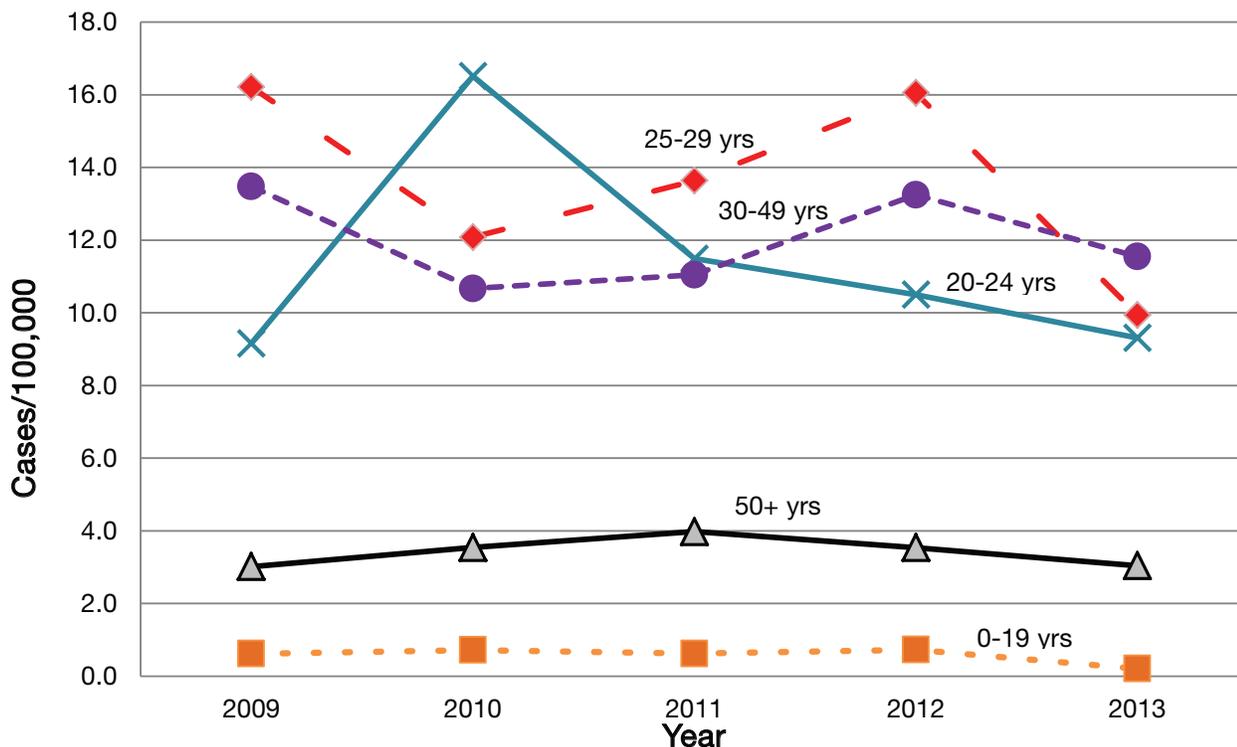
† Includes men who affirmed having sex with women and denied injection drug use, transfusions or transplants during the time they were not being adequately screened for HIV.

‡ Includes women who affirmed sex with men and denied injection drug use, sex with men or transfusions or transplants during the time they were not being adequately screened for HIV

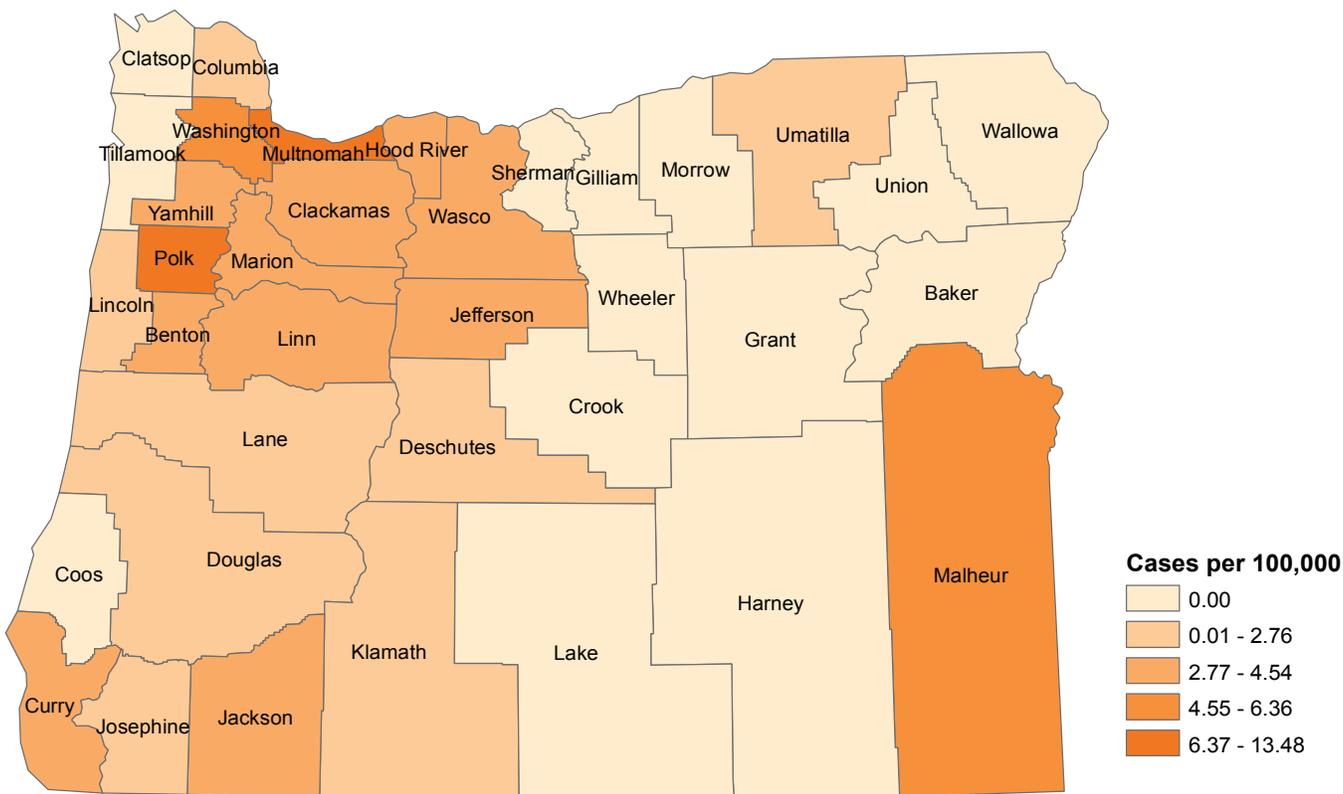
Oregon cases* of HIV infection, diagnosis and deaths: 1994–2013



Age at HIV diagnosis in Oregon: 2009–2013



People living with HIV or AIDS by county of residence at diagnosis: Oregon, 2013



Prevention

Primary prevention strategies aim to prevent a person from becoming infected in the first place by:

- Delaying age at onset of sexual activity;
- Decreasing the number of sex partners;
- Using condoms properly from start to finish when having sex;
- Refraining from injection drug use;
- Avoiding needle or “works” sharing with others, using only clean needles and works, and acquiring new sterile needles from pharmacies or needle exchanges if a person uses injection drugs;
- Providing assistance with drug and alcohol cessation.

Providing post-exposure prophylaxis (PEP) to eligible persons a one-month supply of HIV medication that may prevent infection if started within 72 hours of the sexual or occupational bloodborne exposure;

- Providing pre-exposure prophylaxis (PrEP) to some uninfected persons with very high ongoing risk of infection (daily antiviral medication intended to prevent infection if exposure occurs);
- Taking HIV medications during pregnancy if infected;
- Foregoing breastfeeding if infected;
- Rapid identification and treatment of new cases can also be considered primary prevention when it results in timely treatment of a newly infected person that averts transmission to a sex partner.

Secondary prevention strategies aim to eradicate existing infections by:

- Suppression of viral load by treatment of all HIV-infected persons, leading to decreased rates of secondary transmission;
- HIV screening: Unites States Preventive Health Service recommends screening everyone 15–65 years of age at least once and more often for people with ongoing risks such as multiple sex partners, sex with men (MSM), or injection drug use.

Legionellosis

Legionellosis is usually an acute respiratory tract infection that begins two to 14 days after exposure to *Legionella* spp. Signs of the disease can include a high fever, chills and cough, in addition to headache and muscle aches. Symptoms are similar to those seen in other forms of pneumonia, so the diagnosis is rarely obvious and can be difficult to make. Available confirmatory diagnostic tests include urine antigen detection, direct fluorescent antibody staining, and culture.

“Pontiac fever,” a milder illness associated with *Legionella* bacteria, is characterized by fever and muscle aches without pneumonia. It typically occurs a few hours to two days after exposure.

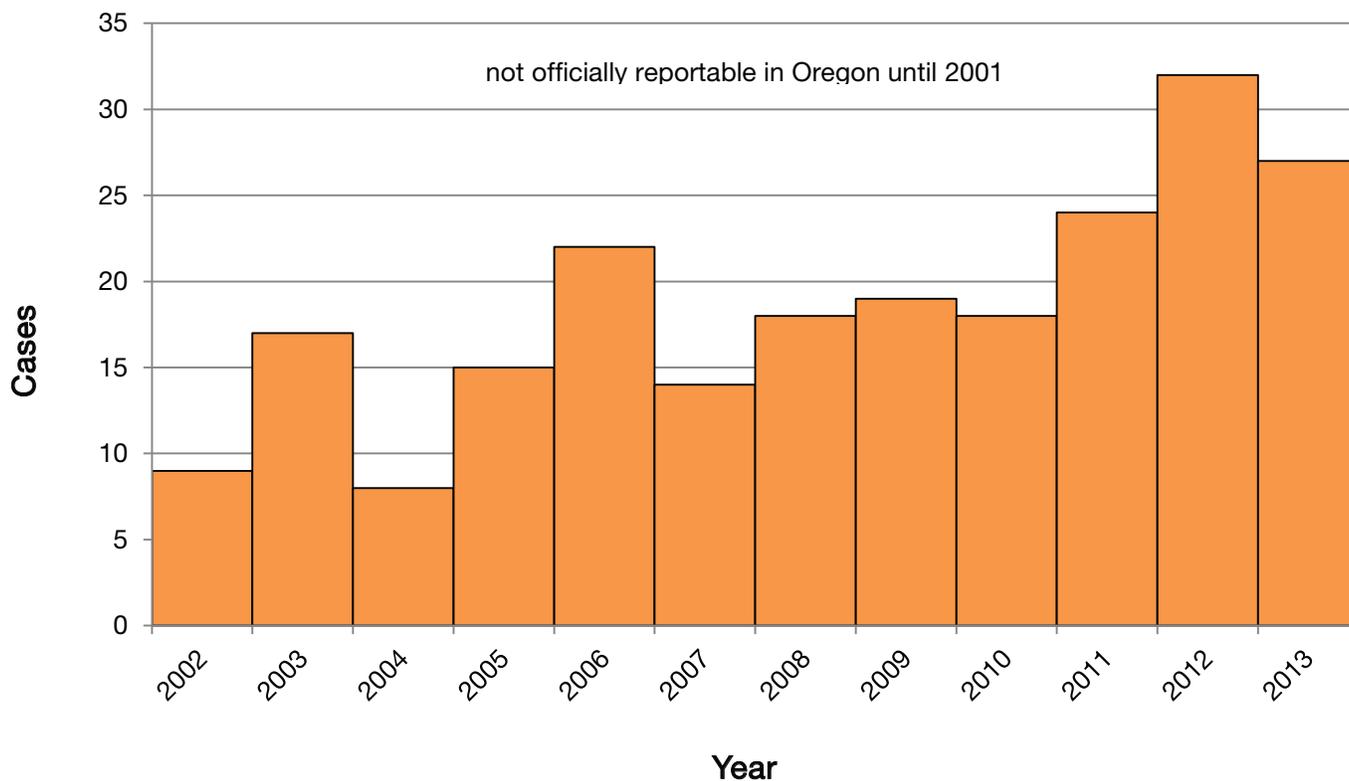
Legionella bacteria are found naturally in the environment, usually in water, and grow best

in warm conditions such as hot tubs, cooling towers, hot-water tanks, large plumbing systems, or the air-conditioning systems of large buildings. They are transmitted by inhalation of aerosolized water or soil infected with the bacteria. Person-to-person transmission does not occur.

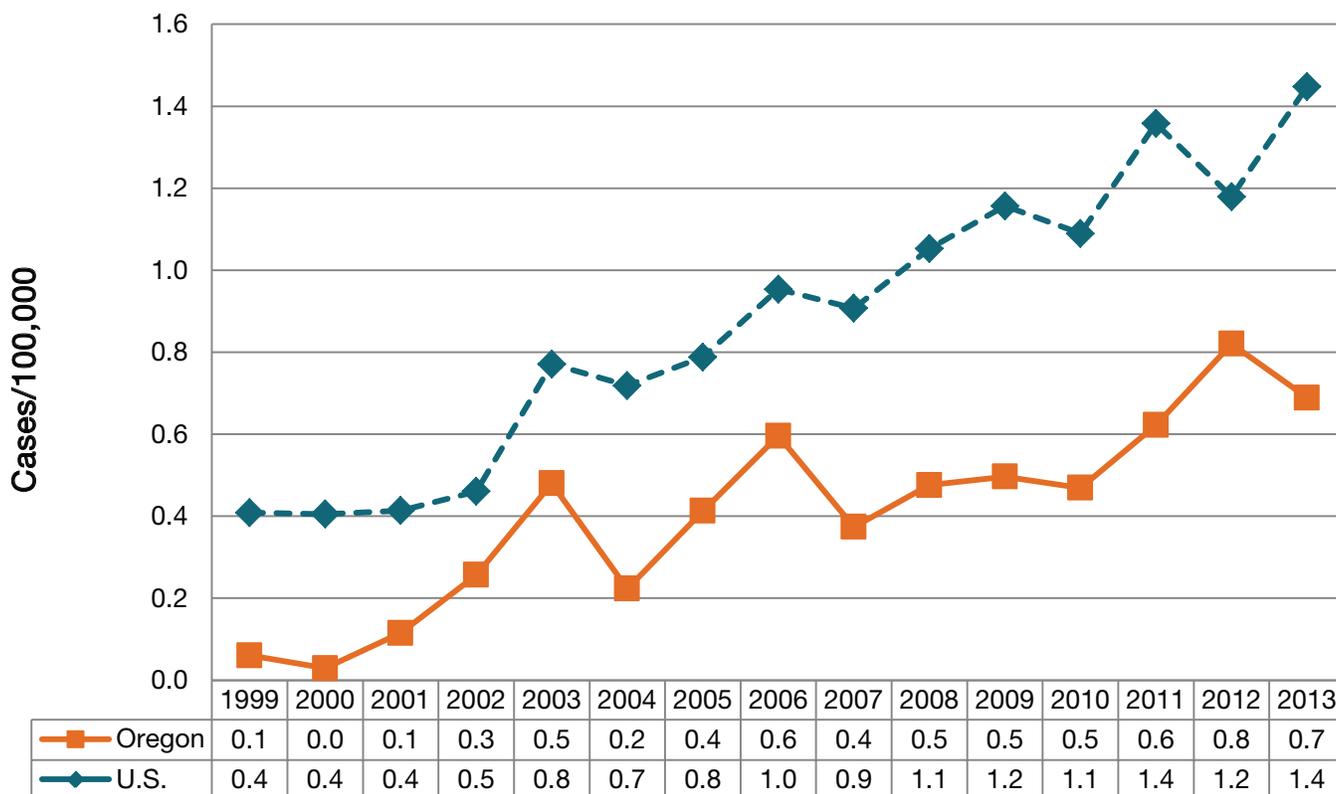
Risks for infection include older age, smoking, chronic lung disease (like emphysema), renal insufficiency, diabetes and immune deficiency. Death occurs in 10% to 15% of cases; a substantially higher proportion of fatal cases occur during outbreaks in hospitals or other health care facilities. Infections are treated with antibiotics.

Legionellosis became officially reportable in Oregon in 2001. In 2013, 27 cases of legionellosis were reported among Oregonians; all cases were hospitalized. There were two deaths.

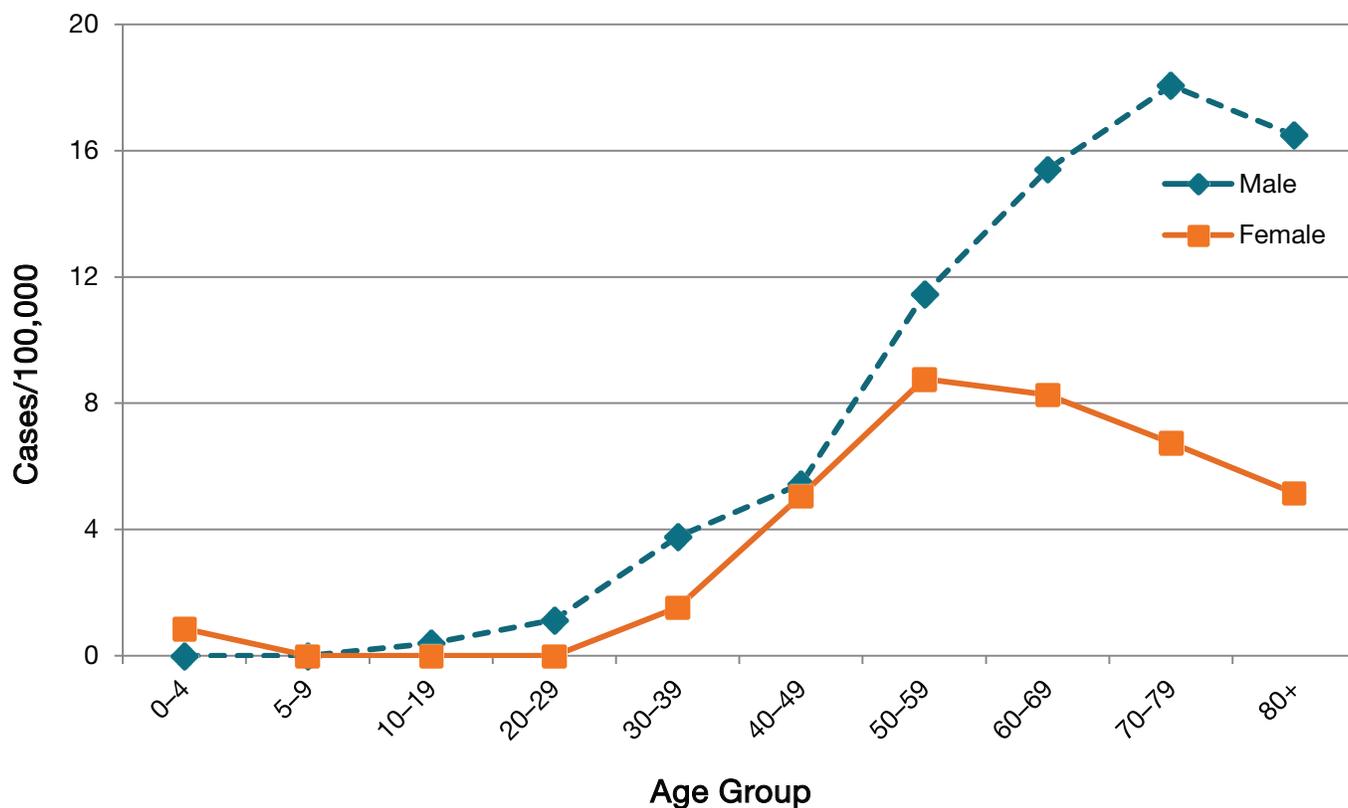
Legionellosis by year: Oregon, 2002–2013



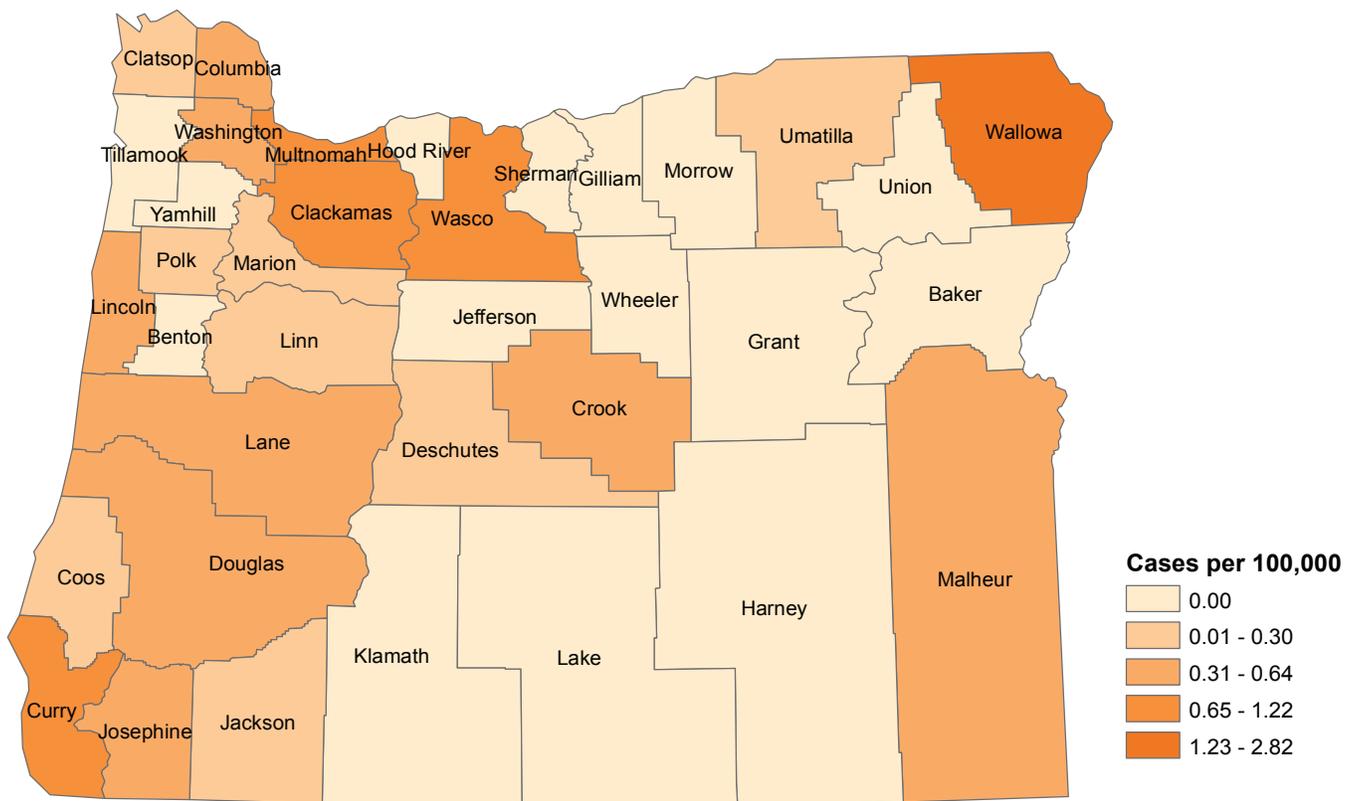
Incidence of legionellosis: Oregon vs. nationwide, 1999–2013



Legionellosis by sex and age group: Oregon, 2004–2013



Incidence of legionellosis by county of residence: Oregon, 2004–2013



Prevention

- Not smoking can lower your chances of developing legionnaire's disease if you are exposed to *Legionella* bacteria.
- Persons at increased risk of infection may choose to avoid high-risk exposures, such as being in or near a hot tub.
- Prevent water conditions that allow *Legionella* to grow:
 - Maintain and clean cooling towers and evaporative condensers twice yearly, and periodically use chlorine.
 - Maintain domestic water heaters at 60°C (140°F), and water temperature at 50°C (122°F) or higher at the faucet.
 - Don't allow water to stagnate. Large water-storage tanks exposed to sunlight can produce warm conditions favorable to growth of the *Legionella*. Flushing of infrequently used water lines will help alleviate stagnation.

Listeriosis

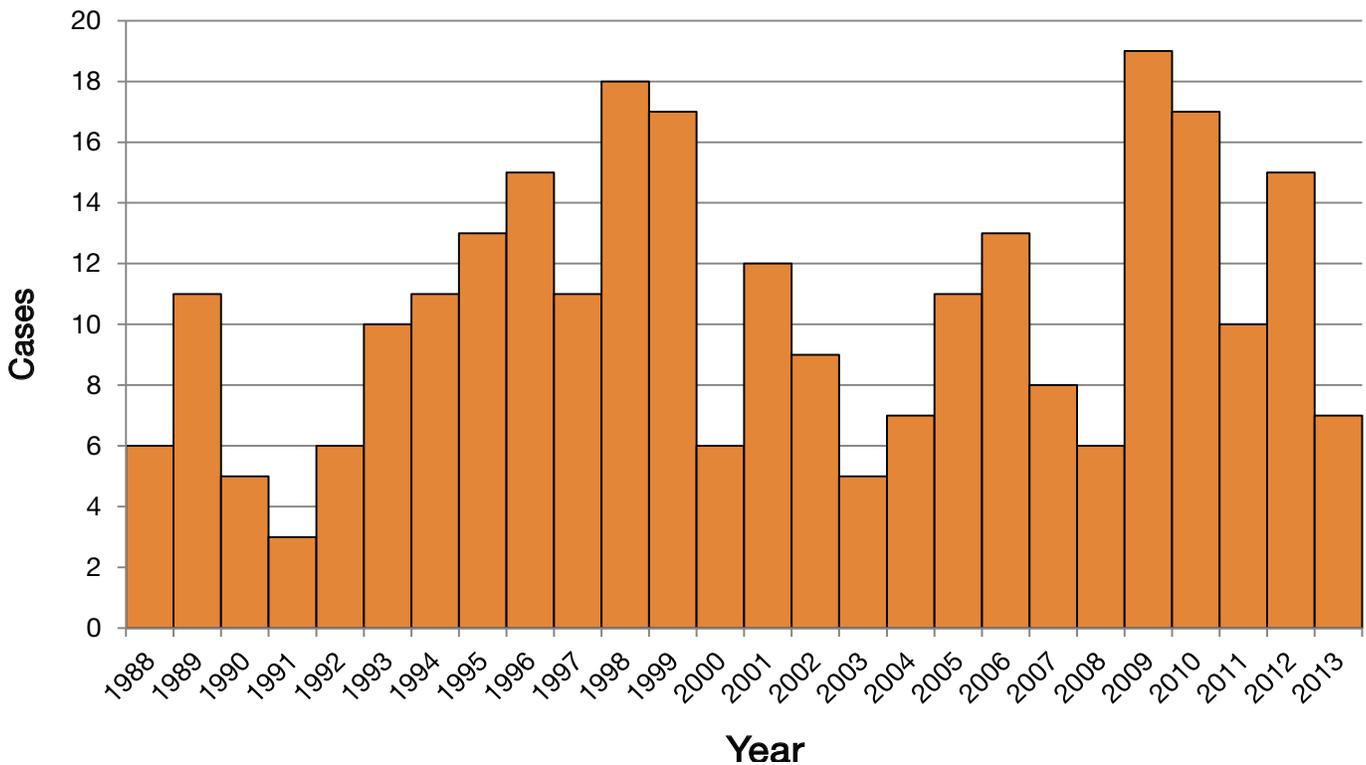
Listeriosis is a bacterial infection that may present as influenza-like illness with high fever, headache and muscle aches; as a gastrointestinal illness; or as an invasive disease with sepsis or meningitis. In pregnant women, listeriosis may cause miscarriages or stillbirths. The case fatality rate of invasive listeriosis is as high as 30% in infants infected prenatally and in non-pregnant adults.

Most cases of listeriosis are “sporadic” rather than part of outbreaks. However, several large outbreaks have been associated with consumption of contaminated foods. It is important to track the incidence of this

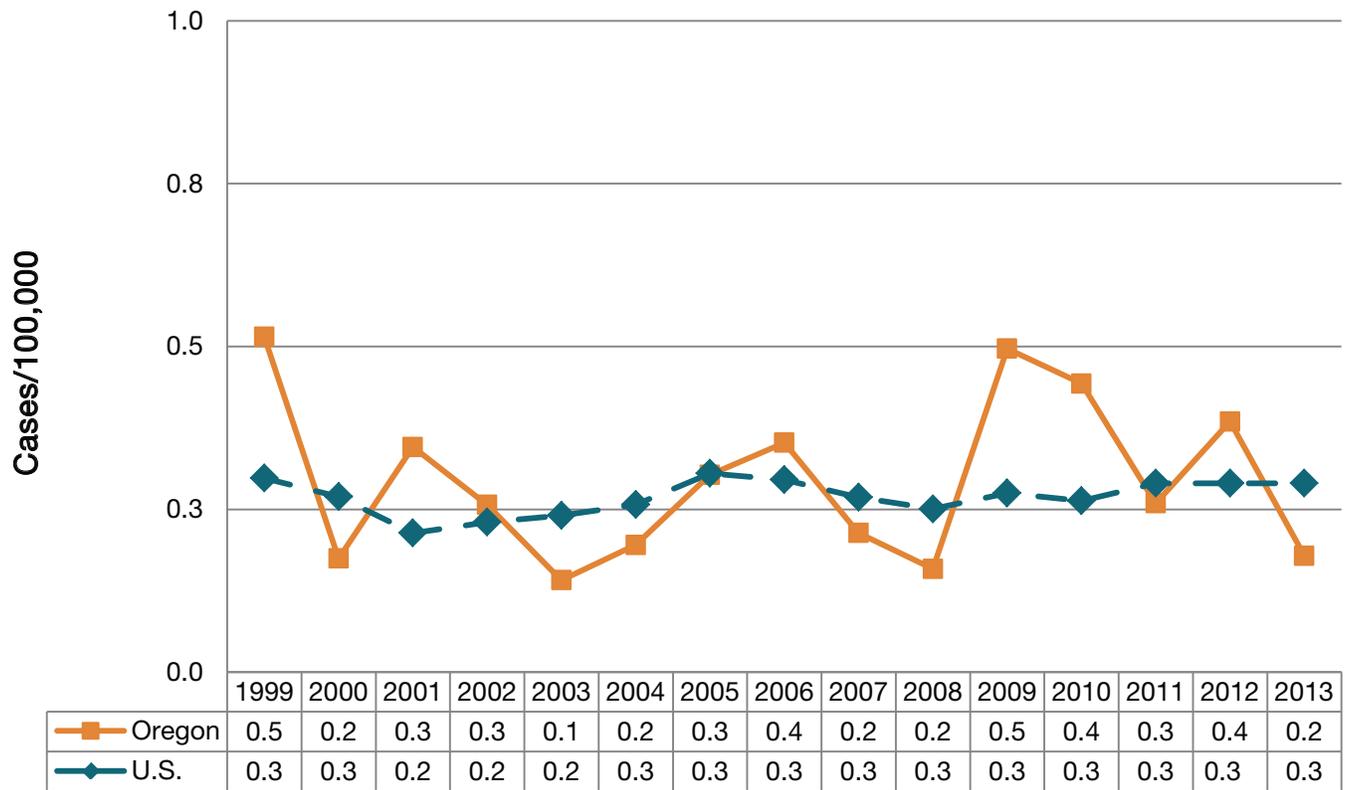
disease to identify such outbreaks, as well as to identify high-risk groups. The rate is higher among pregnant women, newborns, the elderly and immunocompromised persons. Cooking food properly is the most important means of prevention. When listeriosis is diagnosed, treatment with antibiotics should be instituted promptly.

In 2013, 7 cases were reported, a 53% decrease from 2012; there were no deaths. There were three pregnancy-associated cases. There was a history of consumption of cheese made from raw milk in one of them and this led to removing cheese from the shelves of different ethnic markets.

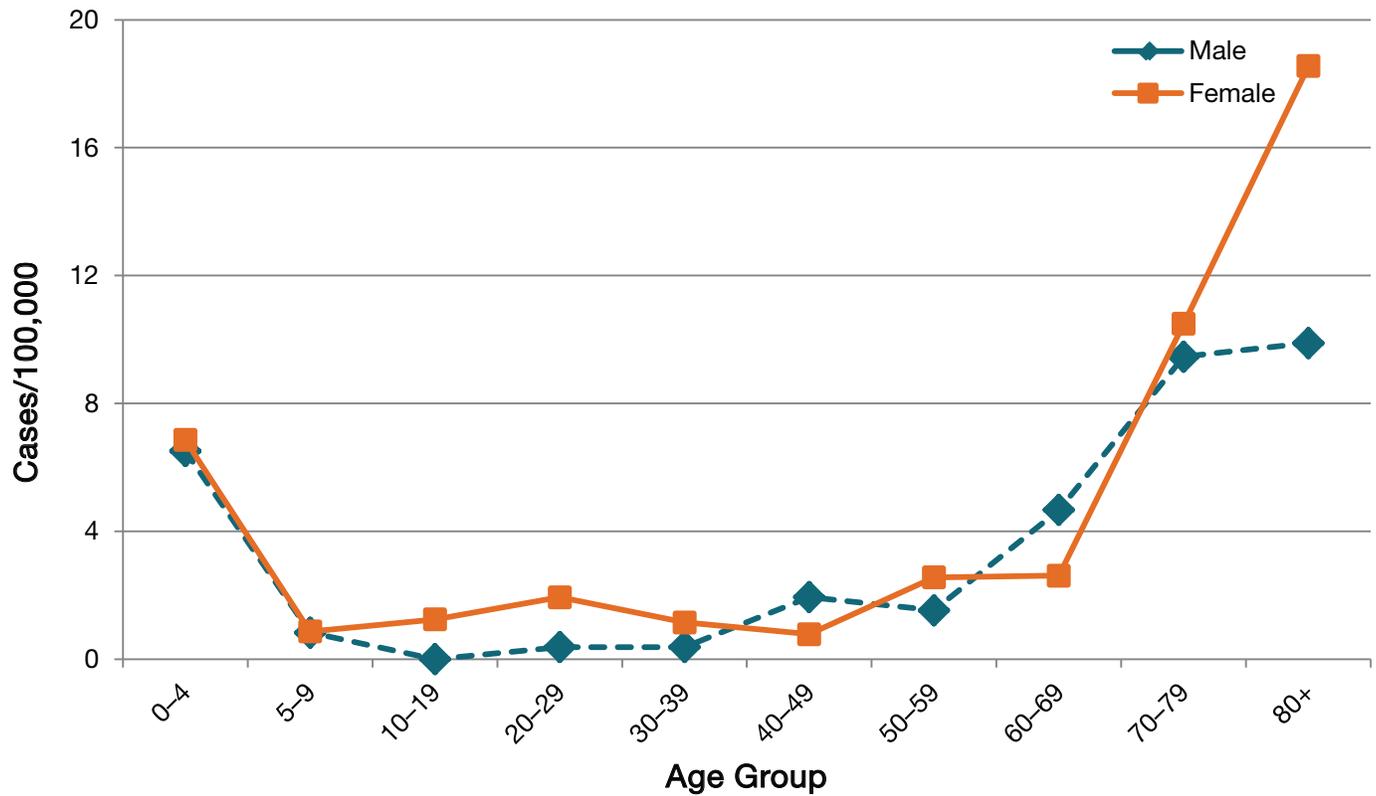
Listeriosis by year: Oregon, 1988–2013



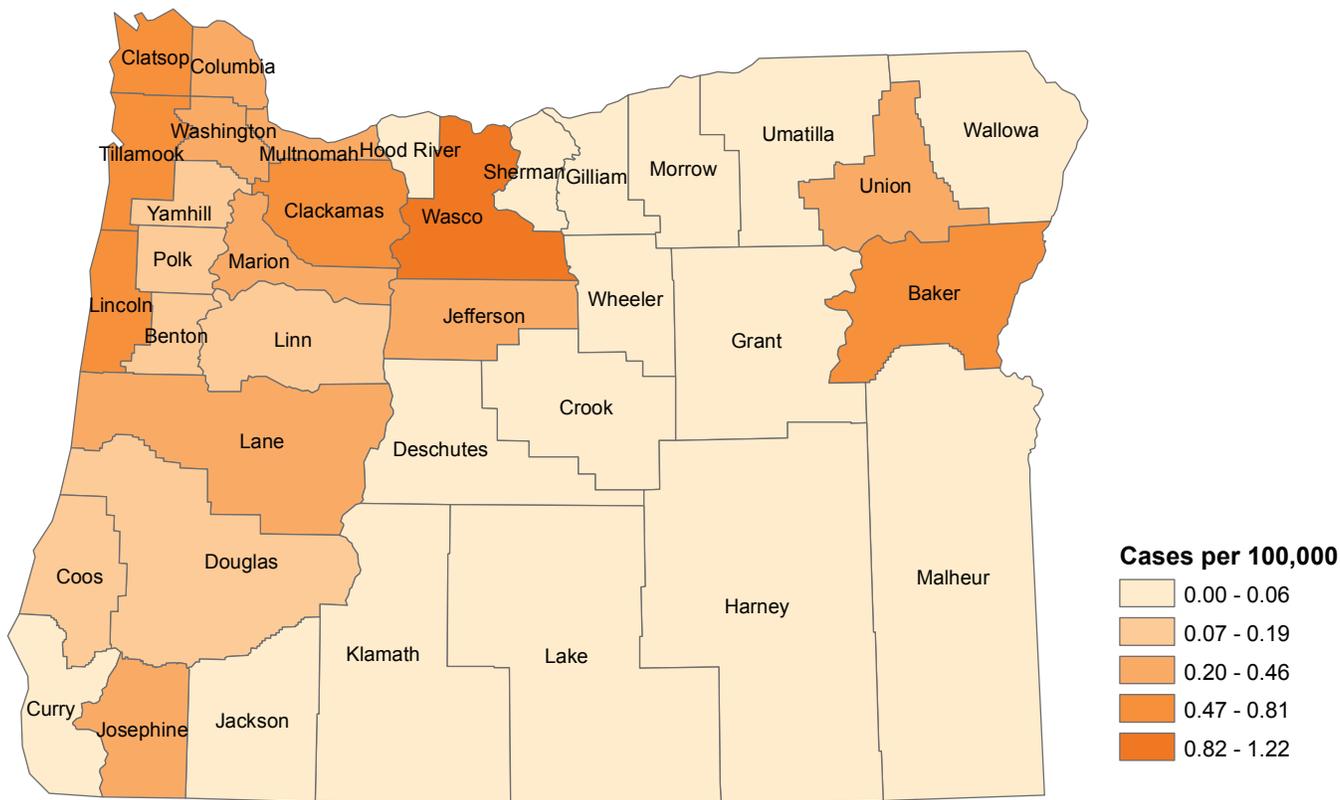
Incidence of listeriosis: Oregon vs. nationwide, 1999–2013



Listeriosis by age and sex: Oregon, 2004–2013



Incidence of listeriosis by county of residence: Oregon, 2004–2013



Prevention

- Practice safe food handling. Rinse raw produce thoroughly under running tap water, separate uncooked meats and poultry from vegetables, cooked foods, and ready-to-eat foods, cook meat and poultry to the proper temperatures.
- Do not drink raw milk and do not eat foods that have unpasteurized milk in them.

Higher-risk persons (pregnant women, immunocompromised and elderly):

- Avoid eating hot dogs, luncheon meats, cold cut, and other deli meats unless they are heated.
- Do not eat soft cheese such as feta, queso fresco, brie, Camembert unless it is labeled as made with pasteurized milk.
- Do not eat refrigerated smoked seafood, unless it is contained in a cooked dish such as casserole.

Lyme disease

Lyme disease is a tick-borne zoonotic disease caused by the spirochete *Borrelia burgdorferi*. The first manifestation in approximately 60% of patients appears as a red spot or bump that expands slowly with clearing in the middle, forming a ring or “target,” sometimes with multiple similar lesions. This distinctive skin lesion is called “erythema migrans.” In most cases, the tick must be attached for 36-48 hours or more before the Lyme disease bacterium can be transmitted. Most humans are infected through the bites of immature ticks called nymphs. Nymphs are tiny (less than 2 mm) and difficult to see, which is why they may be attached for so many hours without being detected; they feed during the spring and summer months. The incubation period for Lyme disease ranges from three to 30 days after tick exposure; however, the early stages of the illness may be asymptomatic, and the patient may later develop systemic symptoms and joint, neurologic or cardiac problems in varying combinations over a

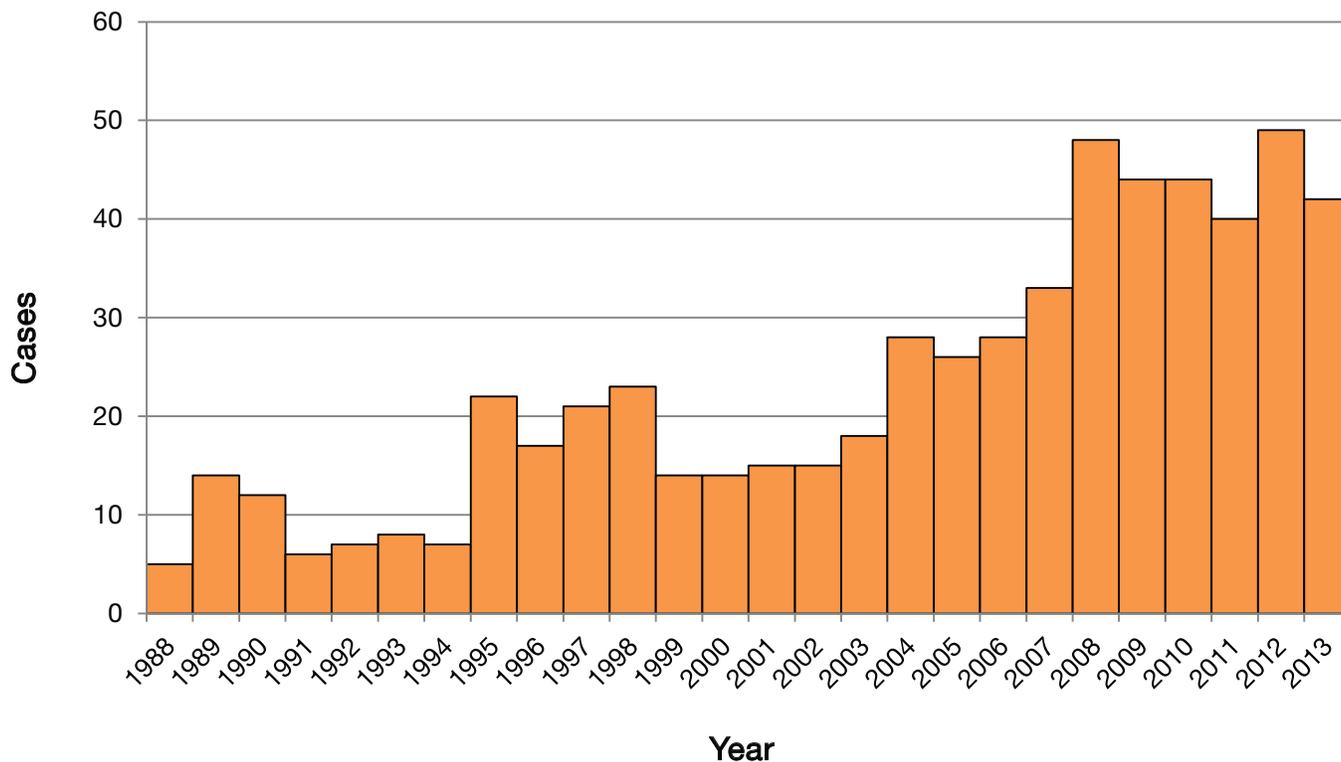
period of months to years. Infections are treated with antibiotics.

Currently, increasing recognition of the disease is redefining areas where ticks may carry *B. burgdorferi*; Lyme disease cases have been reported in 47 states, and in Ontario and British Columbia, Canada. Related borrelioses have been found in Europe, the former Soviet Union, China and Japan.

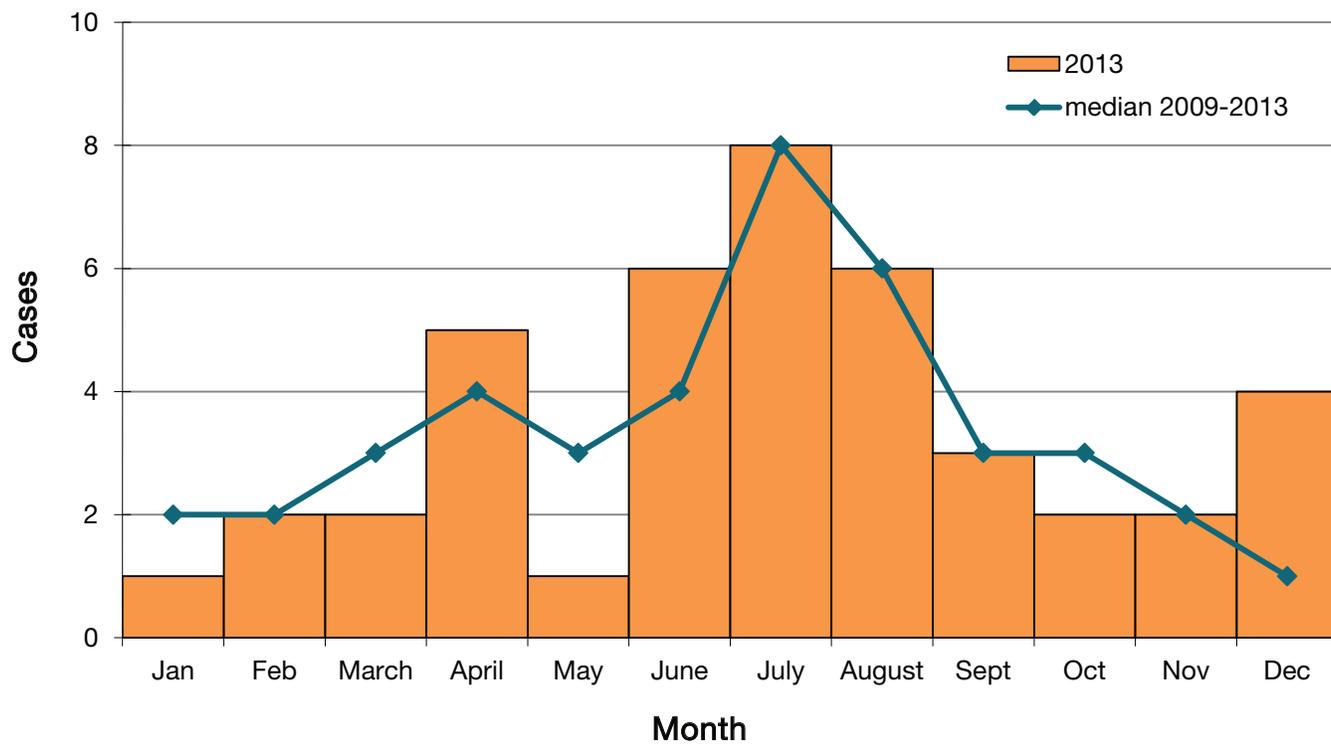
In 1997–1998, CDC and the Oregon Public Health Division collected and identified ticks and tested them for *Borrelia burgdorferi* in Deschutes, Josephine and Jackson counties. No ticks from Deschutes County were identified as carrying *Borrelia* in this study. The organism was isolated in 3.5% of *Ixodes pacificus* ticks tested.

During 2013, 42 cases of Lyme disease were reported in Oregon. The median age was 31 years. Twenty-five (60%) cases were female. Rates of infection were highest in Hood River (5.9/100,000), Josephine (5.6/100,000) and Gilliam (5.3/100,000) counties.

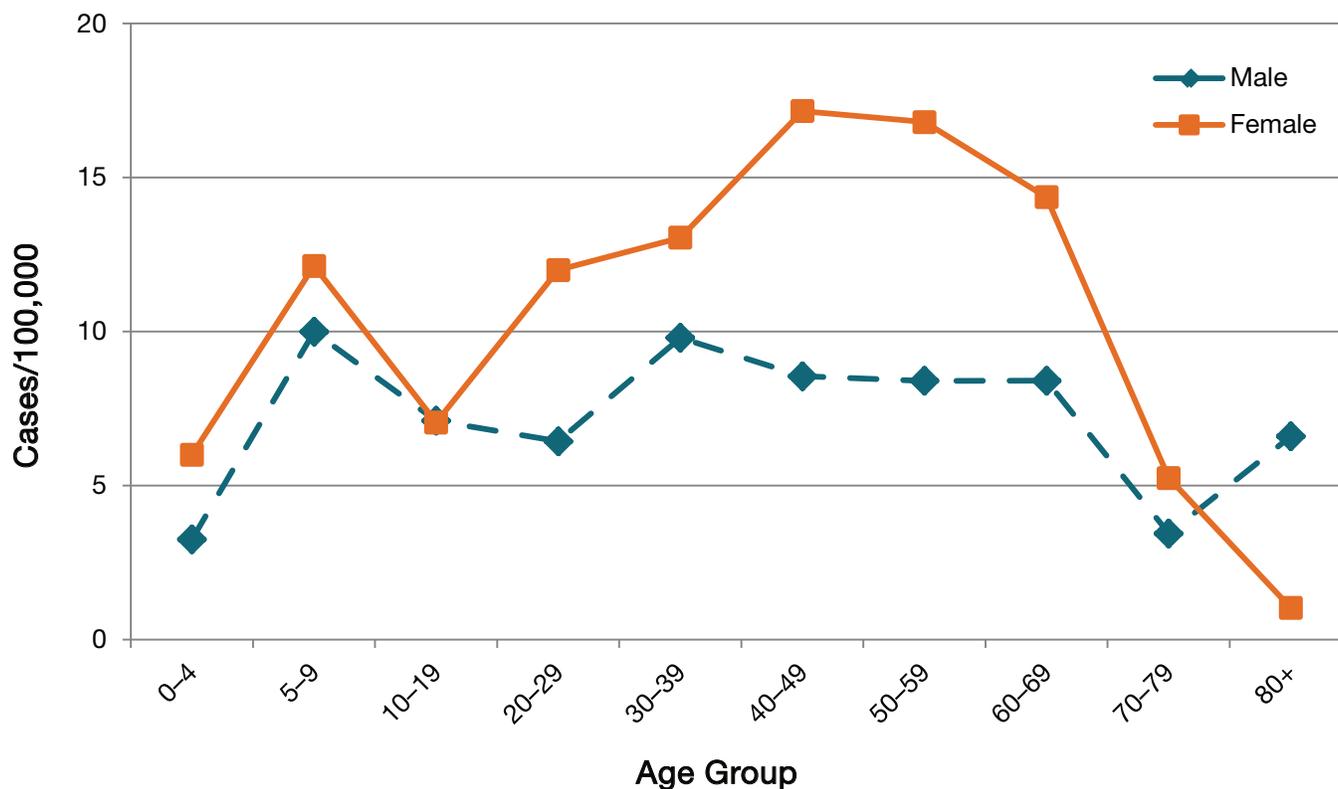
Lyme disease by year: Oregon, 1988–2013



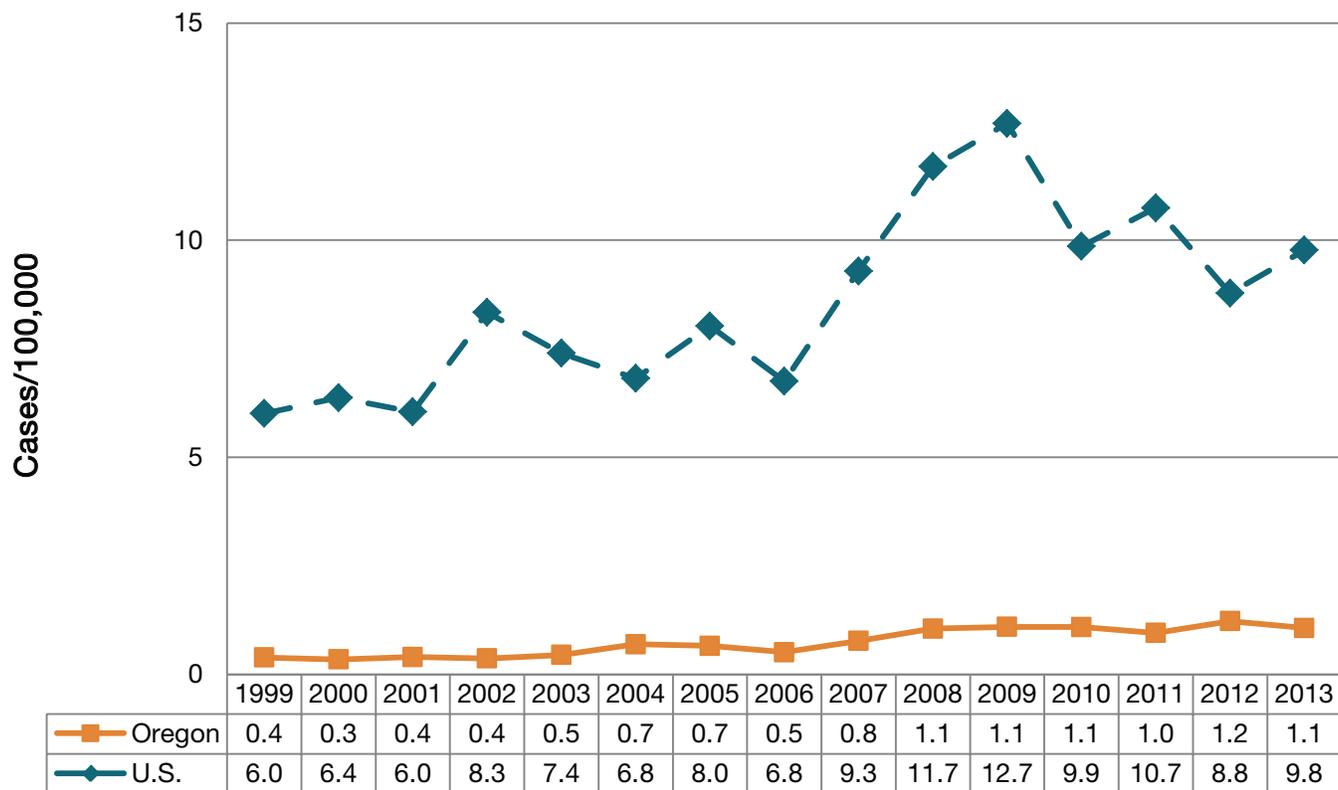
Lyme disease by onset month: Oregon, 2004–2013



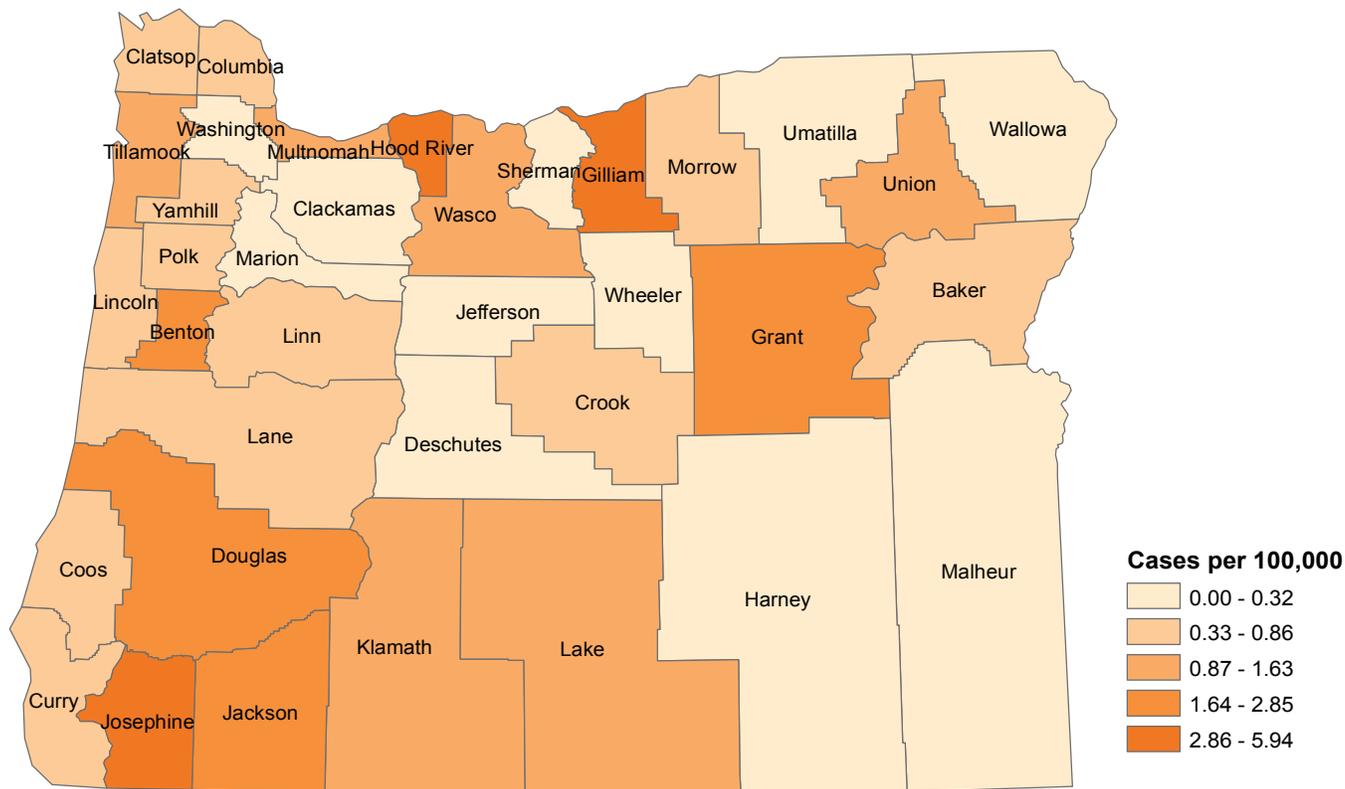
Incidence of Lyme disease by age and sex: Oregon, 2004–2013



Incidence of Lyme disease: Oregon vs. nationwide, 1999–2013



Incidence of Lyme disease by county of residence*: Oregon, 2004–2013



*Not necessarily county of acquisition

Prevention

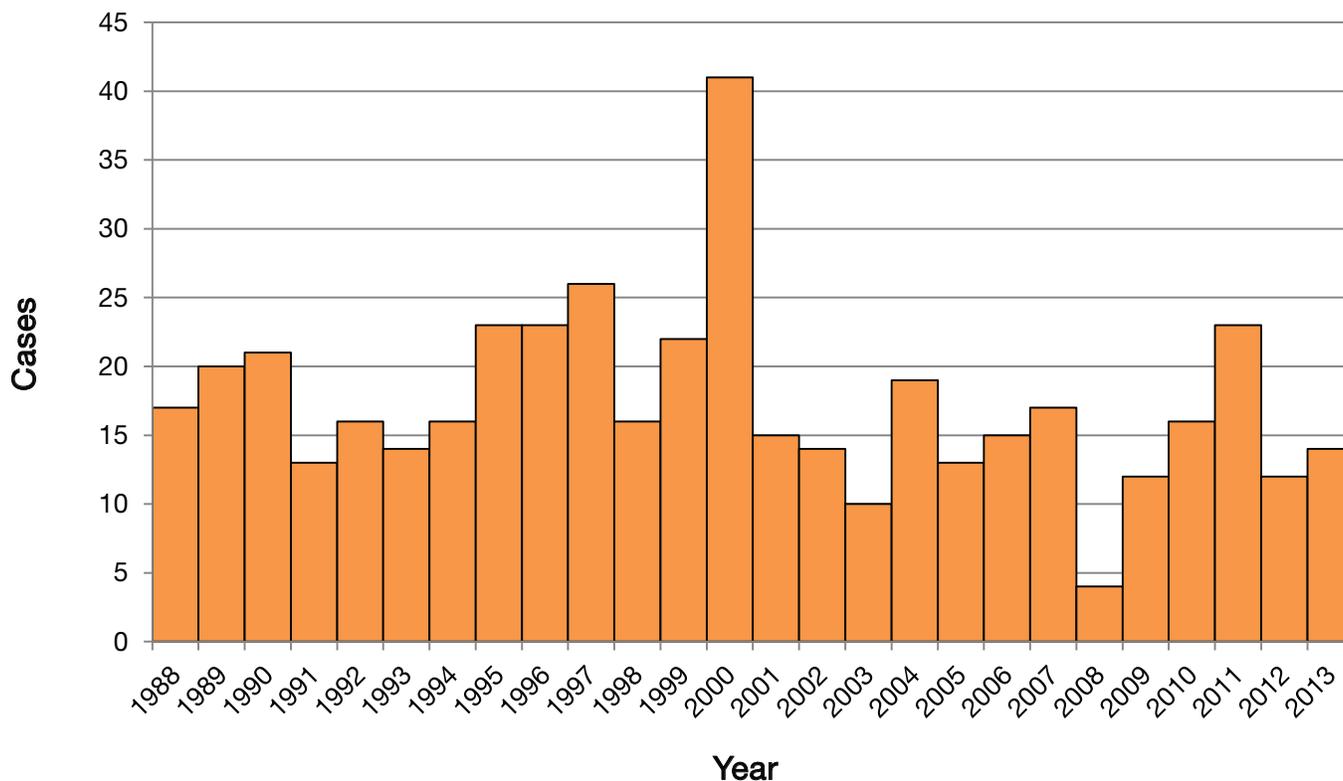
- Avoid exposure to ticks: wear long sleeves, long pants, and socks when outdoors.
- Check yourself, your children and your pets for ticks. Be especially vigilant after spending time in wooded or grassy areas. Remove a tick as soon as possible with tweezers. Gently grasp the tick near its head or mouth. Don't squeeze or crush the tick, but pull carefully and steadily.
- Use insect repellents when you go outdoors. Repellents containing DEET, picaridin, IR3535, and some oil of lemon eucalyptus and para-menthane-3,8-diol products provide longer-lasting protection. To optimize safety and effectiveness, repellents should be used according to the label instructions.
- Do your best to tick-proof your yard. Clear brush and leaves where ticks live. Keep woodpiles in sunny areas.

Malaria

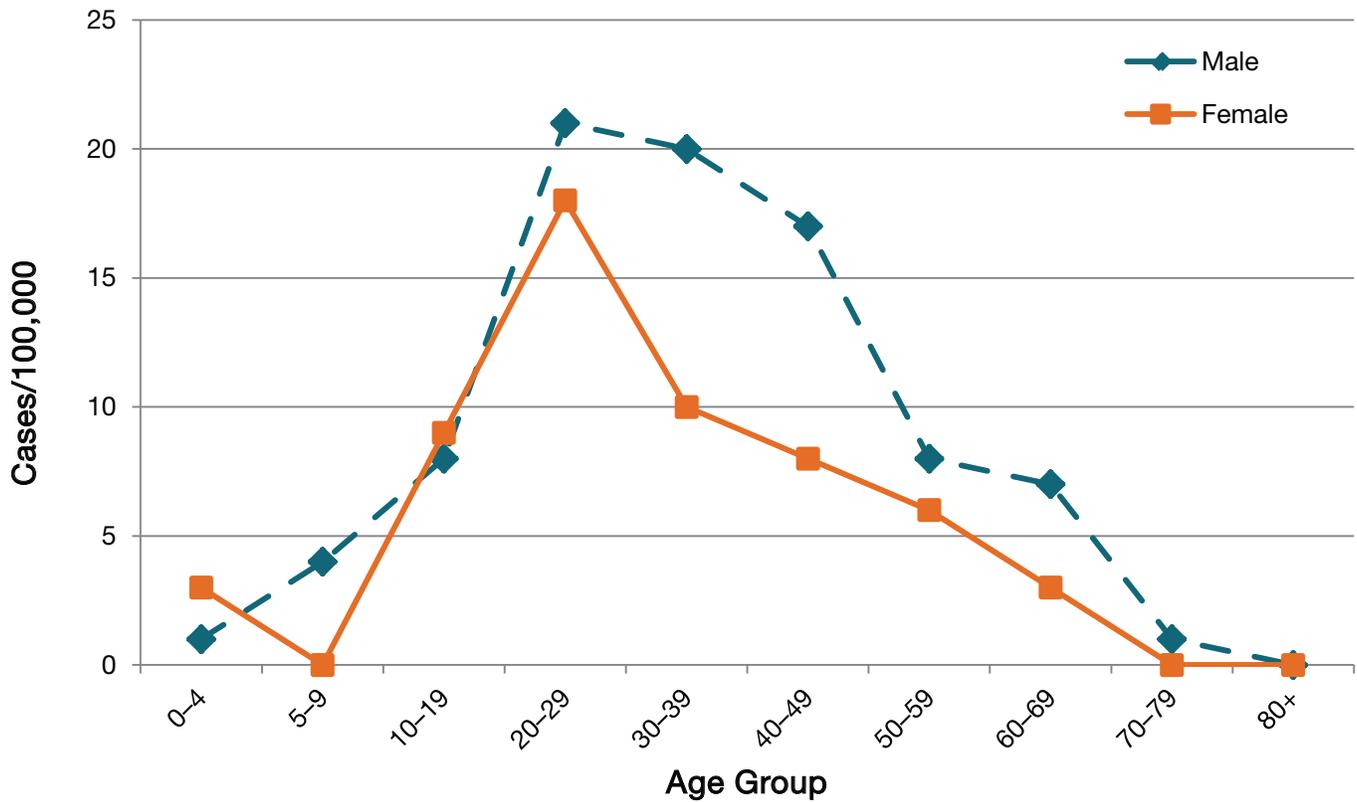
Worldwide, malaria is one of the most devastating of the communicable diseases, causing perhaps 1–2 million deaths annually, in addition to an enormous burden of disability and medical costs. It is caused by parasites of the genus *Plasmodium* that are transmitted among humans by *Anopheles* mosquitoes. While transmission has not been documented in Oregon for decades, malaria is reported every year in our state; all cases have resulted from exposures outside the United States. *Anopheles* mosquitoes capable of transmitting malaria live in Oregon, so local transmission remains a theoretical possibility—albeit one we don’t lose much sleep over.

Fourteen cases of laboratory confirmed malaria were reported in Oregon in 2013. Seven (50%) were *Plasmodium falciparum* — the worst kind to have and the most common worldwide. Oregon surveillance data contribute to the national database, which tailors recommendations for prevention and treatment. Of the 14 Oregon cases reported in 2013, 12 (86%) reported pre-onset travel in Africa or were immigrants from Africa. One case had been in South America and one in Asia. Competent advice about behavioral and chemical interventions can reduce risk to travelers, but refugees and other immigrants may carry long-harbored infections.

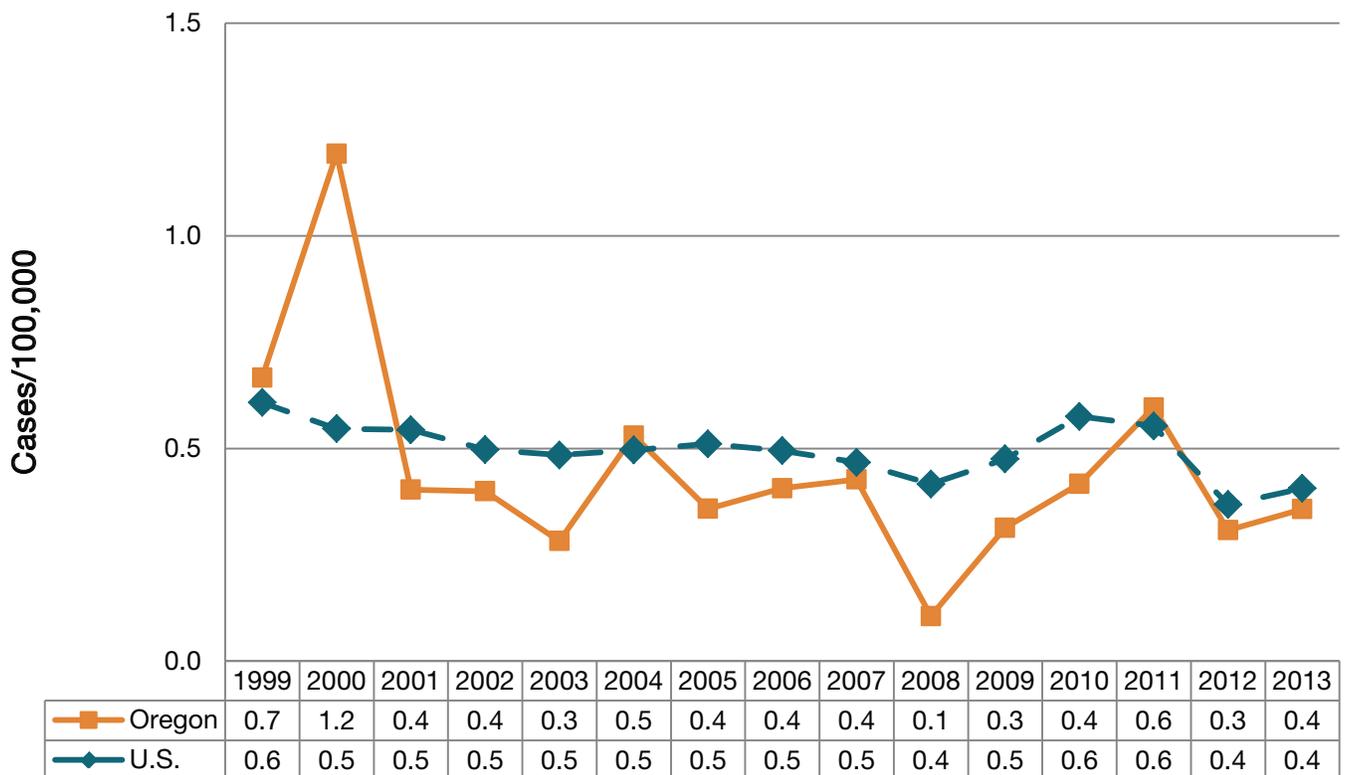
Malaria by year: Oregon, 1988–2013



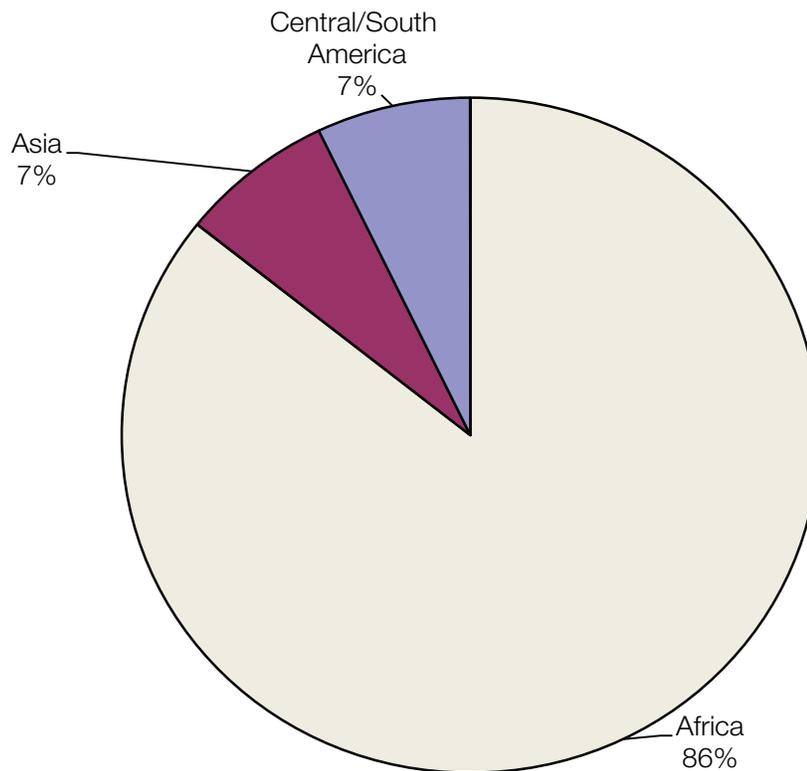
Incidence of malaria by age and sex: Oregon, 2004–2013



Incidence of malaria: Oregon vs. nationwide, 1999–2013



Malaria cases by continent of acquisition: Oregon, 2013



Prevention

- Understanding the current situation with malaria in one's travel destinations is essential. Consult with a travel medicine expert or—if nothing else—read the country-by-country assessment on-line from CDC (www.cdc.gov/malaria/travelers/country_table/a.html).
- Because *Anopheles* mosquitoes feed at night, minimize your risk of getting bitten by sleeping under an insecticide-impregnated mosquito net or in an air-conditioned room (or both!).
- If out and about at night, wear long-sleeved shirts and pants and use topical mosquito repellents.
- Chemoprophylaxis (antibiotic medicine) provides the backstop you need when bite prevention is imperfect—as it always is. Many effective medicines are available in the U.S. (www.cdc.gov/malaria/travelers/drugs.html), and even more elsewhere. Weighing their relative merits and side effects can be complex; consult a travel expert for individualized advice. Don't wait until the last minute; most drugs should be started before and continued after the likely exposure period. See www.cdc.gov/malaria/travelers/drugs.html for a list.

Measles

Measles is an acute, highly communicable viral illness known for its red, blotchy rash, which starts on the face and then spreads widely over the body. The rash is preceded by a febrile prodrome that includes cough, coryza and conjunctivitis, and sometimes photophobia and “Koplik spots” in the mouth. Diagnosis is confirmed by the presence of serum IgM antibodies (in a patient who has not recently been immunized). Treatment is supportive.

A focus on increasing vaccination among preschool children by following the 1989 recommendations for two doses of MMR vaccine resulted in a dramatic reduction in the illness. In Oregon, two doses of measles vaccination have been required for entry into kindergarten since 1998. In 2013, >93% of kindergartners had received two doses of measles-containing vaccine.

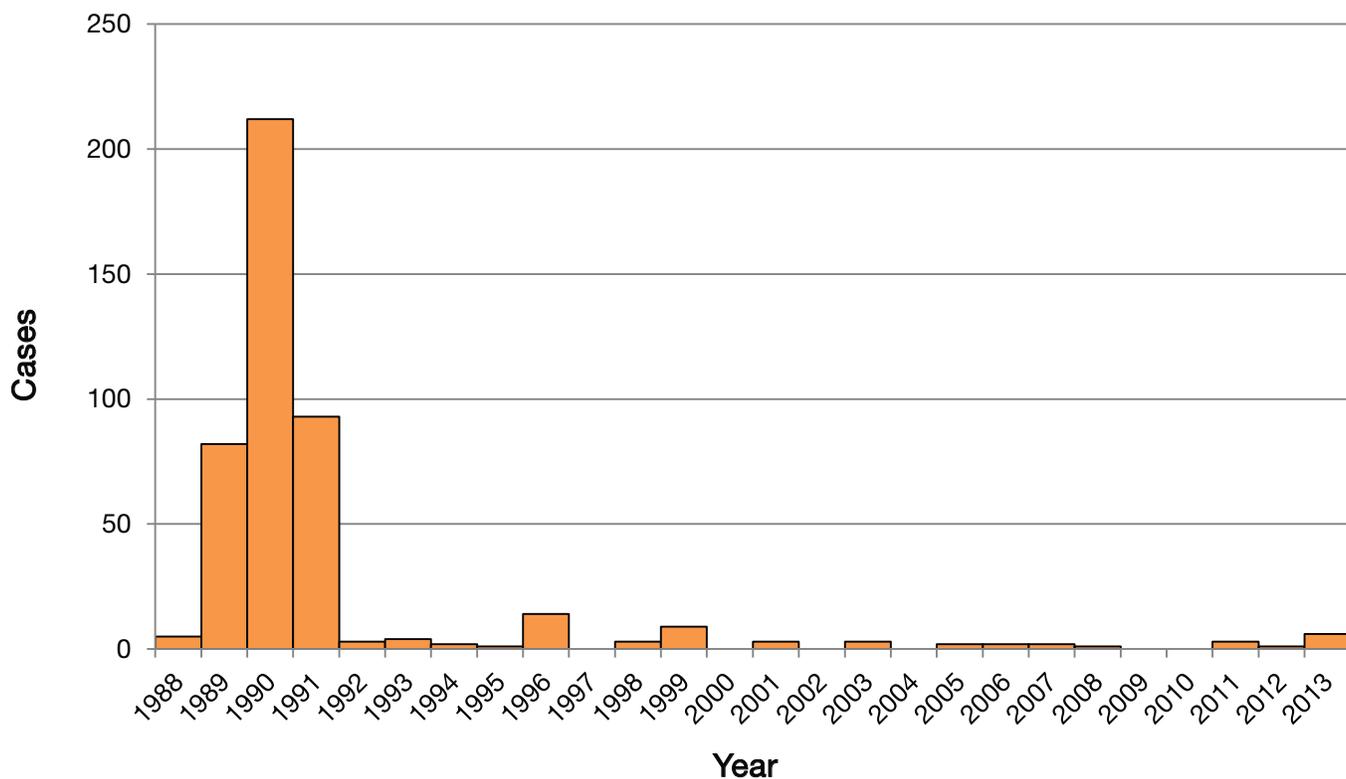
Since 2004, 17 cases were reported in Oregon; 10 of these cases were imported and six were linked to imported cases. Most imported cases originated in Asia and Europe, and occurred both among Oregon

citizens traveling abroad and in persons visiting Oregon from other countries. The median age of cases has been 21 years (range, 11 months–40 years). Ten cases were unvaccinated, six were vaccinated and the vaccination status of one could not be documented.

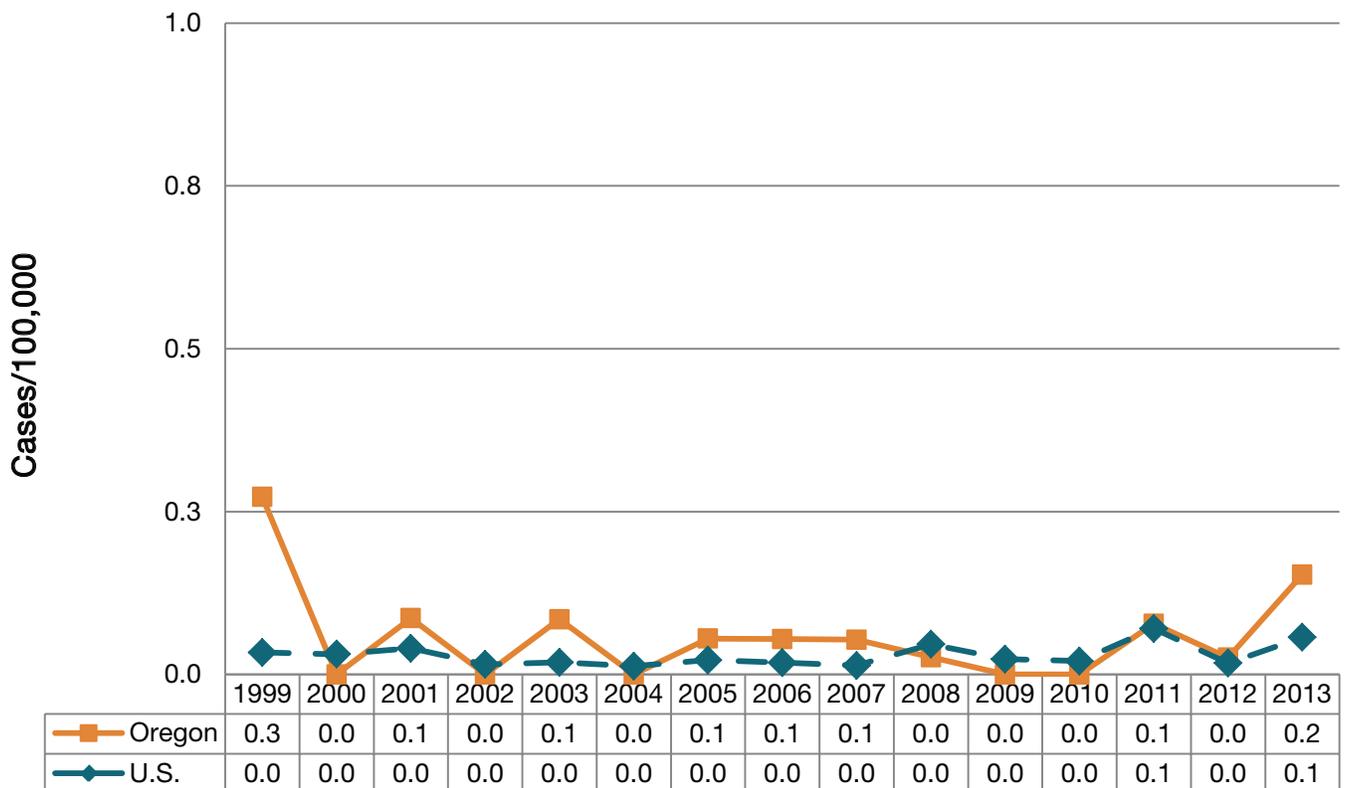
Six Oregonians caught the measles during 2013 — our highest case count in 14 years. Marion County had two clusters initiated by an unvaccinated index case exposed in Eastern Europe and two additional cases among unvaccinated contacts. A separate Marion County case was unvaccinated and exposed in China. Two Washington County cases occurred among vaccinated persons; the index case exposed in India, the other a close contact.

Though measles is highly infectious, the risk of exposure to measles in Oregon remains low. Sustaining high levels of vaccination is important to limit the spread of measles from imported cases and to prevent it from becoming re-established as an endemic disease in the United States.

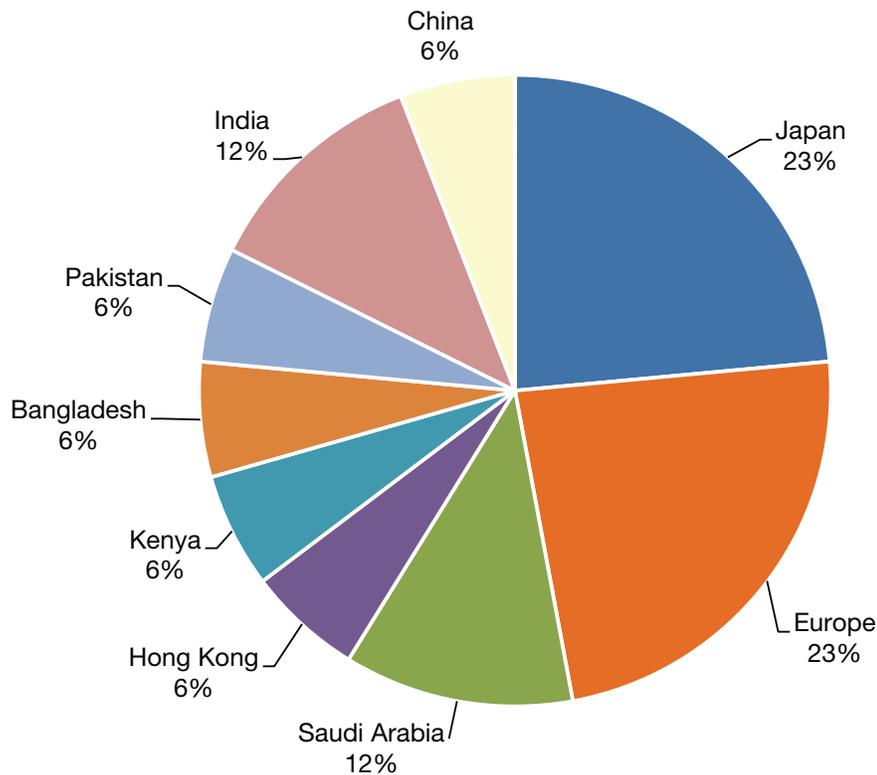
Measles by year: Oregon, 1988–2013



Incidence of measles: Oregon vs. nationwide, 1999–2013



Measles by country of importation: 1997–2013



Prevention

- **Vaccinate:** One dose for preschool-age children >12 months of age and for persons born during or after 1957; and a second dose for school-age children and for adults at high risk of measles exposure (i.e., healthcare personnel, international travelers and students at post-high-school educational institutions).
- **Post-exposure vaccination** can prevent or lessen illness if given within 72 hours of exposure.

Meningococcal disease

Reported cases of invasive meningococcal infections, including sepsis and meningitis, have declined from the hyperendemic levels seen in 1993–1997 attributable to a clonal strain of serogroup B *Neisseria meningitidis*. Respiratory secretions and droplets continue to be shared among Oregonians and predispose us to secondary cases.

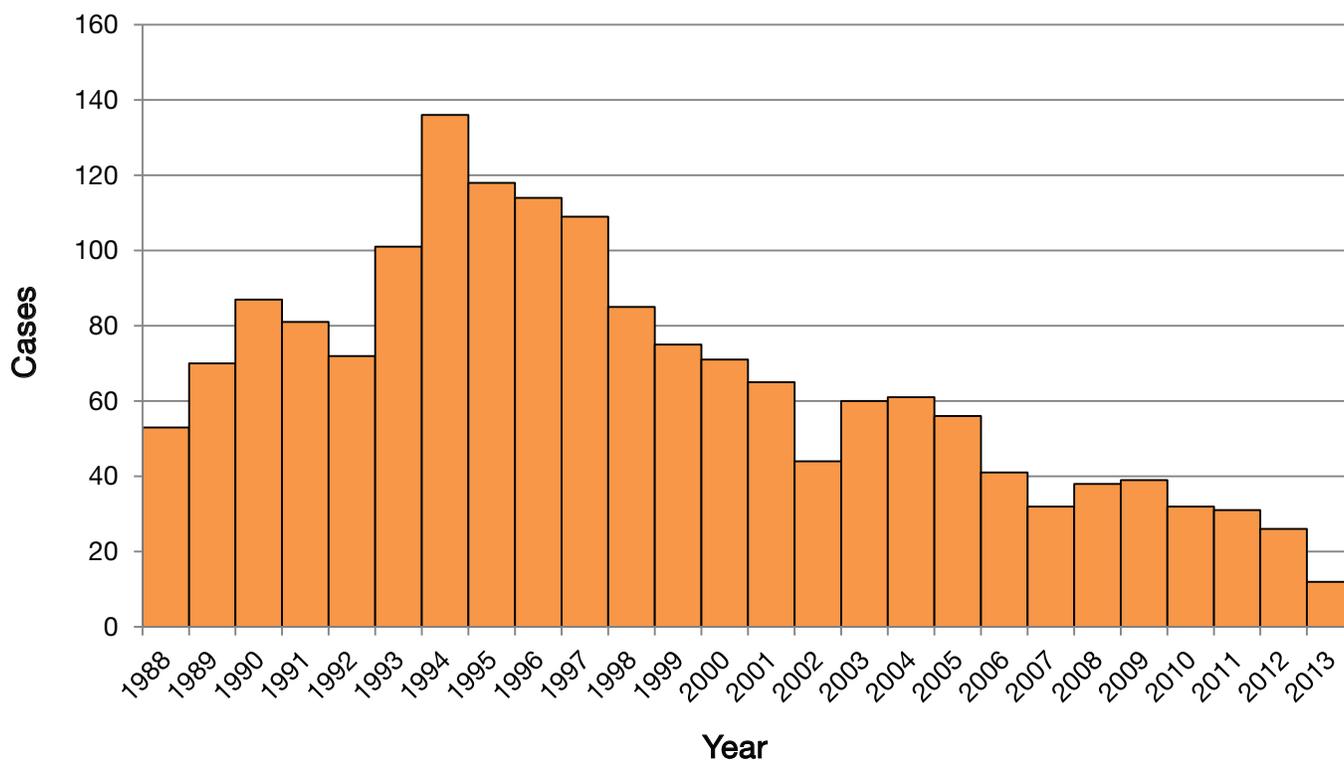
In 2013, there were 12 reported cases and two deaths from meningococcal disease in Oregon. From the early 1990s through 2011, serogroup B predominated in Oregon, but in 2011 and again in 2013, other serogroups have

been more prominent. In 2013 serogroup C accounted for 50% (5) of the serogrouped cases, whereas 30% (3) of cases were serogroup B.

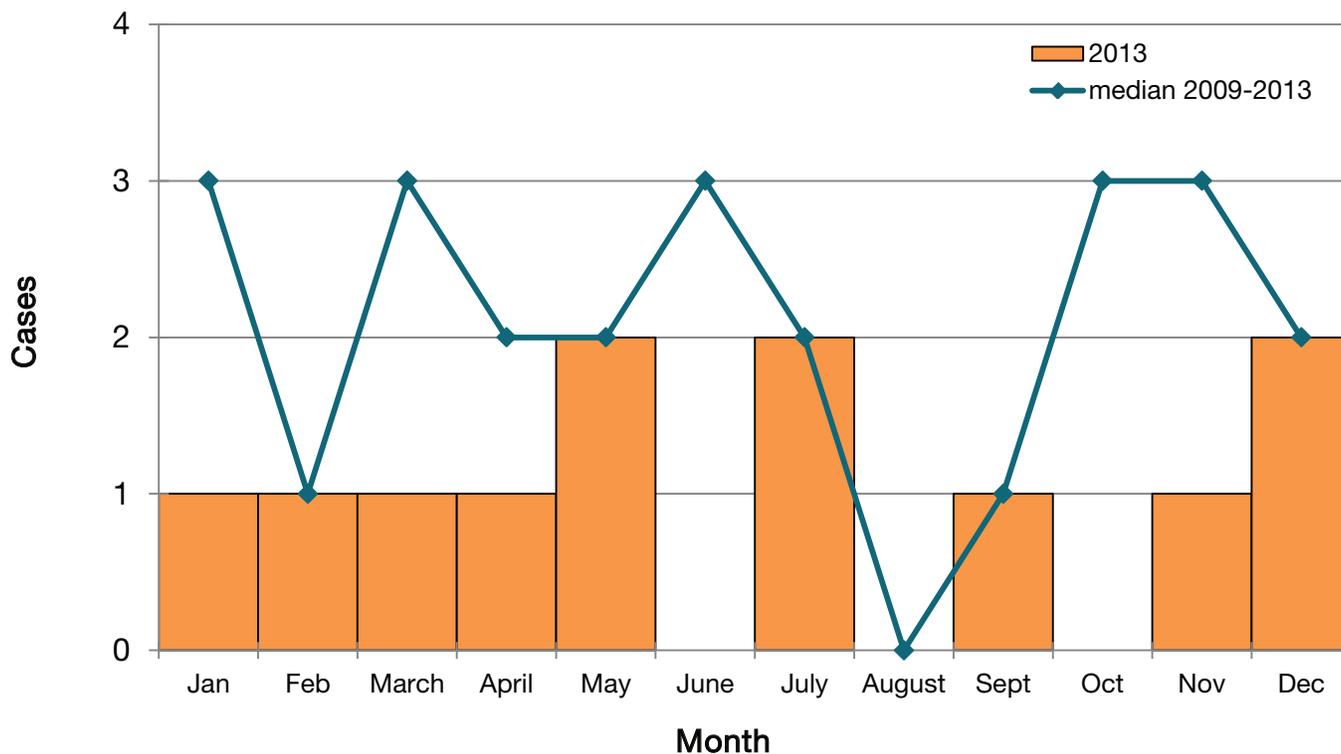
The burden of meningococcal disease was highest in those >5 years of age (41/100,000), followed by those aged >80 years (22 /100,000). Meningococcal disease is treated with intravenous antibiotics.

The quadrivalent (serogroups A, C, Y and W-135) meningococcal conjugate vaccine is recommended routinely for adolescents 11–18 years of age and for other persons at high risk for meningococcal disease. The vaccine does not protect against serogroup B disease.

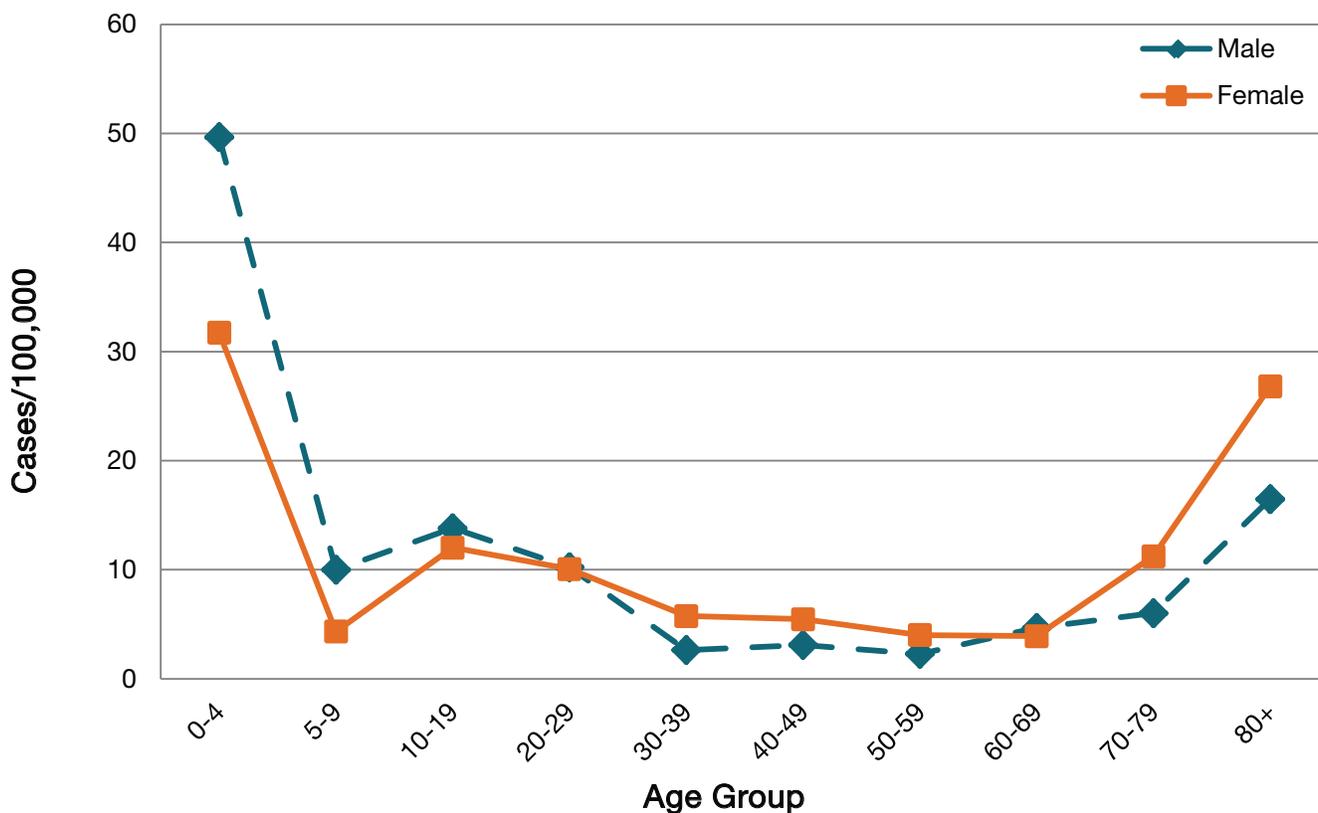
Meningococcal disease by year: Oregon, 1988–2013



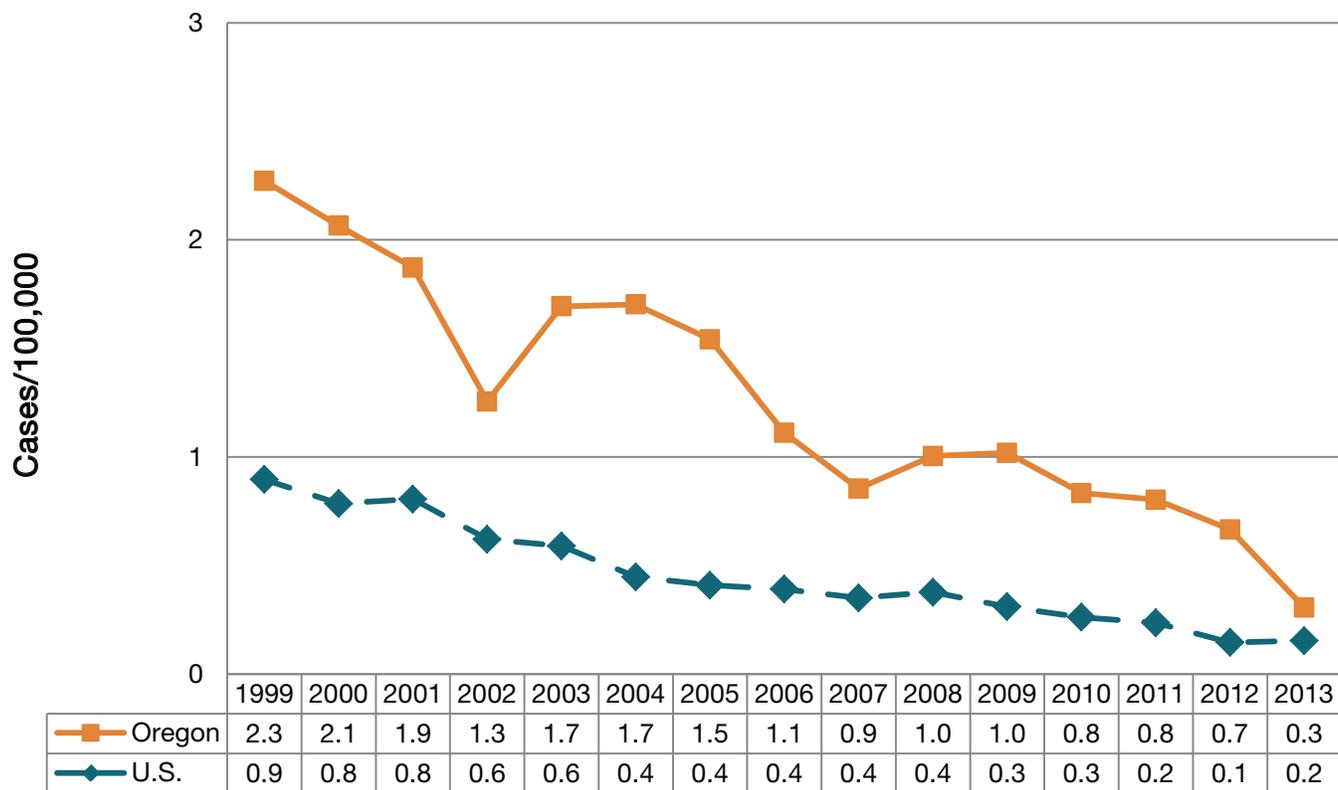
Meningococcal disease by onset month: Oregon, 2013



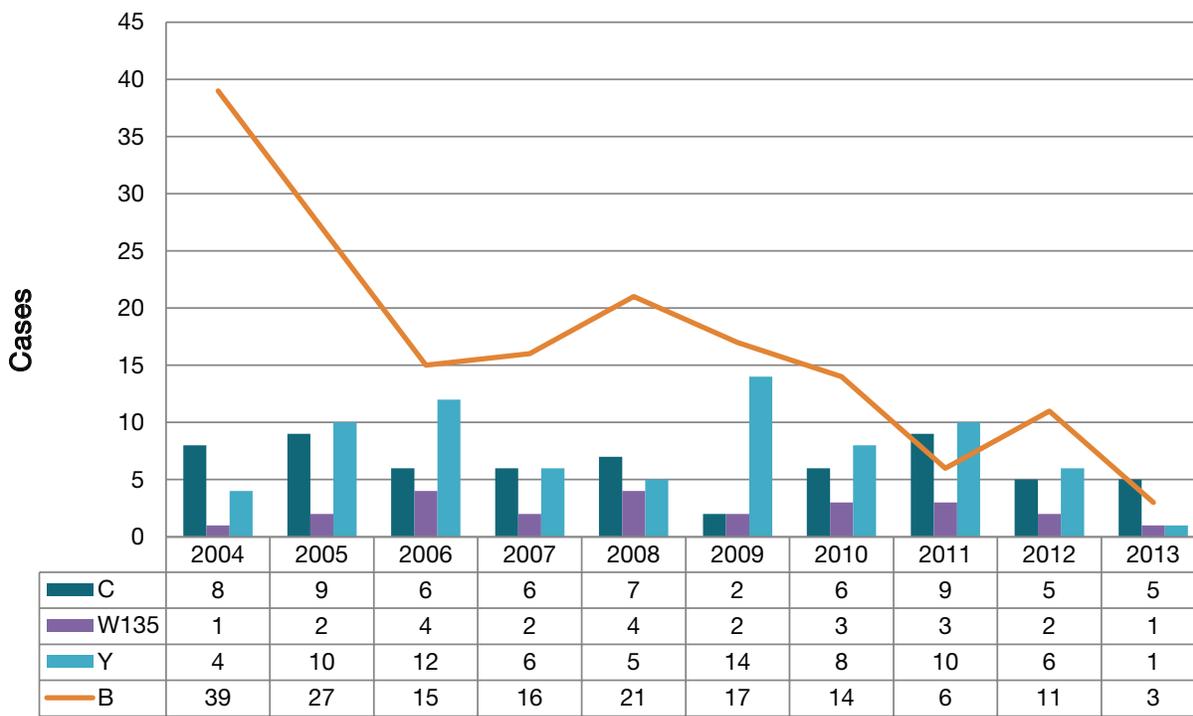
Incidence of meningococcal disease by age and sex: Oregon, 2004–2013



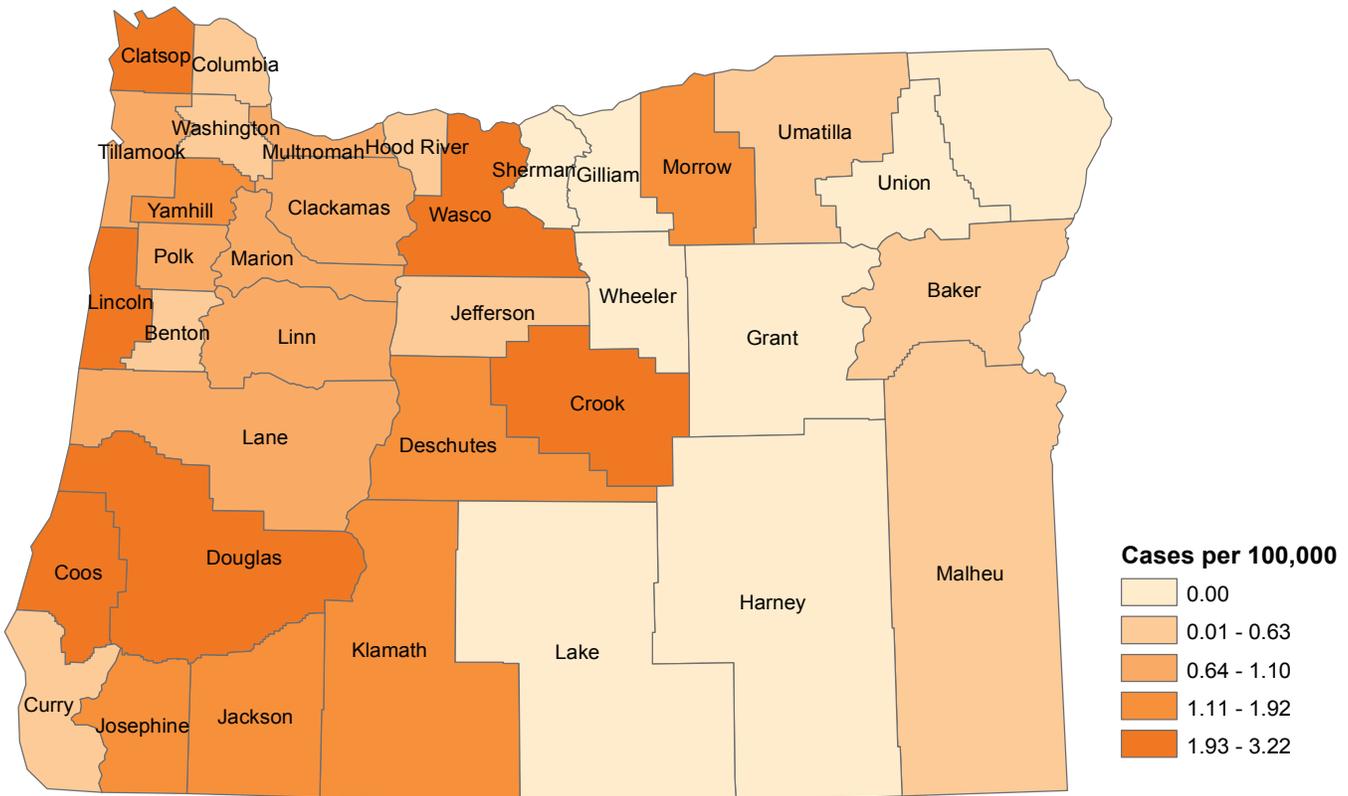
Incidence of meningococcal disease: Oregon vs. nationwide, 1999–2013



Meningococcal disease by serogroup: Oregon, 2004-2013



Incidence of meningococcal disease by county of residence: Oregon, 2004–2013



Prevention

- Vaccinate to prevent illness from serogroups A, C, Y and W-135.
- Identify and recommend prophylaxis of close contacts of confirmed and presumptive cases.
- Avoid smoking and exposing children to tobacco smoke, which have been associated with an increased risk of invasive meningococcal disease.

Mumps

Mumps is an acute viral illness characterized by fever and swelling of the salivary glands, typically the parotids. Transmission is generally through respiratory droplets or through direct contact with nasal secretions.

Once an almost universal childhood infection, mumps incidence decreased in the United States with routine childhood vaccination. Reporting of this vaccine-preventable viral infection was discontinued in Oregon in 1981

but re-established July 1, 2006, prompted by outbreaks of illness. Three cases were reported in 2010, four in 2011, six in 2012 and three in 2013.

Because as many as 20% of mumps virus infections are asymptomatic, and nearly 50% are associated with non-specific or primarily respiratory symptoms (with or without parotitis), mumps infections are significantly underreported.

Prevention:

- One dose of vaccine (as MMR) for all children at 12–15 months of age.
- A second dose (as MMR) for school-age children and for adults at high risk of mumps exposure (i.e., healthcare personnel, international travelers and students at post-high-school educational institutions).
- One dose of vaccine (as MMR) for all persons born during or after 1957 who are not at high risk of mumps exposure.

Pertussis

Pertussis is a highly contagious, acute bacterial respiratory tract infection caused by the bacterium *Bordetella pertussis*. It is transmitted from person to person through contact with respiratory secretions (i.e., droplet transmission). The disease is most severe in infants and young children, many of whom suffer the intense fits of coughing that may end with an inspiratory “whoop.” Although the disease may be milder in older persons, any infected person can transmit the disease to other susceptible persons, including unimmunized or incompletely immunized infants.

Despite high childhood immunization coverage rates, pertussis remains endemic in the U.S., with epidemics every 3–5 years. In 2012, Oregon experienced a pertussis epidemic with the most cases (910) seen in a single year since 1953. Because pertussis often goes undiagnosed in adolescents and adults, it is likely the actual number of cases greatly exceeds the number reported.

Despite the overall decrease in the number of reported pertussis cases in 2013, Klamath, Josephine, Lane and Coos counties experienced large community outbreaks during 2013.

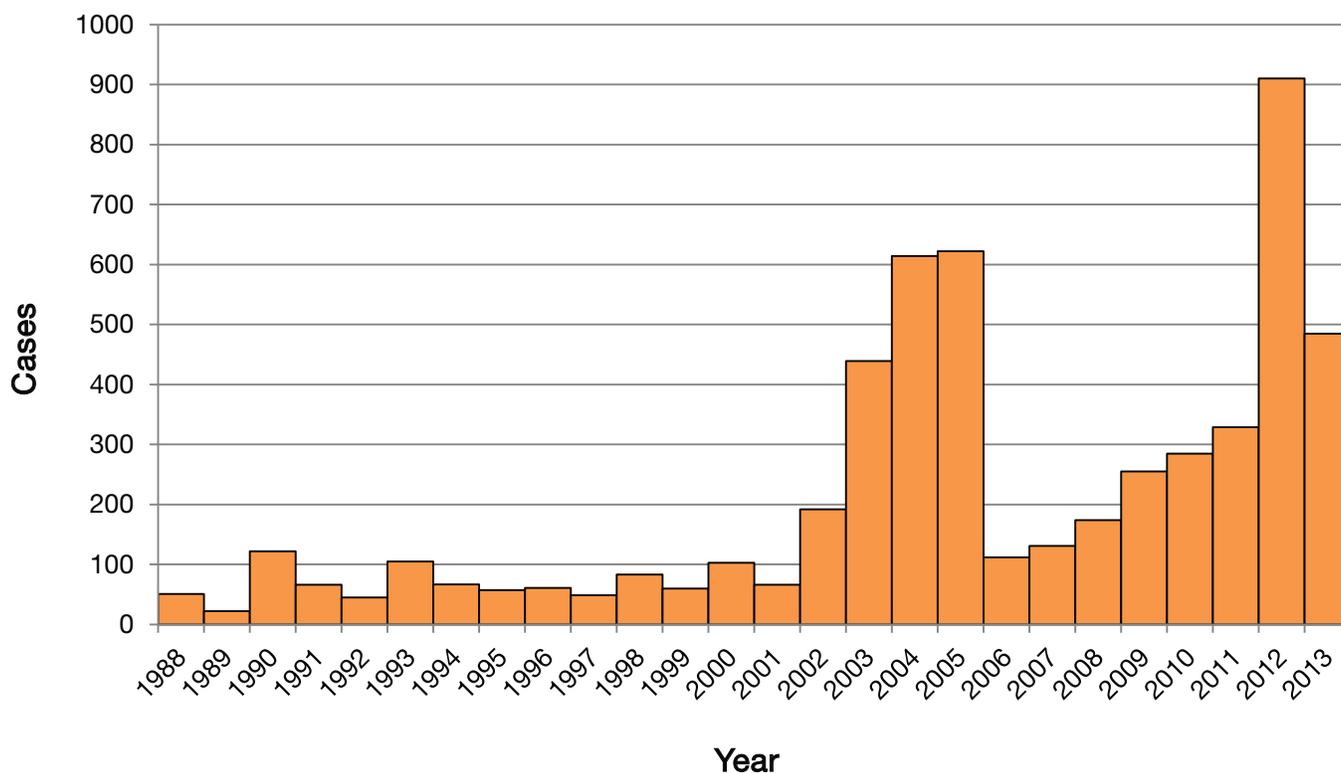
Infants with pertussis are also the most likely to suffer complications and death. Since 2003,

214 (35%) of the 609 infants diagnosed with pertussis in Oregon have been hospitalized and five have died.

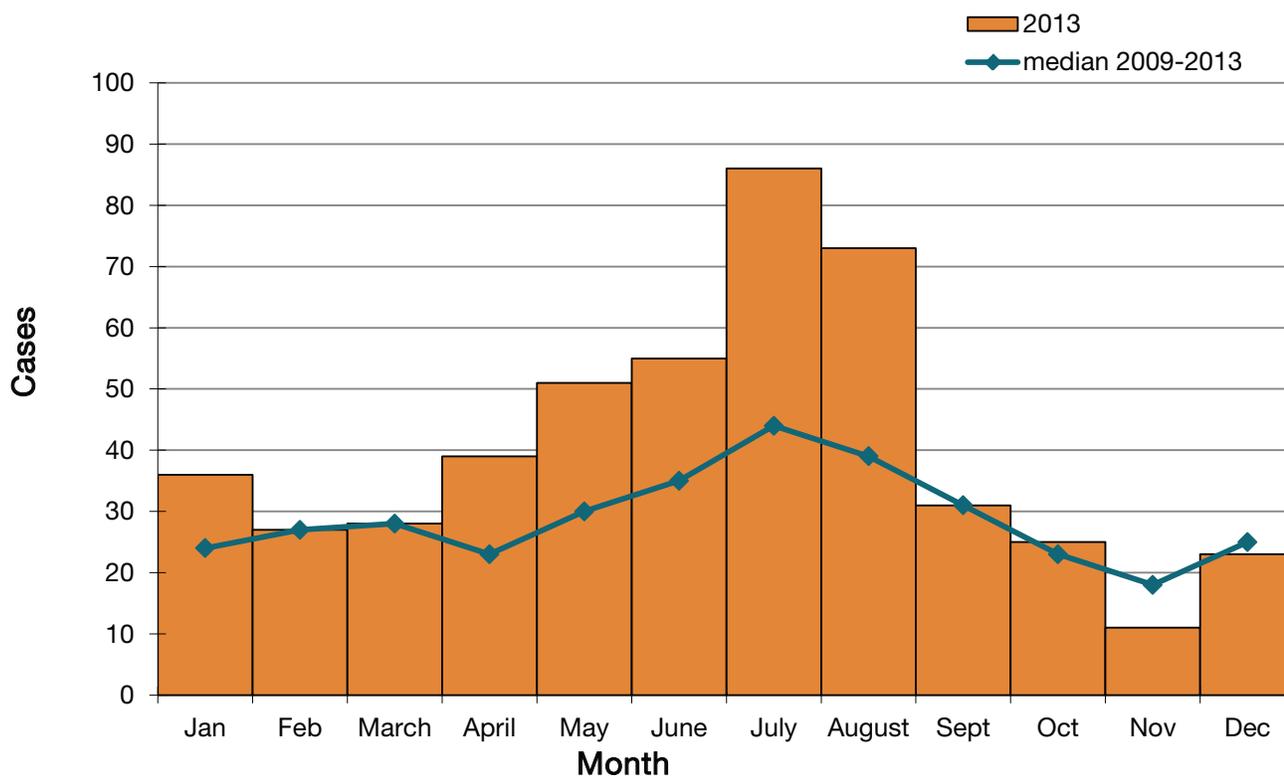
The greatest increase in incidence in recent years has been in adolescents and adults. Since 2003, 50% of pertussis cases reported in Oregon have been in children >10 years of age. Immunity wanes with time, so adolescents and adults need a Tdap booster shot, both to protect themselves and to avoid spreading it to vulnerable infants. All persons ≥ 10 years of age (including persons ≥ 65 years) who have not already received Tdap are advised to get a single dose. Pregnant women should receive Tdap preferably at 27 and 36 weeks' gestation, so they can develop antibodies to pertussis and pass them to their babies before birth. Vaccination of health care workers is strongly encouraged. Children need a series of five DTaP vaccinations before kindergarten, starting at two months of age.

Since 2010, with funding from the CDC, Oregon launched the Metropolitan Area Pertussis Surveillance (MAPS) project, which enhances surveillance for pertussis in Clackamas, Multnomah and Washington counties. Each reported case is investigated extensively and standardized data are collected. These data will guide future developments in regional and national public health policy.

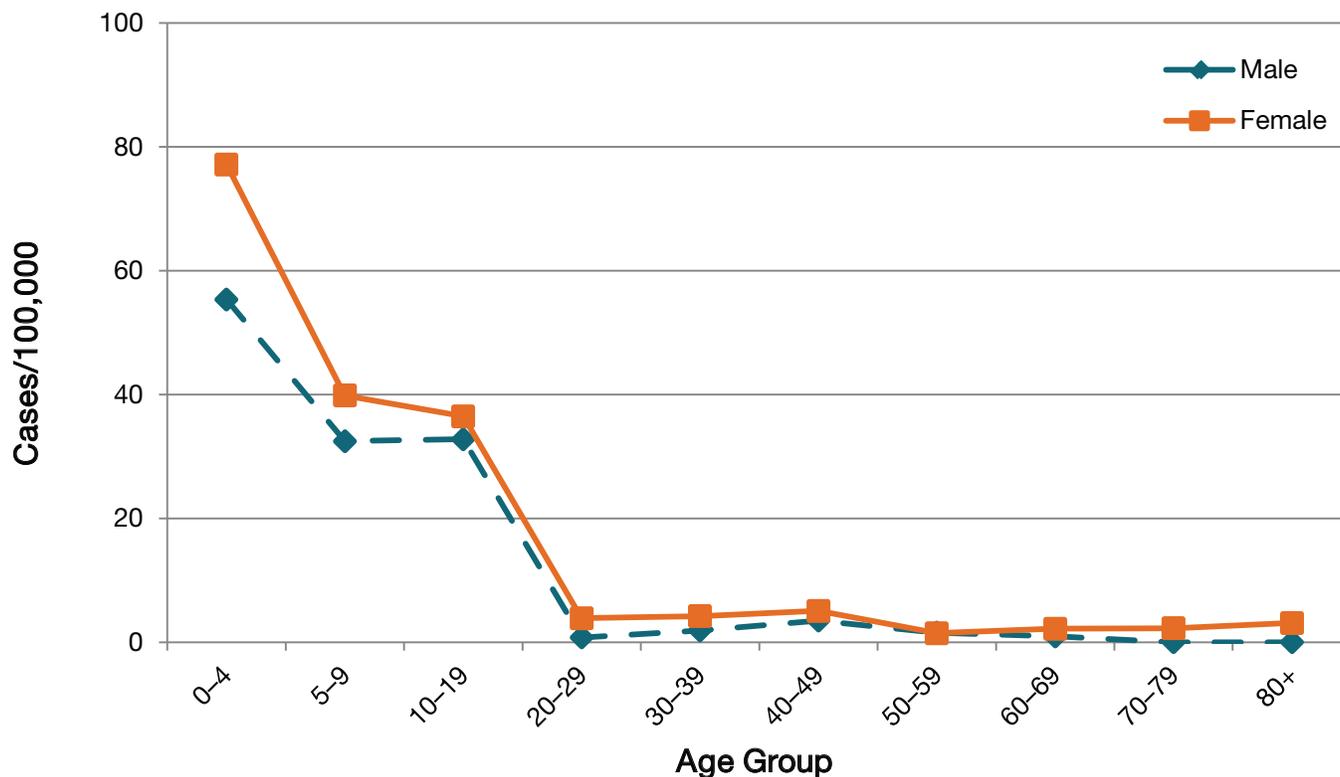
Pertussis by year: Oregon, 1988–2013



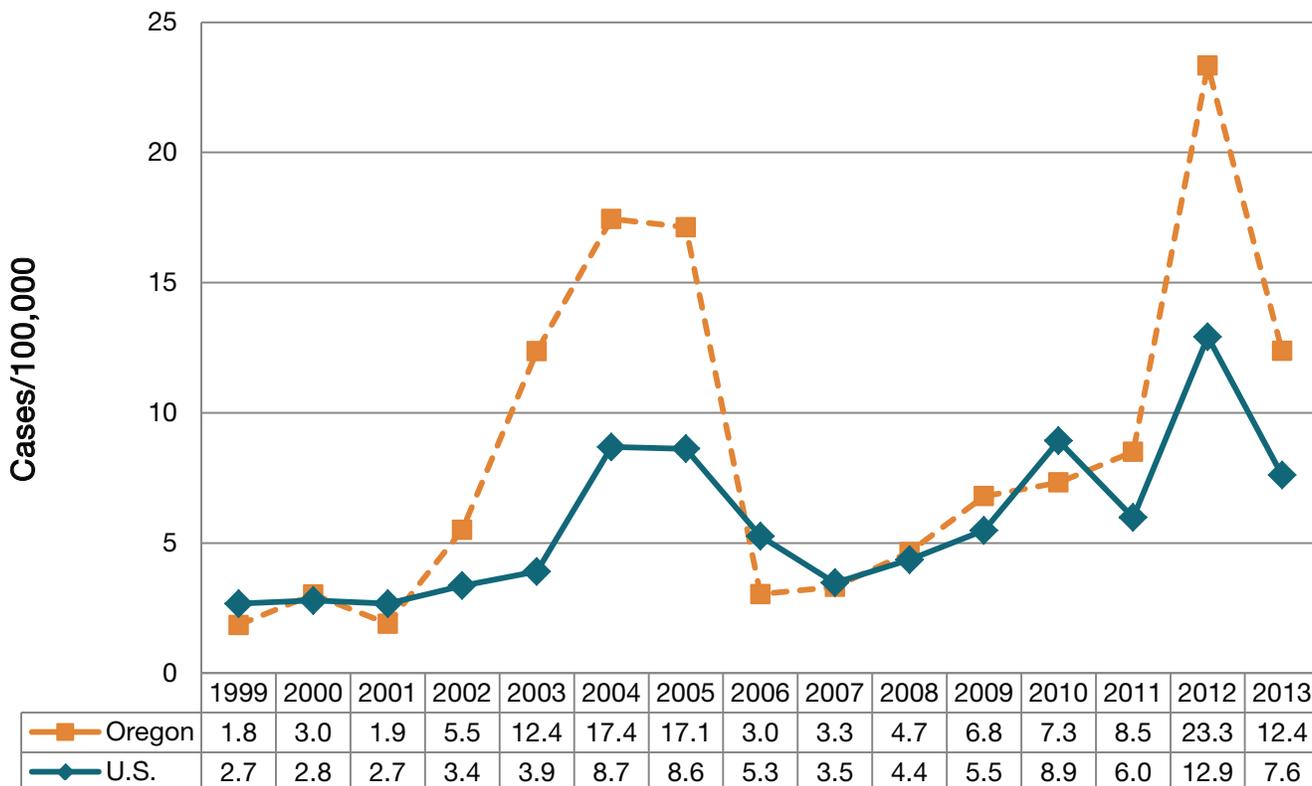
Pertussis by onset month: Oregon, 2013



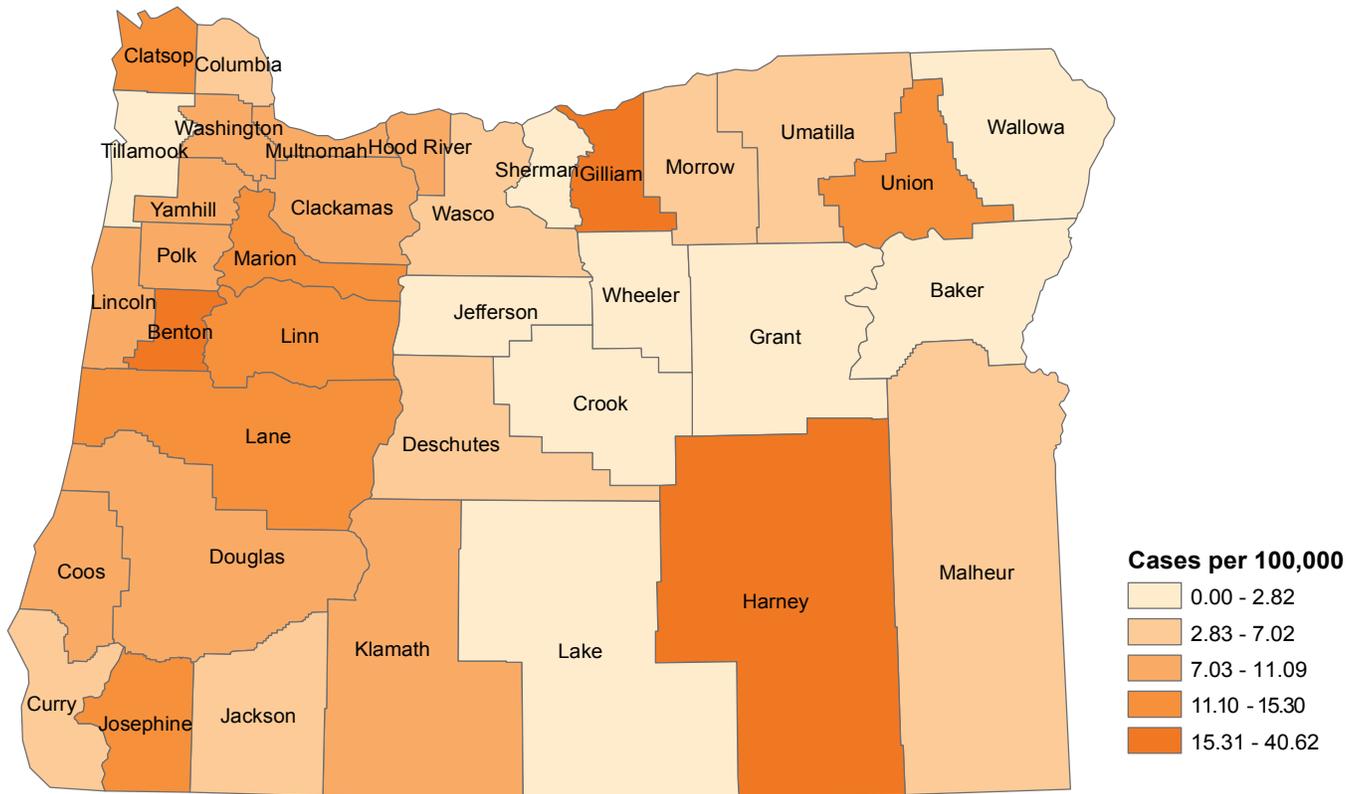
Incidence of pertussis by age and sex: Oregon, 2013



Incidence of pertussis: Oregon vs. nationwide, 1999–2013



Incidence of pertussis by county of residence: Oregon, 2004–2013



Prevention

- Immunization is the best way to prevent pertussis.
- Cover your cough and wash your hands.
- Keep babies away from anyone who is coughing.

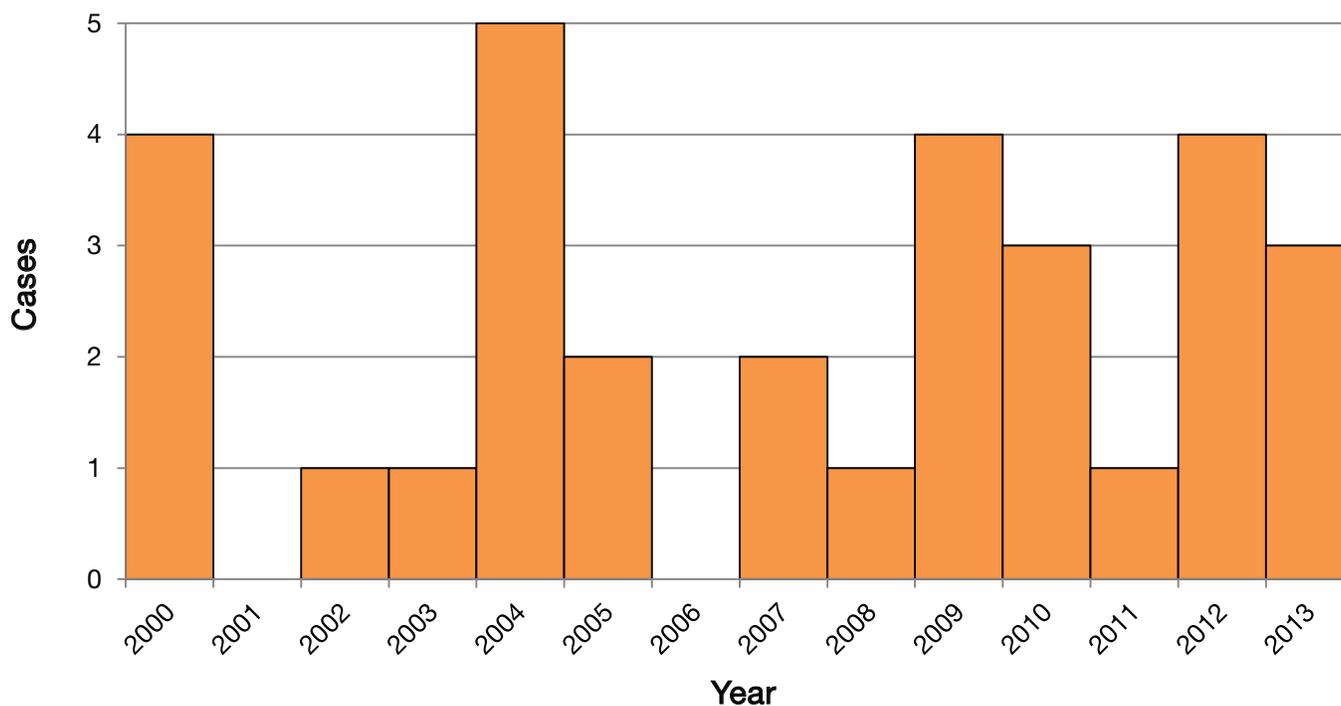
Q fever

Q fever is a bacterial infection caused by *Coxiella burnetii*. It can result in acute or chronic illness in humans, and is usually acquired through inhalation of barnyard dust contaminated with bacteria from the placentas, body fluids or excreta from infected animals. The primary reservoirs are cattle, sheep and goats. Infection may also result from consumption of unpasteurized milk. Acute Q fever can be accompanied by a host of symptoms, including high fever, severe

headache, malaise, myalgia, chills, sweats, nausea, vomiting, dry cough, diarrhea, abdominal pain and chest pain. Most people recover from acute Q fever, but some (<5%) develop chronic illness, which often manifests as endocarditis. Chronic infection can be treated with long courses of antibiotics. Outbreaks in the U.S. have been the result of occupational exposure to infected livestock.

Q fever reports are rare in Oregon; in 2013 three acute cases were reported.

Q fever by year: Oregon, 2000–2013



Prevention

- Barns and laboratories housing potentially infected animals should have restricted access, and holding facilities for sheep should be located away from populated areas.
- Appropriately dispose of placenta, birth products, fetal membranes, and aborted fetuses at facilities housing sheep and goats.
- Use only pasteurized milk and milk products.
- Quarantine imported animals.

Rabies

Rabies is an acute infection of the central nervous system caused by a neurotropic rhabdovirus of the genus *Lyssavirus*. All mammals, including humans, are susceptible to rabies. In humans, rabies causes a rapidly progressive and fatal encephalomyelitis. The incubation period in humans is usually 2–12 weeks, but there have been documented incubation periods as long as seven years. Bites from infected animals constitute the primary route of transmission. Transplanted organs, including corneas from patients with undiagnosed rabies, have also caused infection in recipients.

The Pacific Northwest is considered to be free of terrestrial rabies. In Oregon, the main reservoir of rabies is bats. Mammals like foxes and cats may come in contact with rabid bats, acquire the infection, and be capable of transmitting it to humans. Since 2000, 9% of the bats tested in Oregon have been positive for rabies. This, of course, is not a random sample of Oregon's bats; rather it represents bats that were neurologically impaired enough to have bitten humans or their pets, and then to have been captured. Any contact between a bat and a human should be evaluated carefully and immediately. All potential human exposures should result in a call to a local public health department office. Testing of an exposing mammal involves killing the animal, removing the head, and sending it to a laboratory for special staining and microscopic examination of brain tissue. The Oregon State Public Health Laboratory

will test mammals involved in bona-fide human exposures at no cost to the patient; and (for a fee) the Oregon State University's Veterinary Diagnostic Laboratory will test mammals involved in other exposures.

Seven bats, two foxes and one coyote tested positive in 2013. All foxes were residents of Josephine County and the coyote was from Baker County.

Rabies in humans is 100% preventable through prompt appropriate medical care, beginning with thorough cleaning of the wound. Persons not previously immunized for rabies, who are exposed to a rabid animal, should be given human rabies immune globulin (HRIG), with as much as possible infiltrated into and around the bite wound(s), and the rest administered intramuscularly; and four doses of rabies vaccine, one each on days 0, 3, 7 and 14. Before 2008, a five-dose vaccine regimen was recommended. However, review of serologic and case data indicated that four doses of vaccination in combination with HRIG elicited a protective immune response and that a fifth dose of vaccine provided no additional benefit.

Though bats are the reservoir in Oregon, canine rabies still accounts for most human rabies cases worldwide. Travelers to rabies-enzootic countries should be warned to seek immediate medical care if they are bitten by any mammal.

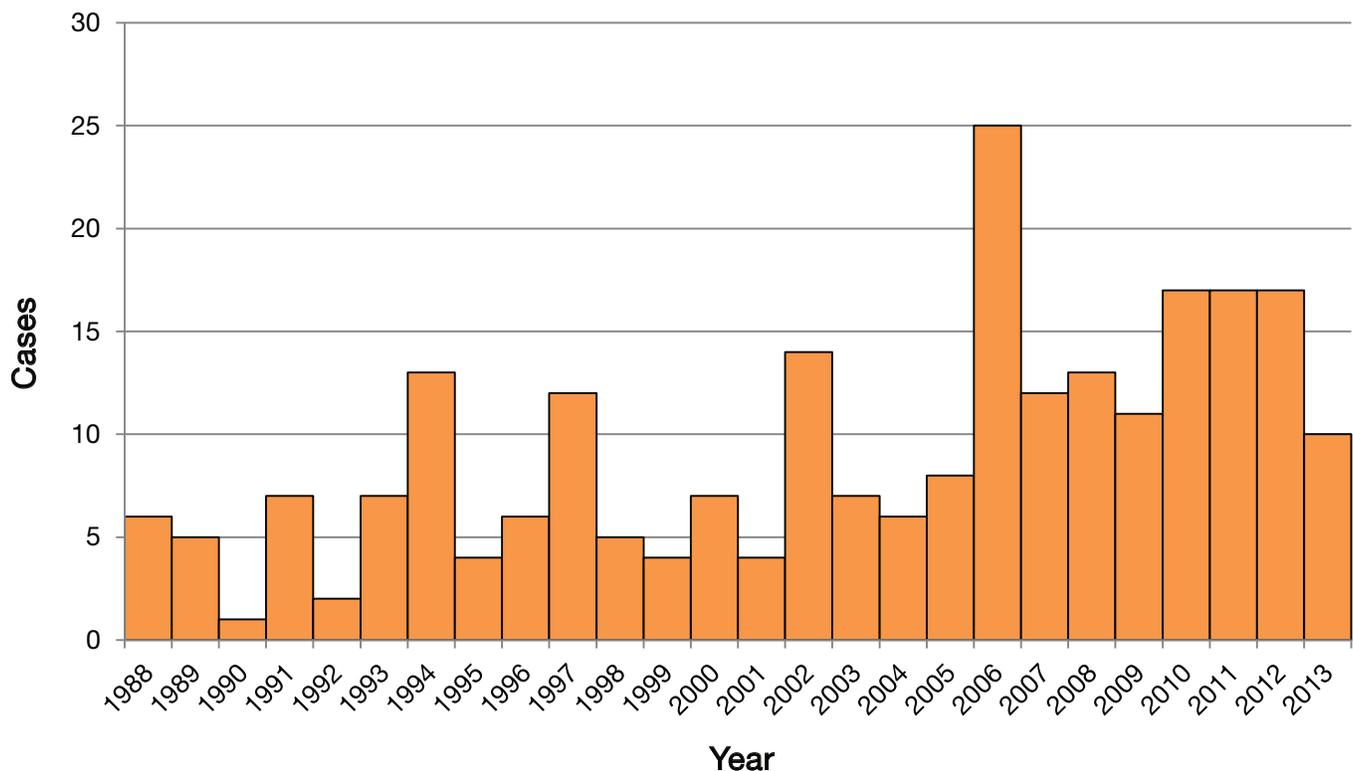
Additional information and an algorithm to follow for assessment of rabies risk are provided here.

Rabies testing, Oregon, 2000–2013 (number of positive/total tested)

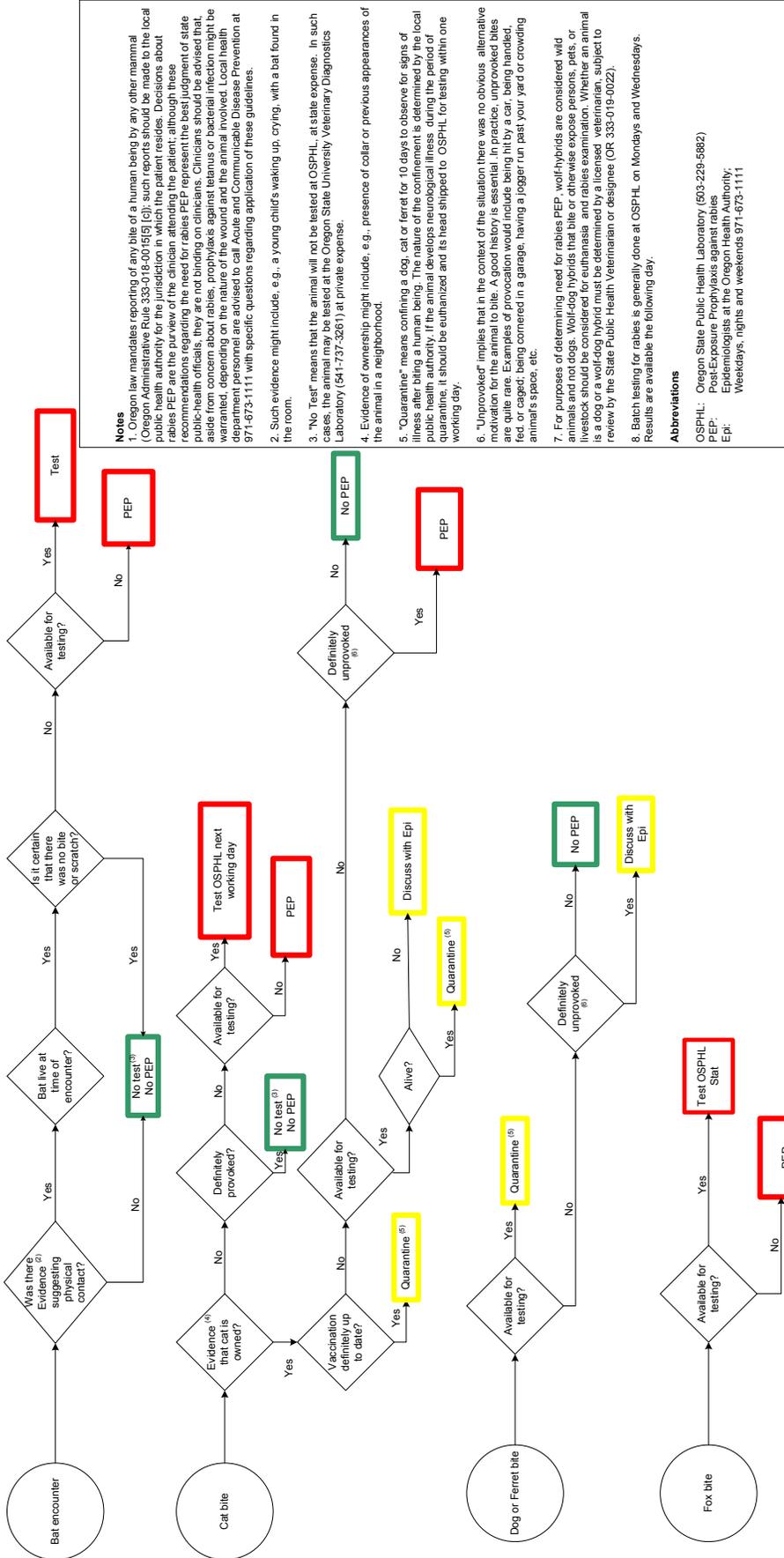
Year	Bat	Cat	Dog	Fox	Other
2000	8/73	0/79	0/56	1/4	0/4
2001	4/59	0/67	0/46	0/1	0/41
2002	12/134	0/102	0/27	2/4	0/29
2003	6/61	0/75	0/36	1/5	0/39
2004	7/88	0/105	0/42	0/2	0/27
2005	8/83	0/100	0/48	0/1	0/23
2006	23/126	0/72	0/26	2/4	0/41
2007	12/153	0/80	0/33	0/1	0/26
2008	13/128	0/58	0/23	0/3	0/53
2009	11/117	0/73	0/27	0/1	0/42
2010	10/104	0/67	0/41	6/15	1/48 (goat)
2011	11/143	0/84	0/32	5/44	1**/61 (coyote)
2012	14/203	0/79	0/37	3**/28	0/45
2013	7/193	0/90	0/36	2/34	1/53 (coyote)
Totals 2000–2013	146/1,665 8.7%	0/131	0/510	22/147 14.9%	3/532 (0.56%)

** enhanced surveillance due to positive goat and foxes in 2010–2012

Animal rabies by year: Oregon, 2008–2013

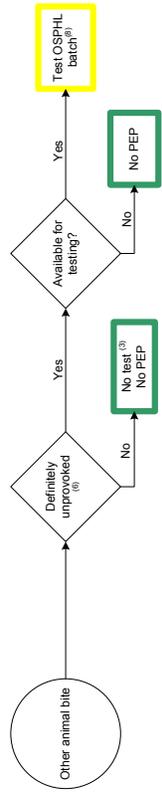


Algorithm for Prevention of Rabies After Animal Encounters in Oregon (1)

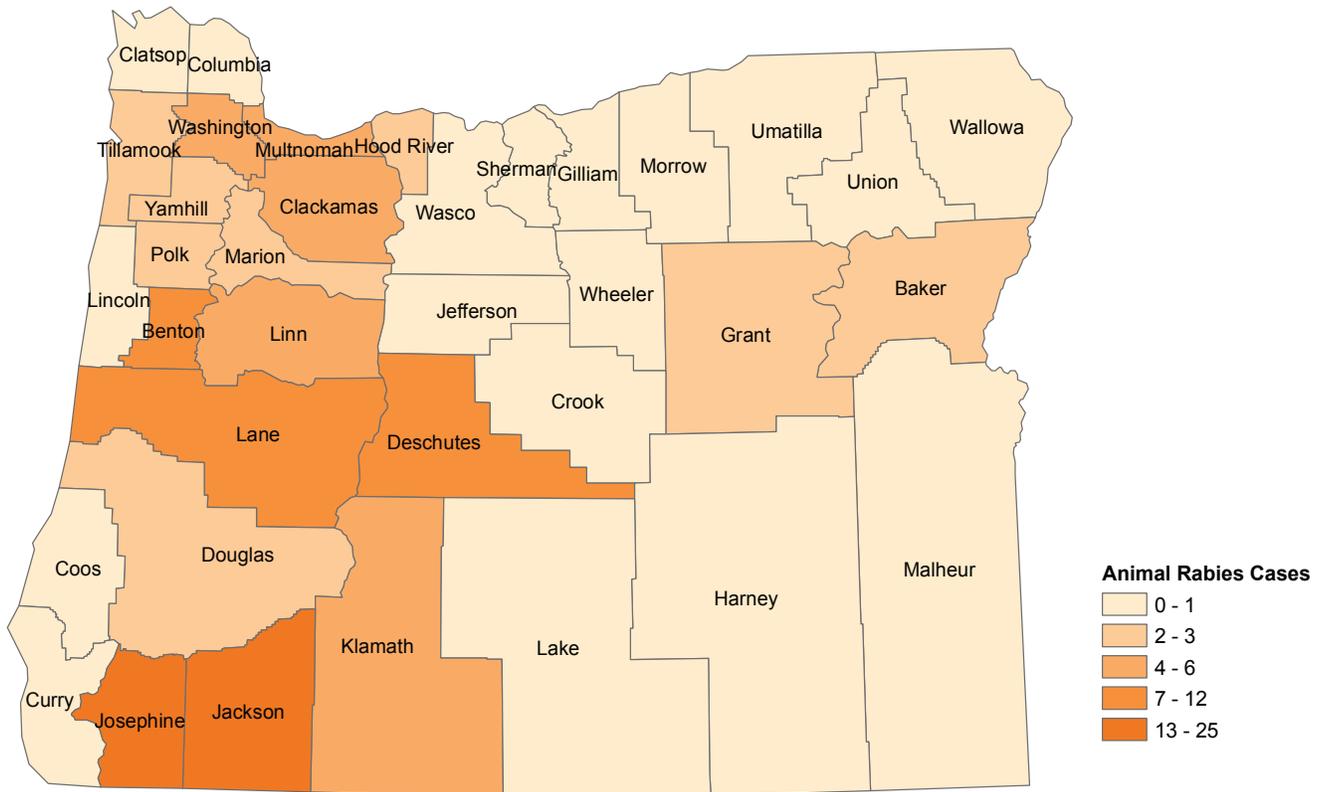


Rabies testing, Oregon 2000-2012

Animal	Positive	Tested	% Positive
Bat	139	1472	9.4%
Cat	0	1041	0
Dog	0	474	0
Fox	20	113	17.7%



Animal rabies cases by county: Oregon, 2004–2013

**Prevention:**

- Keep rabies vaccinations up to date for all pet cats, ferrets and dogs.
- Maintain control of pets by keeping cats and ferrets indoors and keeping dogs under direct supervision.
- Spay or neuter pets to help reduce the number of unwanted pets that may not be properly cared for or vaccinated regularly.
- Call animal control to remove stray animals from your neighborhood, because these animals may be unvaccinated or ill.
- Do not handle wildlife, especially bats and foxes.

Salmonellosis

Salmonellosis is a bacterial illness characterized by acute abdominal pain, diarrhea, and often fever, that usually begins one to five days after exposure. Excretion of *Salmonella* may persist for several days or even months beyond the acute phase of illness. Antibiotics are not needed by most patients (the exceptions being those at high risk of invasive infection), and they may increase the duration of excretion.

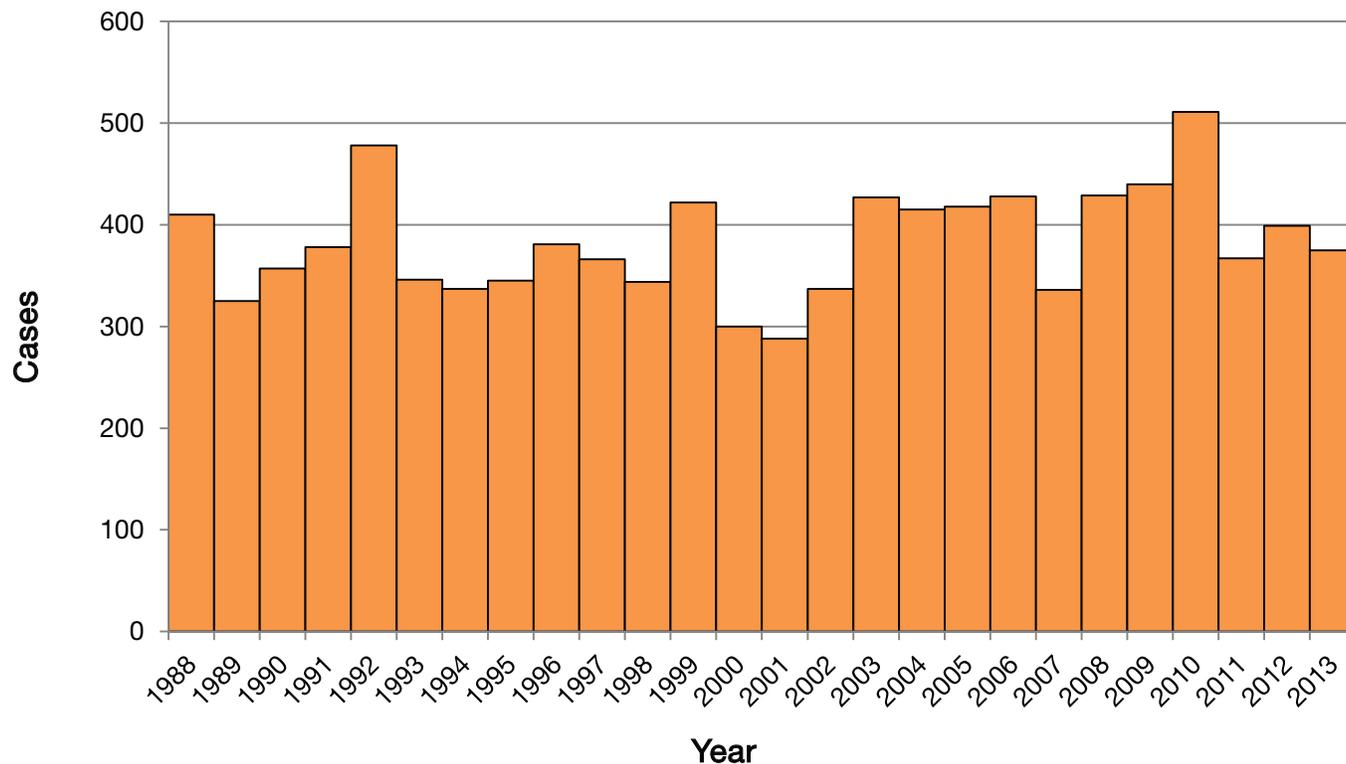
A wide range of domestic and wild animals are carriers of *Salmonella*, including poultry, swine, cattle, rodents, iguanas, tortoises, turtles, snakes, young poultry, dogs and cats. Most human infections are thought to come from consumption of fecally contaminated food or water, but other environmental exposures may be hard to document and therefore under-appreciated. Raw or undercooked produce and products of animal origin — such as eggs, milk, meat and poultry — have been implicated as common sources of animal and human salmonellosis. Though

not as common as *Escherichia coli* O157 infection, person-to-person transmission of salmonellosis is well documented. The incidence of reported infection is highest among children <5 years of age.

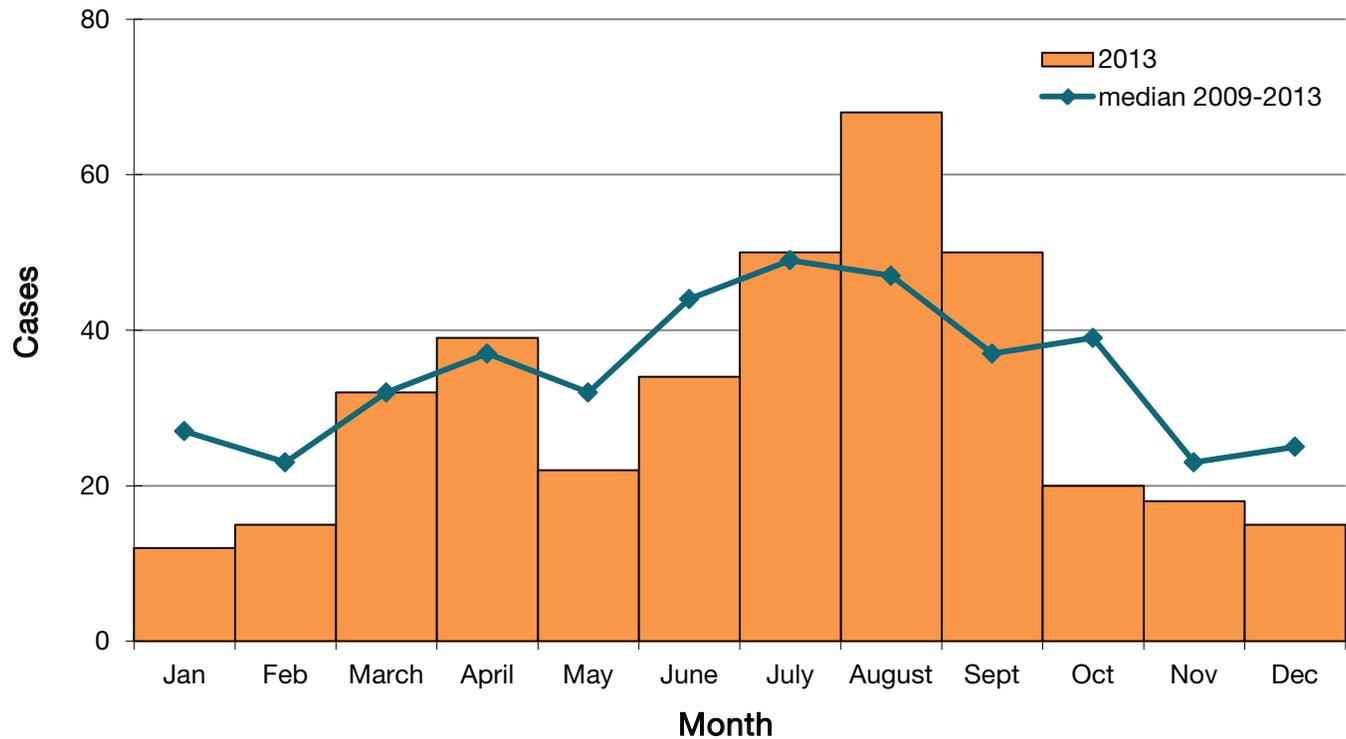
Of approximately 2,500 known serotypes, only about 200 are detected in the United States in any given year. In Oregon, *S. Enteritidis* and *S. Typhimurium* have historically been the two most commonly reported serotypes, comprising 22% and 23% of all lab-confirmed isolates in 2013, respectively. However, an ongoing outbreak of *S. Heidelberg* infections allowed this particular serotype to rank third with 6% of the reported salmonellosis cases during 2013.

In 2013, 375 salmonellosis cases were reported in Oregon, down from a high of 511 in 2010. Sixteen outbreaks of salmonellosis were reported. Most of these were small; however, one large outbreak with 13 cases in Oregon was linked to a multi-state outbreak of human *Salmonella* Typhimurium infections linked to live poultry.

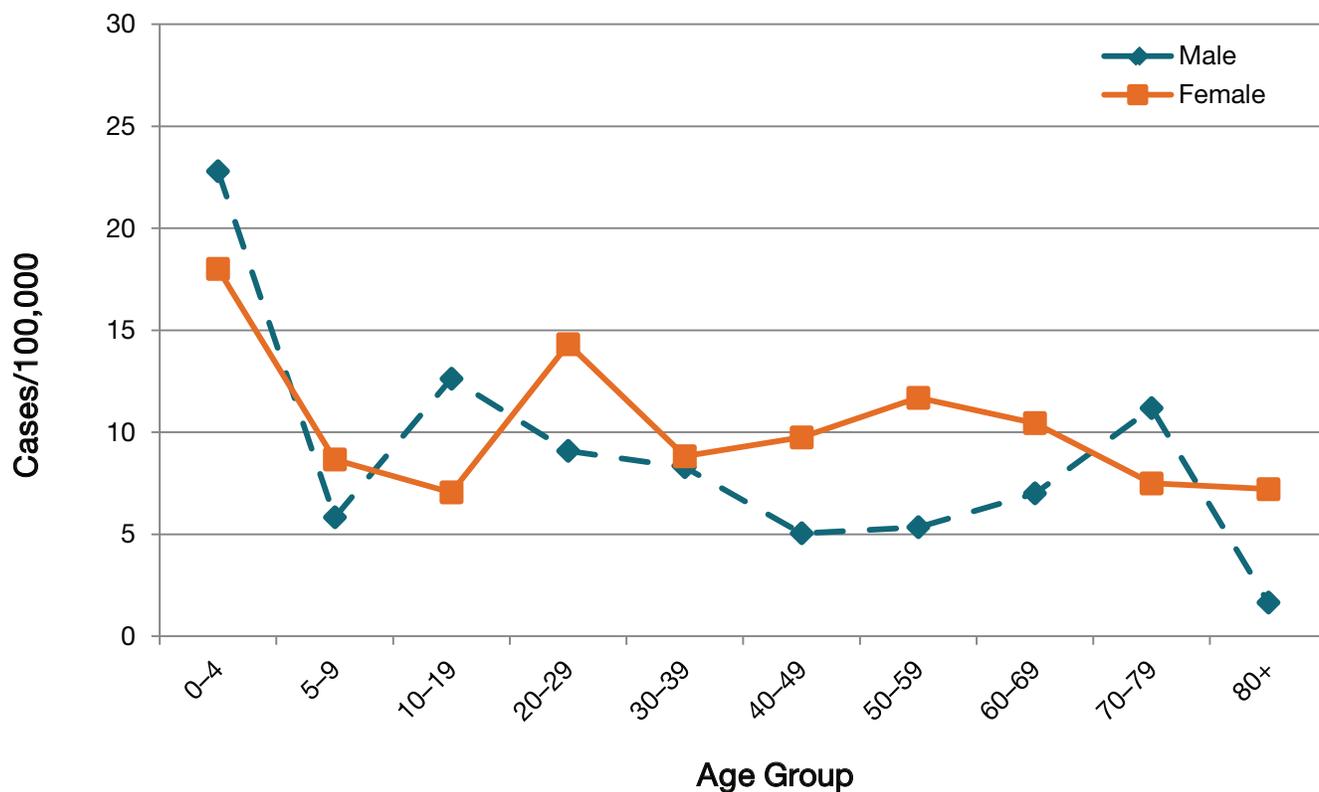
Salmonellosis by year: Oregon, 1988–2013



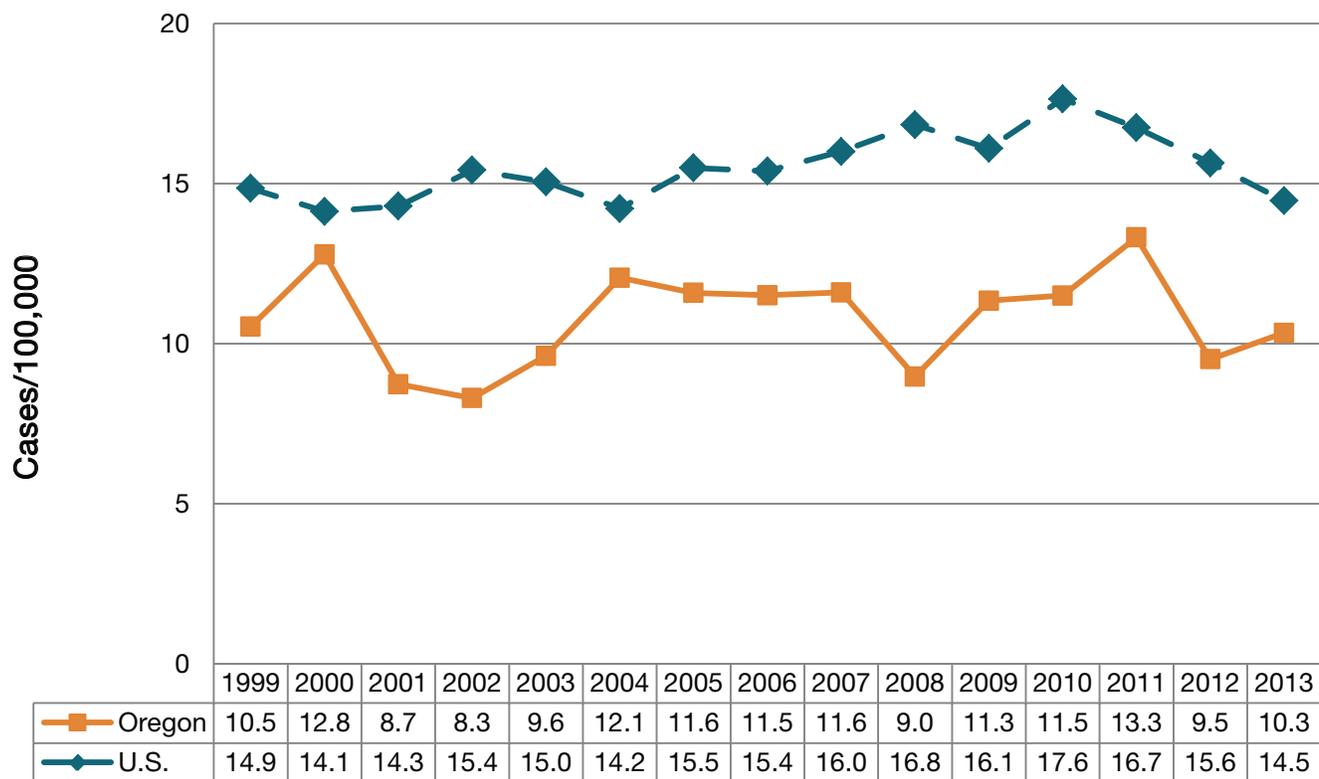
Salmonellosis by onset month: Oregon, 2013



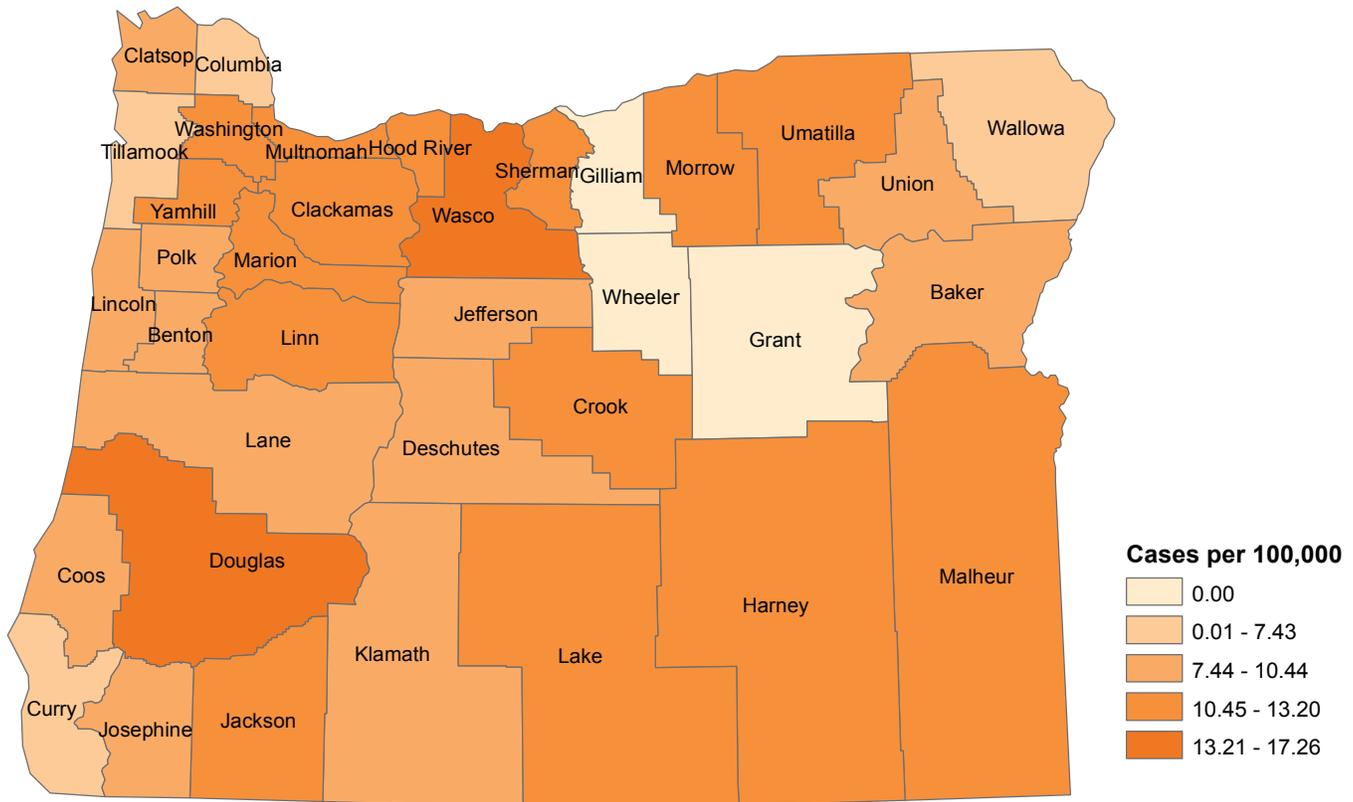
Incidence of salmonellosis by age and sex: Oregon, 2013



Incidence of salmonellosis: Oregon vs. nationwide, 1999–2013



Incidence of salmonellosis by county of residence: Oregon, 2004–2013



Selected* salmonellosis cases by serotype, Oregon, 2004–2013

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Braenderup	2	1	11	8	1	21	36	9	10	7
Enteritidis	64	86	74	54	76	61	123	67	74	80
Hadar	3	5	5	1	3	7	8	8	11	6
Heidelberg	42	51	19	26	23	44	28	13	57	23
Infantis	10	5	7	5	8	9	9	13	15	10
Montevideo	15	15	13	12	15	22	12	17	13	5
Muenchen	7	8	8	9	9	10	10	5	5	3
Newport	14	17	16	17	15	15	24	13	8	15
Oranienburg	6	8	5	8	8	6	8	11	8	9
Saintpaul	16	7	10	3	23	10	13	8	3	12
Thompson	1	6	9	4	7	12	14	14	9	12
Typhimurium	86	84	90	52	65	74	40	47	50	82

*Selected because at least one case was reported in 2013 and it is a more common serotype.

Prevention:

- Cook poultry, ground beef, and eggs thoroughly.
- Do not eat or drink foods containing raw eggs, or raw (unpasteurized) milk.
- If you are served undercooked meat, poultry or eggs in a restaurant, send it back to the kitchen for further cooking.
- Wash hands, kitchen work surfaces, and utensils with soap and warm water immediately after they have been in contact with raw meat or poultry.
- Be particularly careful with foods prepared for infants, the elderly, and the immunocompromised.
- Wash hands with soap and warm water after handling reptiles, birds, or baby chicks, and after contact with pet feces.
- Avoid direct or even indirect contact between reptiles (turtles, iguanas, other lizards, snakes) and infants or immunocompromised persons.
- Don't work with raw poultry or meat, and an infant (e.g., feed, change diaper) at the same time.

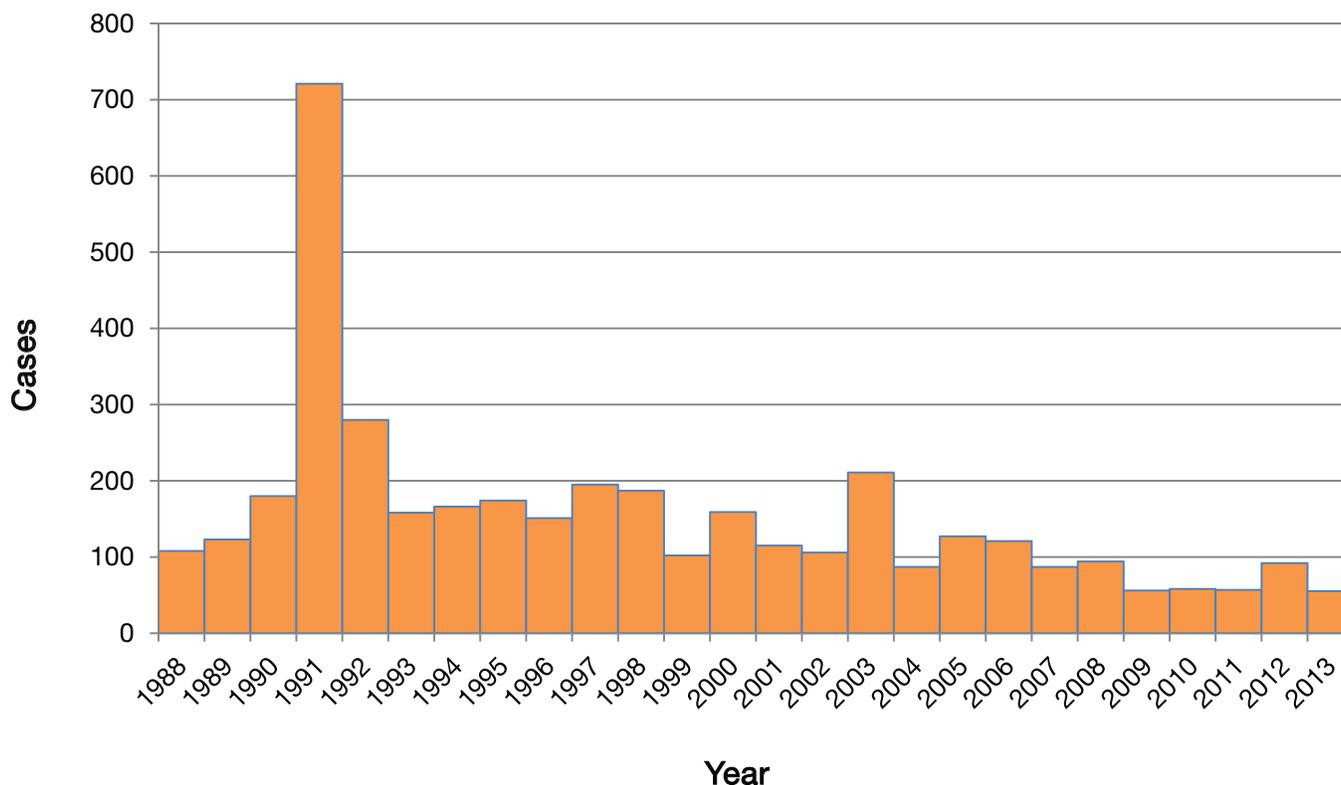
Shigellosis

Shigellosis is an acute bacterial infection characterized by (sometimes bloody) diarrhea, vomiting, abdominal cramps and, often, fever. In Oregon, shigellosis is typically caused by *S. sonnei* or *S. flexneri*. The other species — *S. boydii* and *S. dysenteriae* — are more common in developing countries. Humans are the only known reservoir. Shigellosis is transmitted from person to person, and just a few organisms can cause illness. The rate has historically been highest among children 1–4 years of age. The incidence of shigellosis typically peaks in late summer and fall.

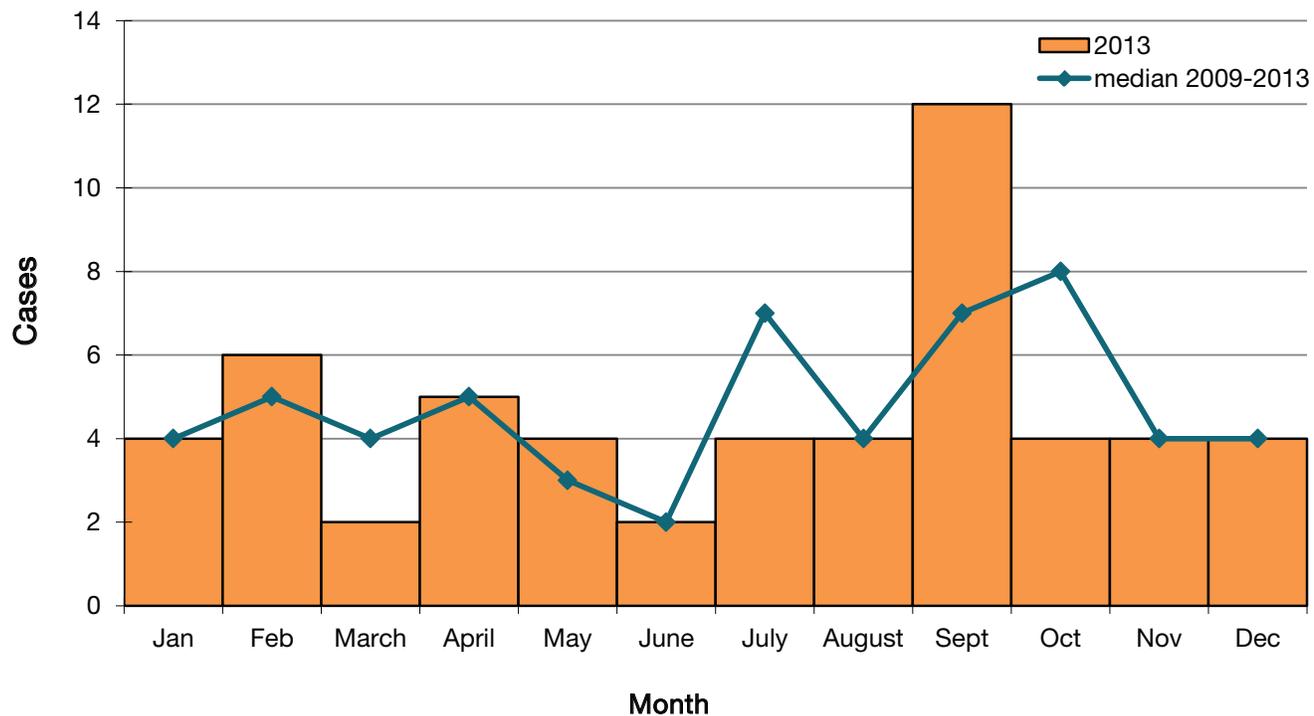
Outbreaks in daycare centers are common, mainly due to the poor hygienic practices of small children. Hand washing is the most important means of prevention. Treatment reduces duration of illness, but the organism has become resistant to many antibiotics used for empiric therapy. Testing for antibiotic susceptibility is important for treatment.

In 2013, 55 cases were reported; a decrease from the 92 cases reported in 2012. This is a historic low for Oregon. Thirty-seven were sporadic cases, seven involved household transmission and 11 were part of outbreaks.

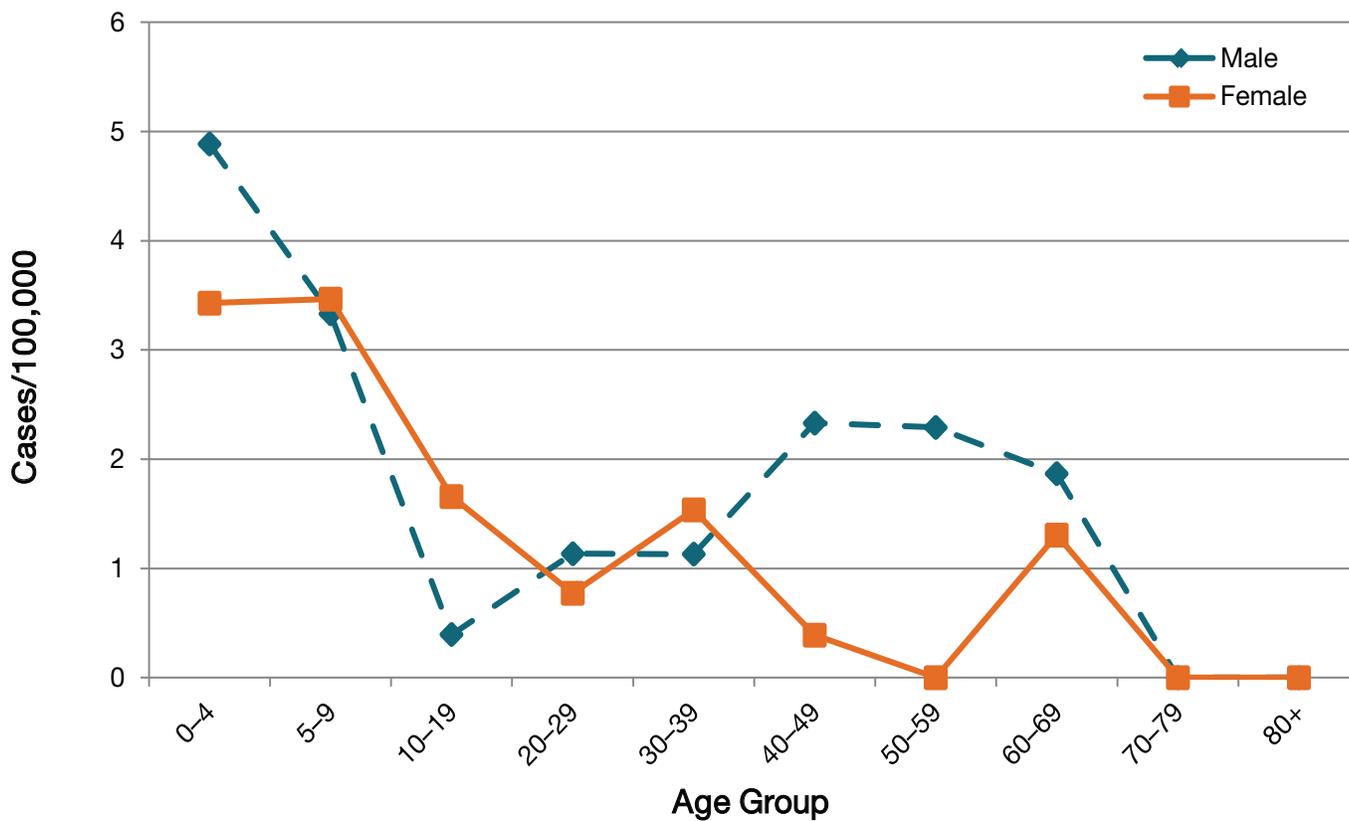
Shigellosis by year: Oregon, 1988–2013



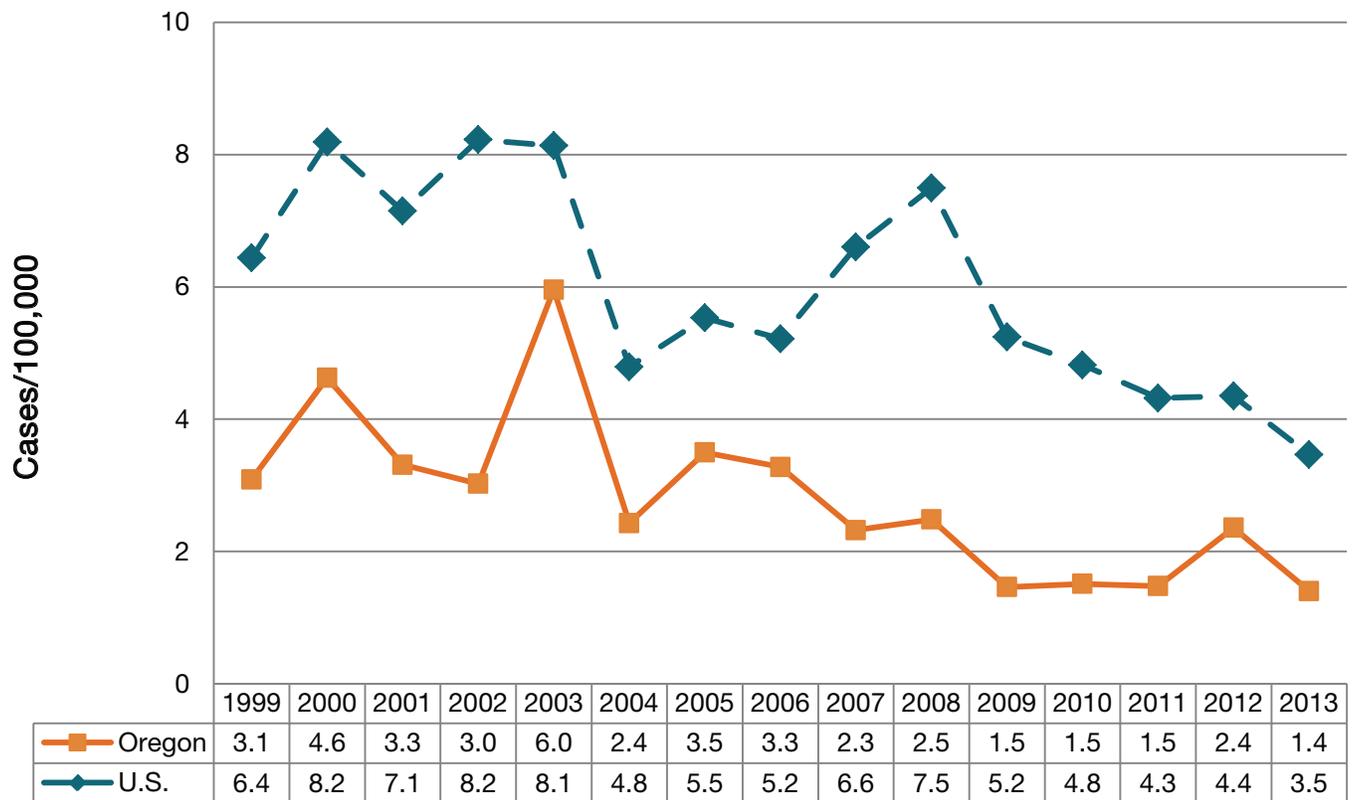
Shigellosis by onset month: Oregon, 2013



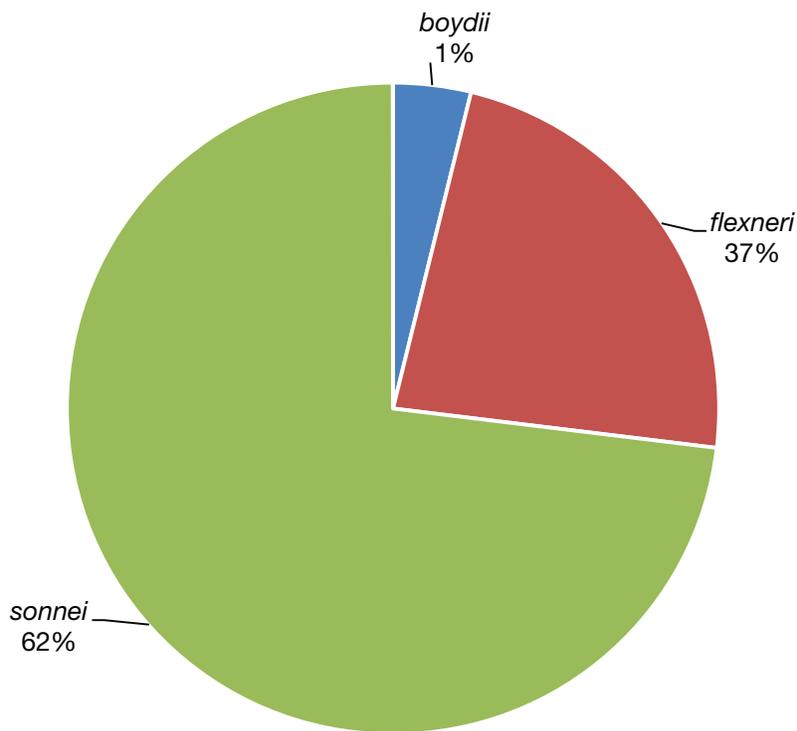
Incidence of shigellosis by age and sex: Oregon, 2013



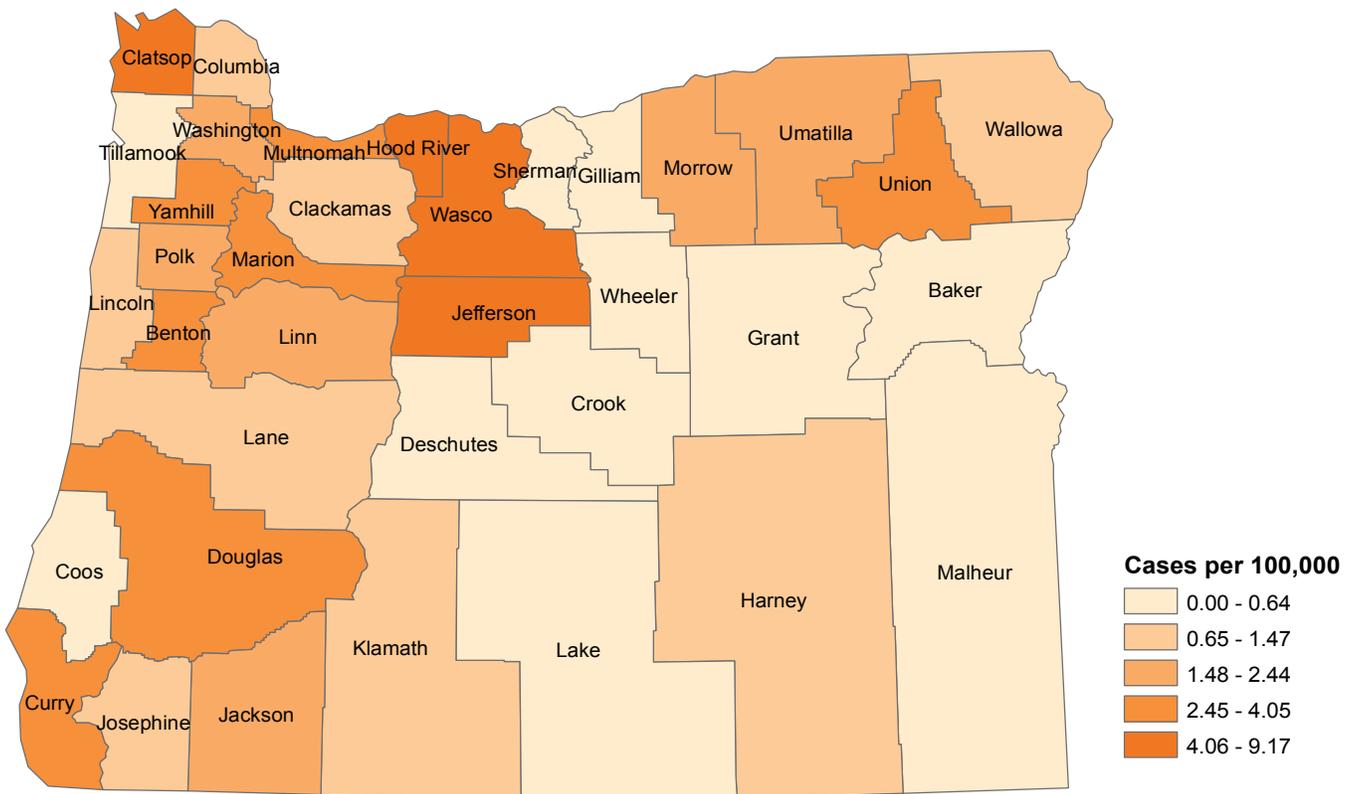
Incidence of shigellosis: Oregon vs. nationwide, 1999–2013



Shigellosis by species: Oregon, 2013



Incidence of shigellosis by county of residence: Oregon, 2004–2013



Prevention

- Wash hands with soap and warm water carefully and frequently, especially after going to the bathroom, after changing diapers, and before preparing food or beverages.
- Dispose soiled diapers properly.
- Disinfect diaper changing areas after using them.
- Keep children with diarrhea out of child care settings.
- Supervise hand washing of toddlers and small children after they use the toilet.
- Do not prepare food for others while ill with diarrhea.
- Avoid swallowing water from ponds, lakes, or untreated pools.

Syphilis

Syphilis is a sexually transmitted infection characterized by stages that can be separated by extended periods without symptoms.

Primary syphilis usually consists of a solitary, painless “chancre” at the site of inoculation that lasts one to five weeks. Syphilis is most infectious during this period and can be transmitted by direct contact with the primary lesion, ordinarily during sex. Blood tests for syphilis are often not positive until three weeks or more after the exposure (inoculation).

Secondary syphilis does not always follow in every case but when it does, it typically appears approximately four weeks after the sore disappears. It includes general body rash, swollen lymph nodes and focal rashes in moist sites, such as the mouth or vagina. These last one to six weeks then disappear, even without treatment. People with secondary syphilis remain infectious, especially upon contact with patchy lesions on the mucous membranes.

There are no symptoms during latent syphilis infection. Latent syphilis may go undetected for a lifetime or be followed within a few years by outward symptoms of *tertiary (late) syphilis*. Blood tests for syphilis are generally positive (reactive) throughout latent infection.

Between 30% and 40% of untreated people with primary syphilis will develop symptoms of tertiary (late) syphilis at some point. Late syphilis can cause disabilities such as dementia, and balance and sensory problems.

Infection acquired in the womb or during delivery is called congenital syphilis. Thanks

to syphilis testing during pregnancy, such infections are now rare. Congenital syphilis may cause miscarriage, stillbirth, neonatal death or chronic disability.

Treatment

Syphilis can be cured with antibiotics. Recent sex partners of people with confirmed primary, secondary or early latent syphilis should receive treatment for syphilis regardless of whether or not they have a positive blood test for syphilis.

In Oregon, cases of early syphilis (including primary, secondary and early latent syphilis) increased substantially during the past five years, from a nadir of 26 cases (0.7/100,000) during 2007 to 404 (10/100,000) during 2013. The 404 cases reported during 2013 in Oregon were more than in any single year since 1989.

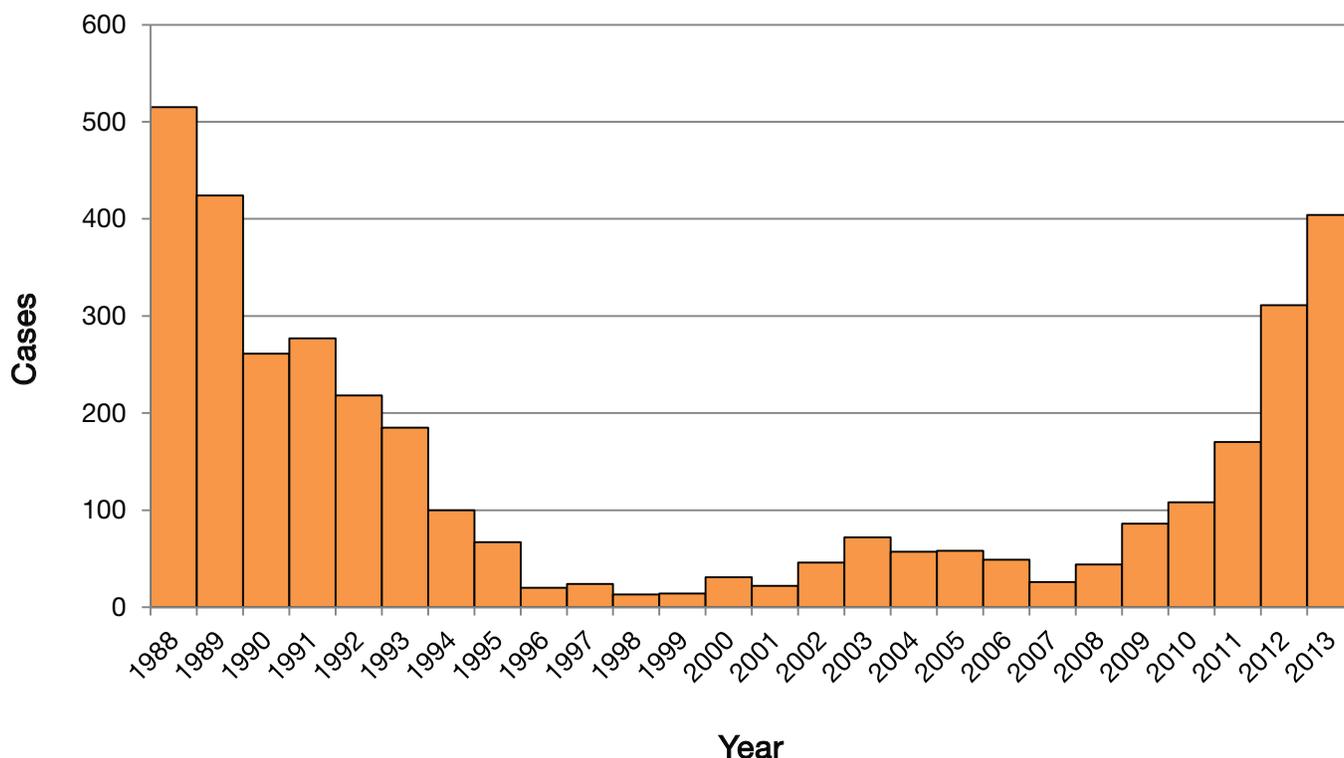
During 2013, elevated rates of early syphilis were observed in men aged 25–54 years, with the highest rate occurring in men aged 25–29 years (45/100,000). Almost all cases of syphilis in the last decade have occurred among men who have sex with other men (MSM). Of the men interviewed in 2013, 95% reported having sex with men. The 16 early syphilis cases reported in women during 2013 exceeded the sum of the previous three years. HIV-positive men comprised 54% (217/404) of 2013 early syphilis cases. As discussed elsewhere, relatively high numbers of gonorrhea reports are also being observed among men with HIV and/or men who have sex with men, in Oregon and the rest of the United States.

Although reasons for increased syphilis among men with HIV are not completely understood, two factors may contribute. In order to avoid transmitting HIV to HIV-negative partners, some men with HIV select sex partners who are also HIV-positive. Since syphilis is common in this population, they might inadvertently be exposing one another to syphilis. Men with syphilis appear to transmit the infection more easily if they also have

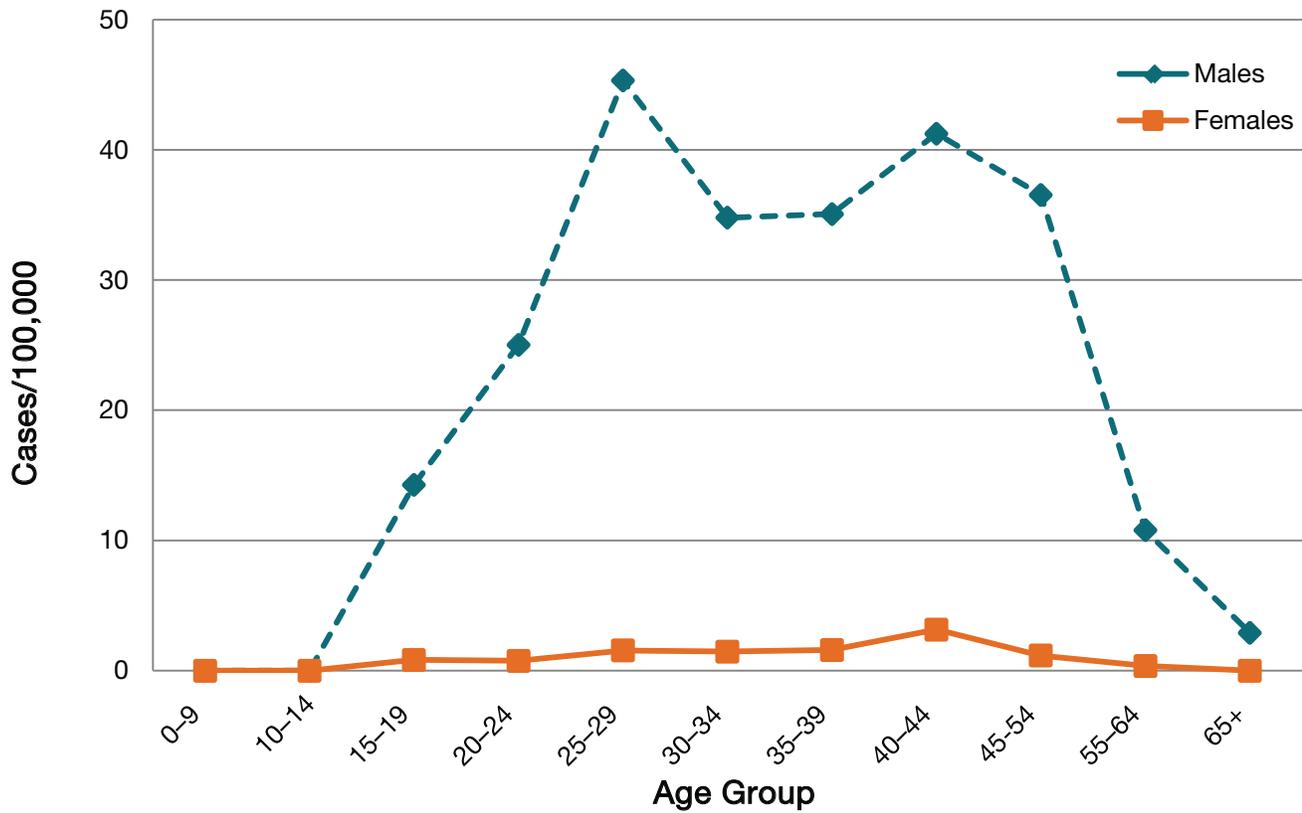
HIV, and men who have HIV appear to be more easily infected after exposure to syphilis. For this reason, men with HIV should be encouraged to test regularly for syphilis.

During 2013, 238 people with reported cases of early syphilis lived in Multnomah County (32/100,000) and accounted for 59% of all early syphilis in Oregon during the year.

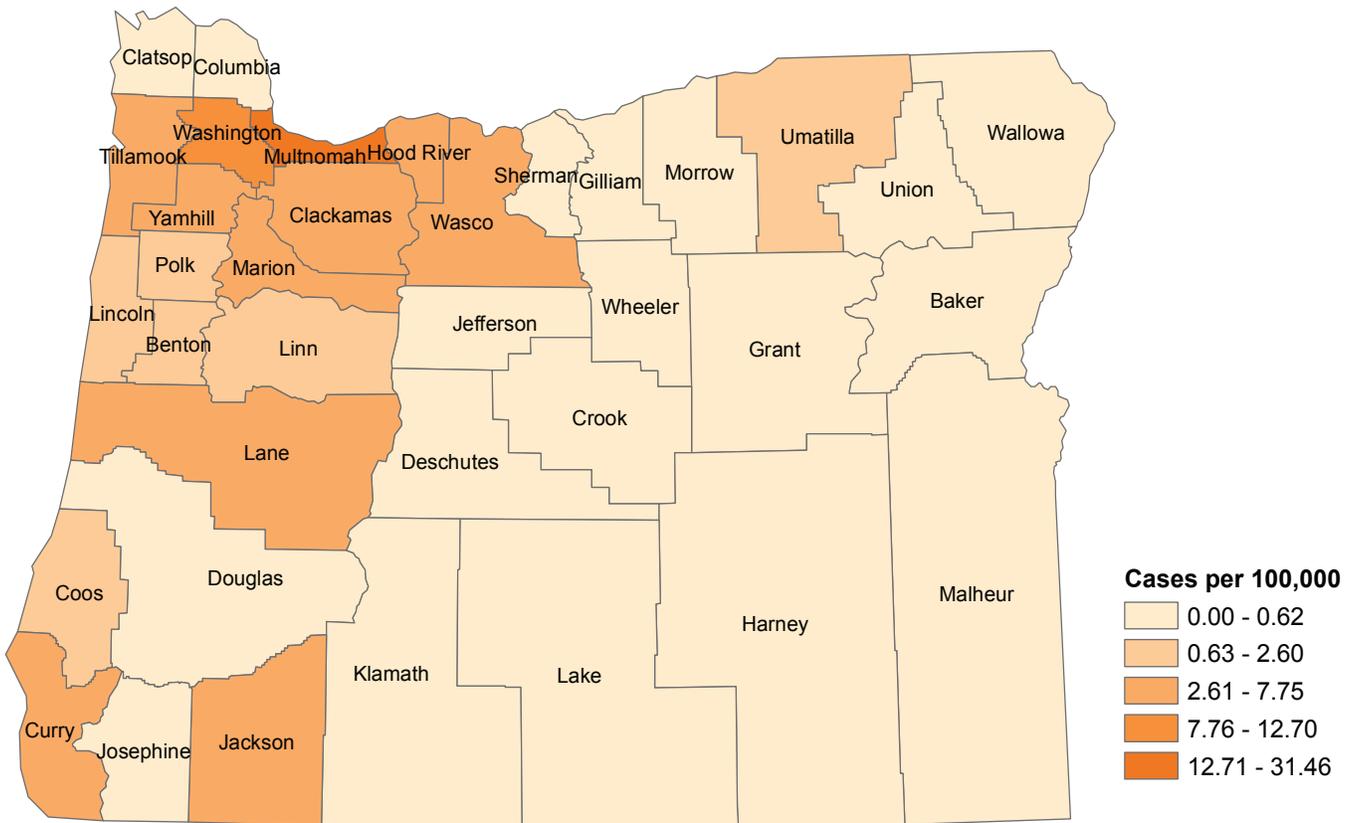
Incidence of syphilis by year, Oregon, 1988–2013



Cases of early syphilis by age group and sex, Oregon, 2013



Cases and incidence of early syphilis by county, 2013



Prevention

Primary prevention strategies aim to prevent a person from becoming infected in the first place by:

- Delaying age at onset of sexual intercourse.
- Decreasing the number of sex partners.
- Using condoms properly from start to finish when having sex.
- Abstain from sex with a partner who has any sore in the genital, anal, or oral area.
- Rapid identification and treatment of new cases can also be considered primary prevention when it results in averting transmission to a sex partner.

Secondary prevention strategies aim to eradicate existing infections by:

- Regularly screening HIV positive persons, MSM and anyone with a sex partner known to have had syphilis.
- Screening pregnant women and treating infections in pregnant women promptly to reduce risk of congenital syphilis.
- Treating early syphilis infections.
- Treating all sex partners exposed ≤ 90 days before diagnosis of a case of early syphilis.
- Screening all sex partners exposed >90 days before diagnosis of a case of early syphilis, treating all such partners with serologic evidence of infection, and presumptively treating anyone for whom screening results are not promptly available or who might not be easily located and treated when testing results are available.

Tuberculosis

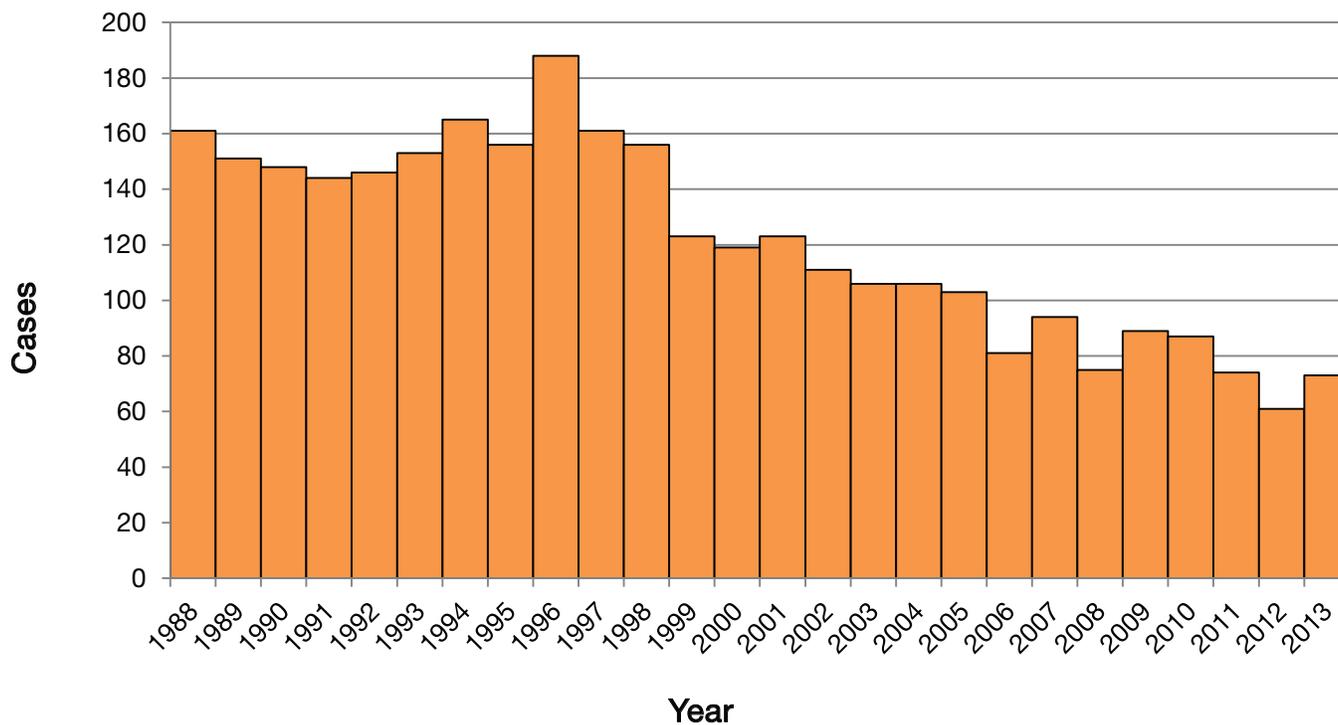
Tuberculosis (TB) is a communicable disease caused by the bacterium *Mycobacterium tuberculosis*. The most common site for TB disease are the lungs; however, TB can occur in any organ in the body. *Mycobacterium tuberculosis* infection spreads when someone with TB disease in their lungs coughs or sneezes tiny, bacteria-laden particles into the air, and the particles are inhaled by another person. If another person inhales air containing these droplet nuclei, he or she may become infected. However, not everyone infected with TB bacteria becomes sick. As a result, two TB-related conditions exist: latent TB infection (LTBI) and TB disease. Although most people with LTBI will not get sick with TB disease, some will. TB disease can occur weeks to years after a person is first infected. Because of this, TB testing is recommended for people who had significant contact with someone who has TB.

Both LTBI and TB disease are curable with appropriate treatment.

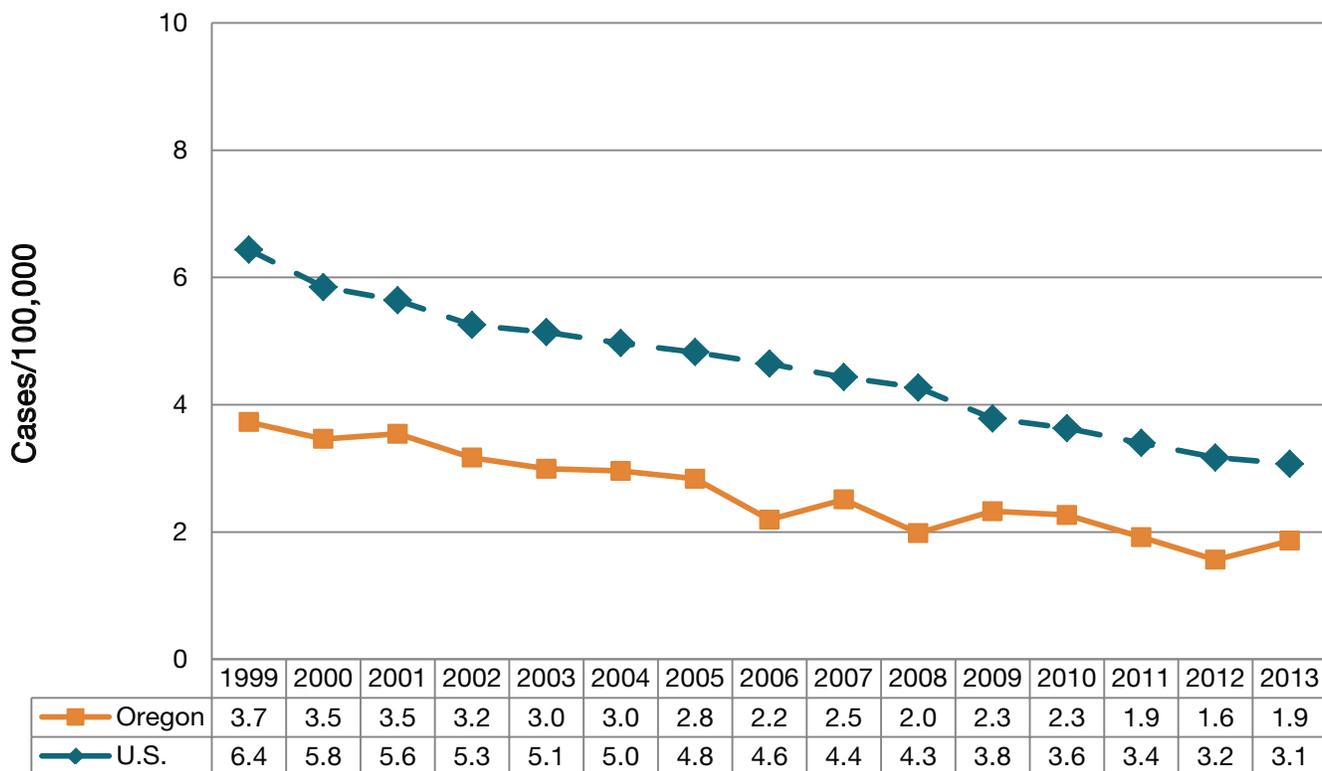
There are several different treatment regimens available for LTBI which range in length of treatment from 3–9 months. The standard initial treatment for TB disease consists of four drugs which must be taken daily. Most patients require treatment for 6–9 months. Multi-drug-resistant tuberculosis (MDR TB) is defined as resistance to at least isoniazid and rifampin; such strains require longer treatment with second-line drugs.

The incidence rate of TB has been declining in Oregon over the past decade. In 2013, a total of 73 cases of active TB disease were diagnosed in Oregon, for a rate of 1.9 cases per 100,000 residents. Nationally, there were 9,588 new TB cases reported in the U.S., an incidence of 3.0 per 100,000 population.

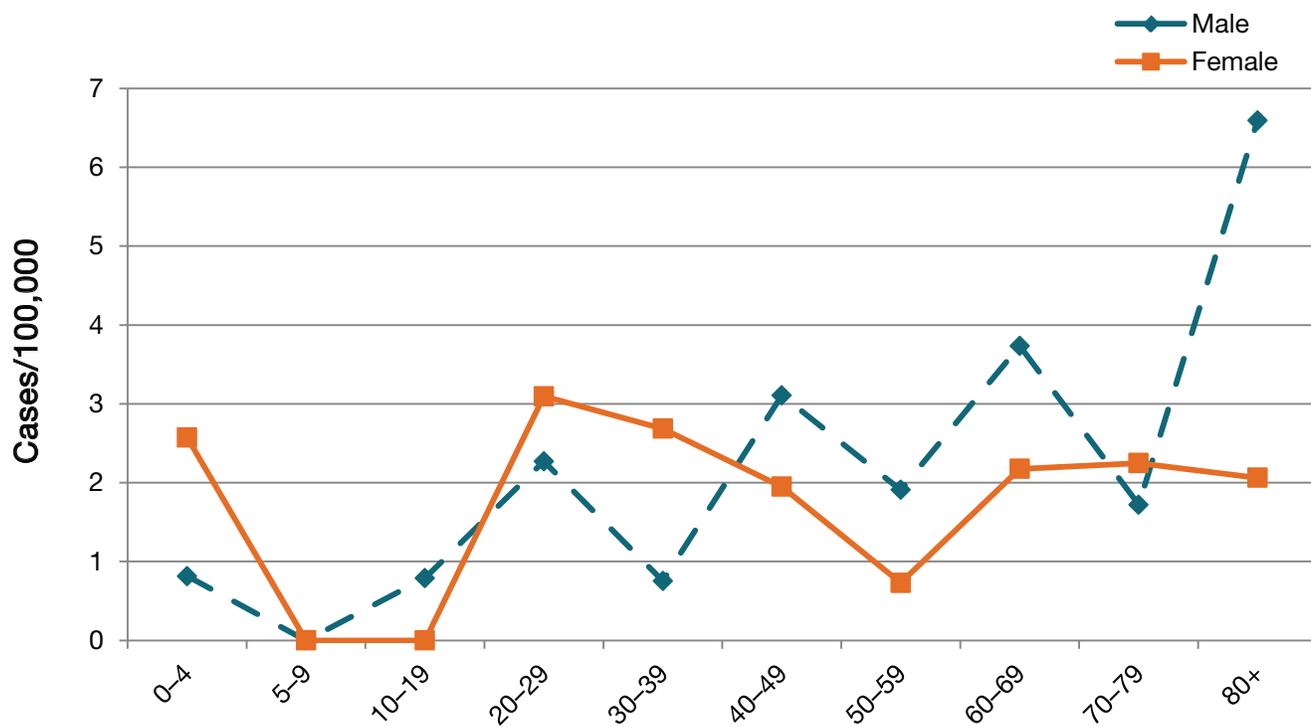
Tuberculosis by year: Oregon, 1988–2013



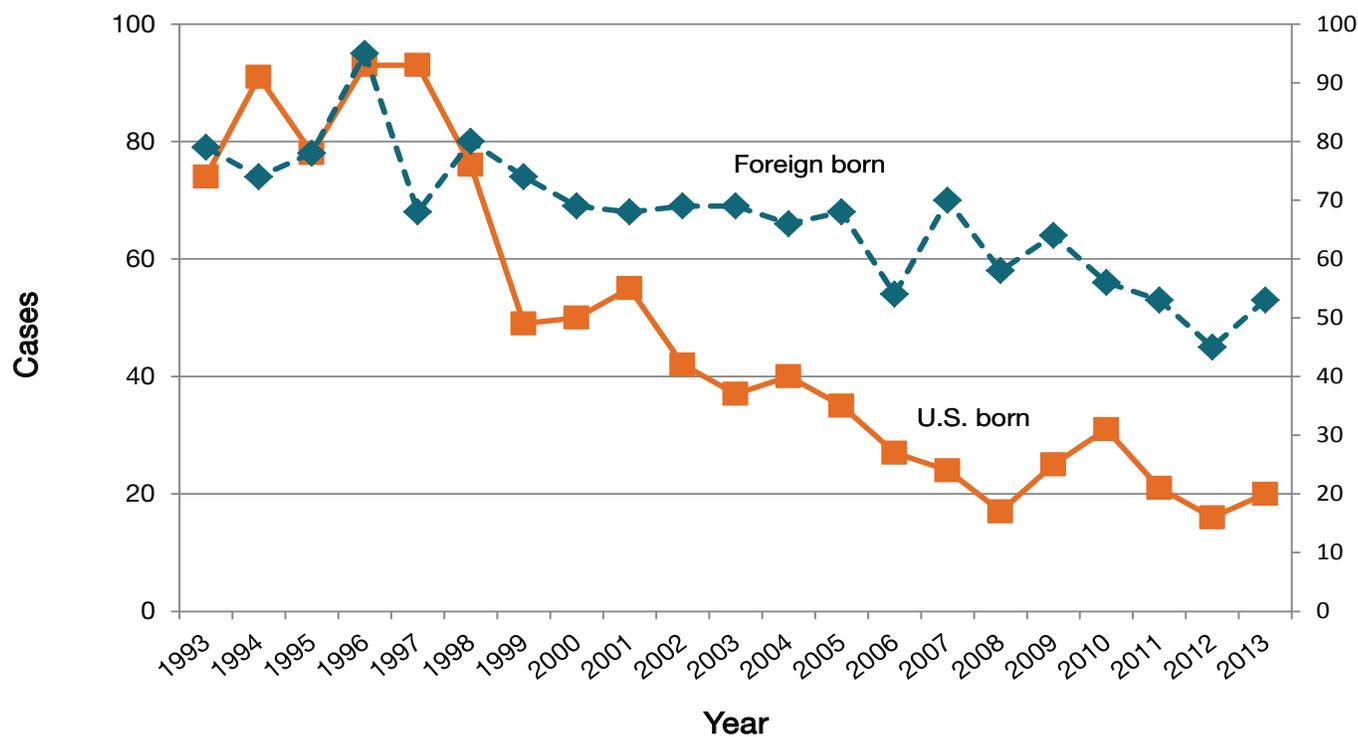
Incidence of tuberculosis: Oregon vs. nationwide, 1999–2013



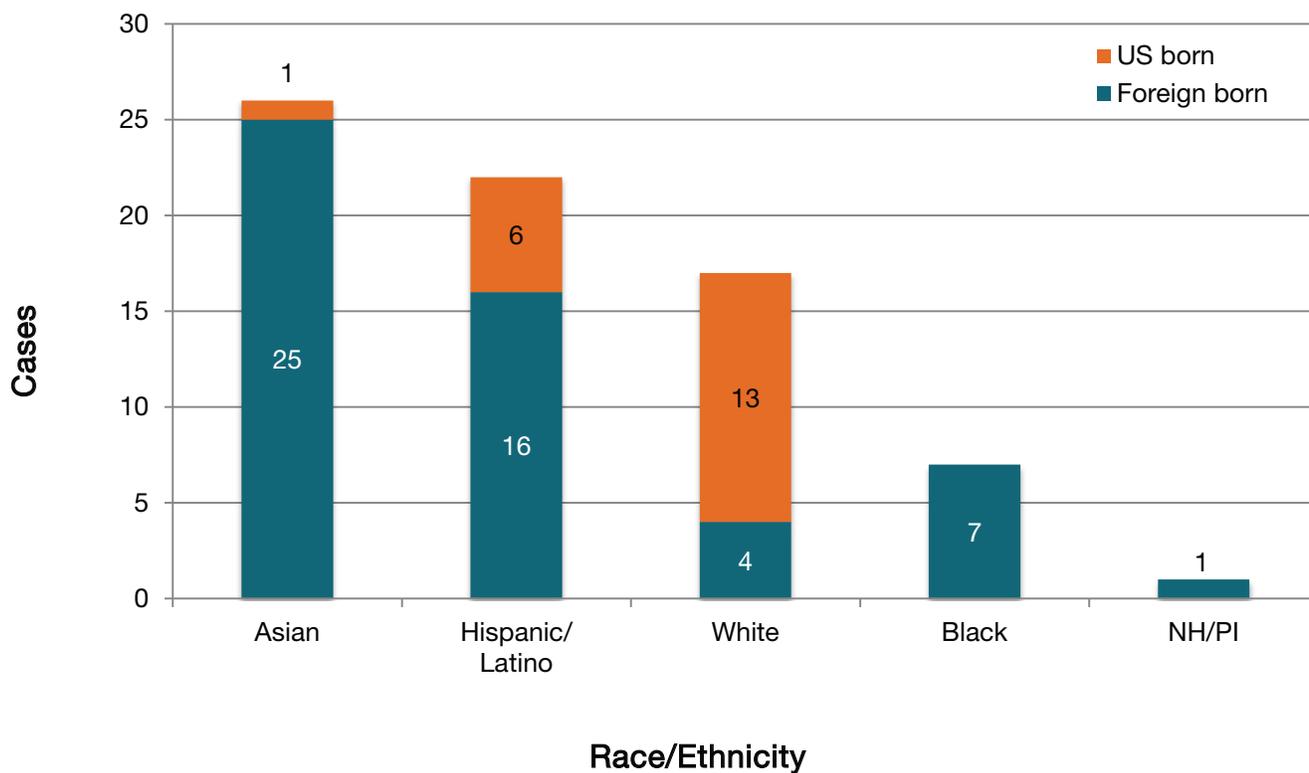
Incidence of tuberculosis by age and sex: Oregon, 2013



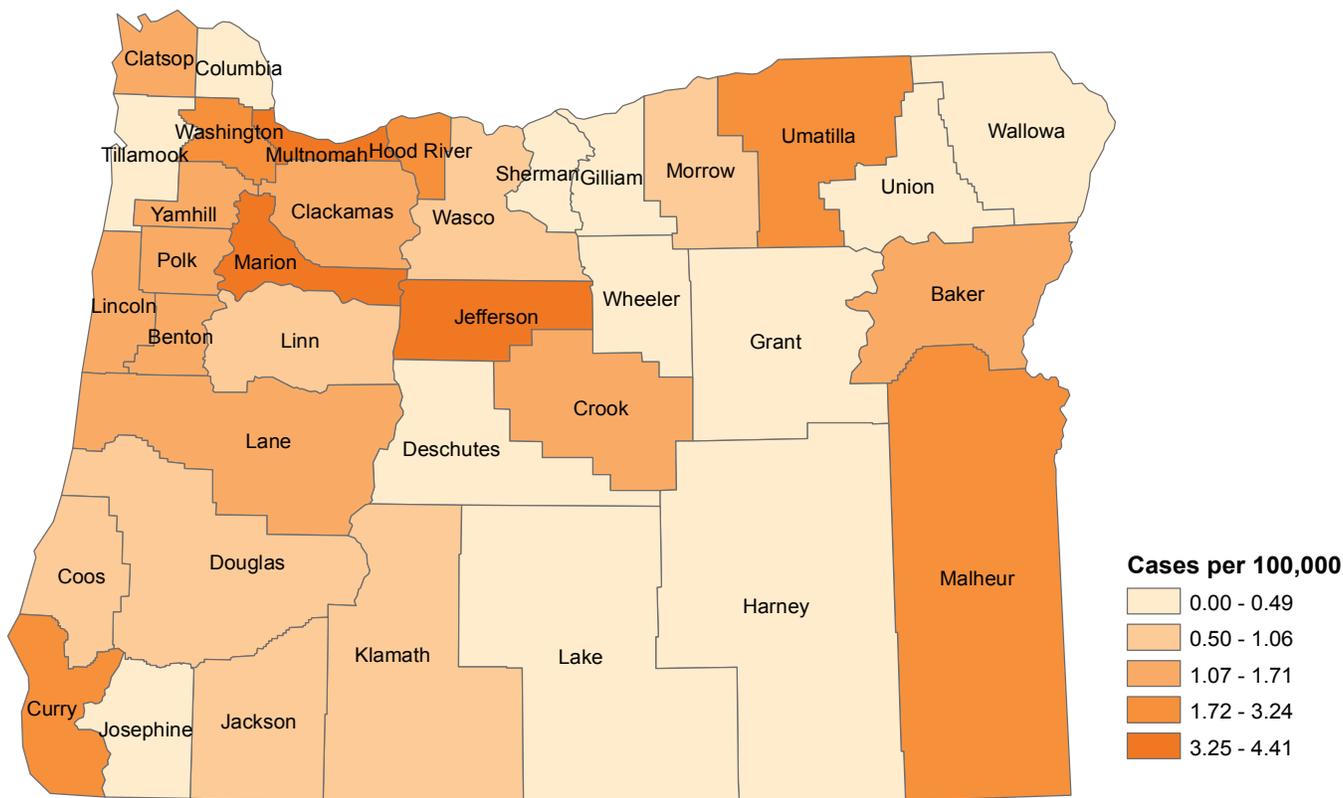
Tuberculosis cases by country of birth, foreign-born vs. U.S.-born: Oregon, 1993-2013



Tuberculosis by race/ethnicity and foreign born status: Oregon, 2013



Incidence of tuberculosis by county of residence: Oregon, 2004–2013



Prevention and Treatment

TB is preventable, treatable and curable. TB can be prevented by diagnosing and treating persons with active TB disease, stopping potential transmission to others. It can also be prevented by identifying and treating persons with latent TB infection who, if untreated, may develop active TB disease. Reporting of TB ensures cases are treated and contacts are identified and offered preventive antibiotics.

Tularemia

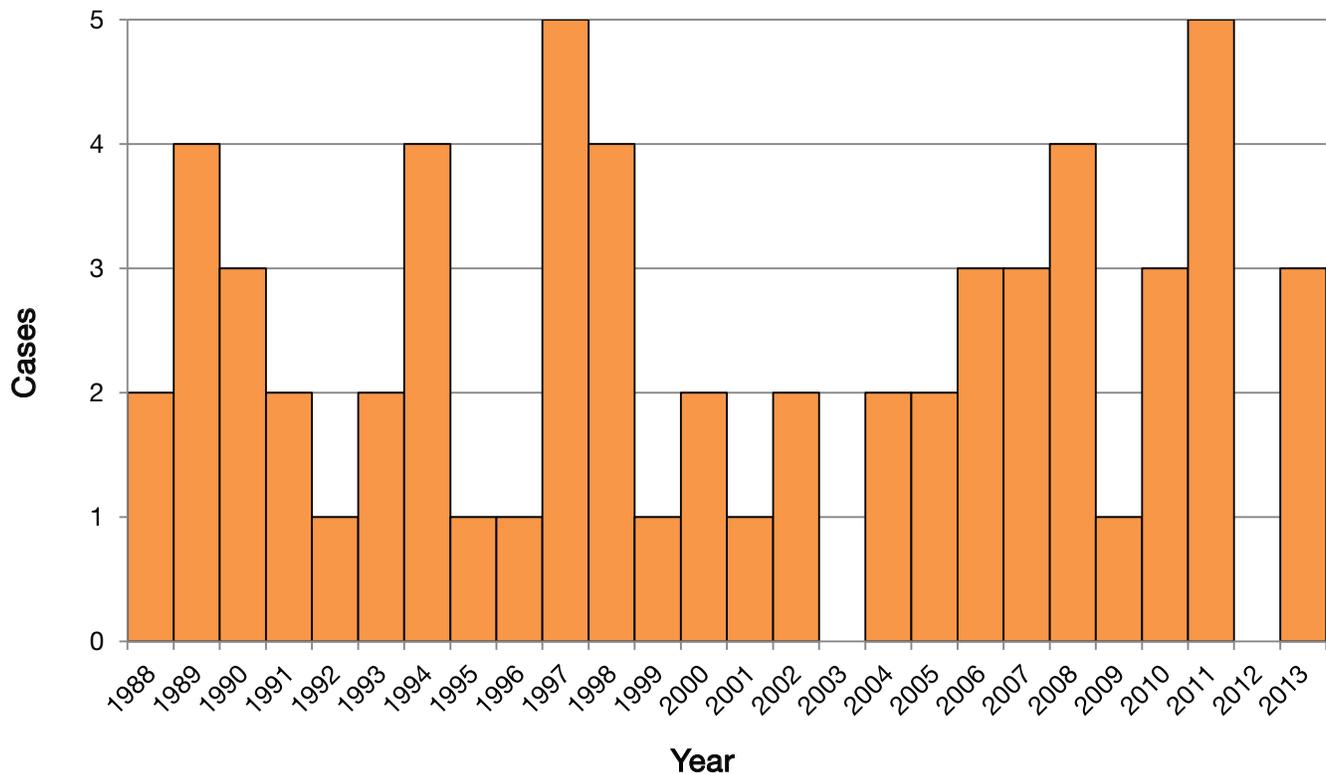
Tularemia, also known as rabbit or deer-fly fever, is considered a “category A” agent of potential bioterrorism. Tularemia is caused by *Francisella tularensis*, a hardy organism found in rodents, rabbits and squirrels; in ticks, deer flies and mosquitoes; and in contaminated soil, water and animal carcasses. Biovar type A, the most common type in North America, is highly virulent; as few as 10–50 organisms can cause disease.

Tularemia occurs throughout the United States. Persons become infected primarily through handling contaminated animals; the bite of infective deer flies, mosquitoes or ticks; direct contact with or ingestion of contaminated food, water or soil; or inhalation of infective aerosols. *Francisella tularensis* is highly infectious when grown in culture and can generate concern for laboratory workers. For potentially exposed workers, management options include a “fever watch” or antimicrobial prophylaxis.

Disease onset is usually sudden, and symptoms are influenza-like. General symptoms of tularemia include fever, malaise, myalgias, headache, chills, rigors and sore throat. Tularemia has six clinical forms, depending on the bacterium’s portal of entry. Ulceroglandular tularemia is the most common form of the disease, accounting for 75%–85% of naturally occurring cases. Other clinical forms include pneumonic (pulmonary symptoms); typhoidal (gastrointestinal symptoms and sepsis); glandular (regional adenopathy without skin lesion); oculoglandular (painful, purulent conjunctivitis with adenopathy); and oropharyngeal (pharyngitis with adenopathy).

From 2000–2013, 31 cases of tularemia were reported in Oregon. Three sporadic cases were reported in 2013. Two were subtyped B (the third subtype is unknown).

Tularemia by year: Oregon, 1988–2013



Prevention

Use precautions when hiking, hunting, camping or working outdoors:

- Use insect repellents containing 20%–30% DEET, picaridin or IR3535.
- Wear long pants, long sleeves and long socks to keep ticks and deer flies off your skin.
- Remove attached ticks promptly with fine-tipped tweezers.
- Don't drink untreated surface water.
- Don't run over sick or dead animals with a lawn mower.
- If you hunt, trap or skin animals:
 - Use gloves when handling animals, especially rabbits, muskrats, prairie dogs, and other rodents.
 - Cook game meat thoroughly before eating

Laboratory workers should use precautions when working with suspect cultures:

- Procedures that manipulate cultures and might produce aerosols or droplets should be done under biosafety level 3 conditions.

Vibriosis

Vibriosis is caused by infection with bacteria from the *Vibrionaceae* family. This family of bacteria includes the species that causes cholera, and public health investigators typically distinguish between either cholera (infection with toxigenic *V. cholerae*) and other “vibriosis” (infection with any other *Vibrionaceae*, including those vibrios lately rechristened as “*Grimontia*”).

Commonly, vibriosis is acquired by eating raw or undercooked molluscan shellfish and presents as watery diarrhea, abdominal cramps and fever. In Oregon, *V. parahaemolyticus* is the most frequently reported species, as this pathogen is found naturally in the coastal waters and shellfish of the Pacific Northwest, especially during summer months. Nonfoodborne infections with *Vibrio* species can also occur through contact with sea or brackish water (e.g., infection with *V. alginolyticus* after swimming with an open wound, or through a laceration while shucking an oyster). These types of infections can produce bullae, cellulitis, muscle pain, fever and sepsis.

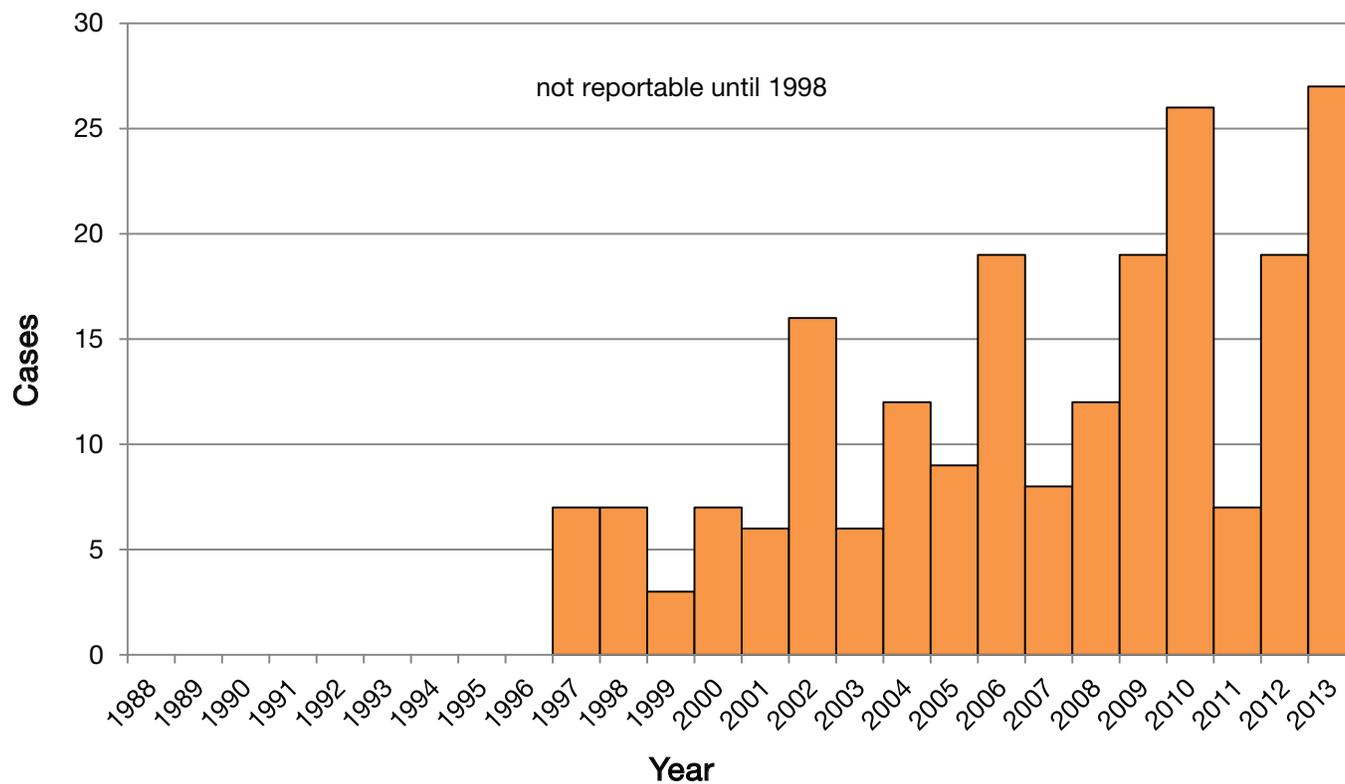
Vibriosis was not reportable until 1998 in Oregon and 2007 nationwide. Today, all

Vibrio infections are nationally notifiable. Case reporting is essential to the identification of contaminated shellfish beds and removal of these shellfish from the raw seafood market. In 2013, the CDC FoodNet Program estimated every reported case of *Vibrio* represents 142 people not diagnosed with the infection.

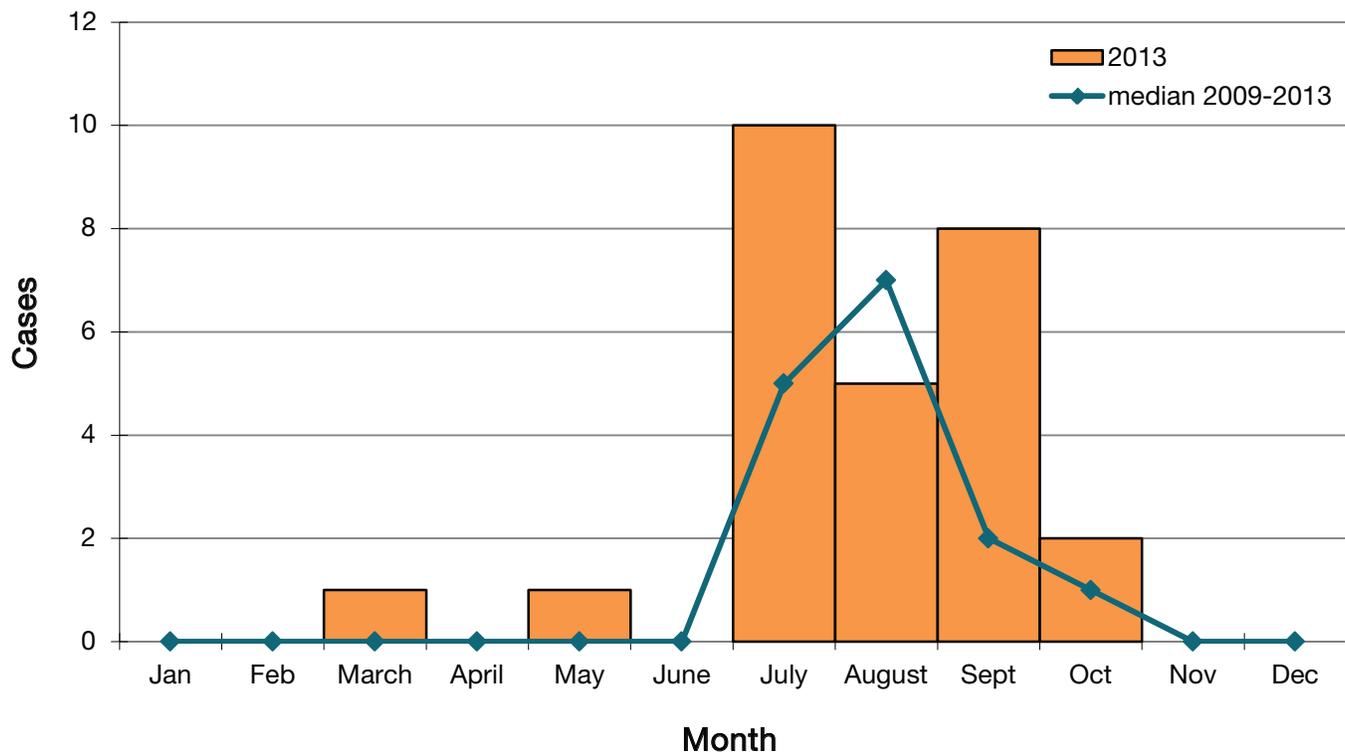
Nationally, reported rates of vibriosis have trended upwards in the past decade. Rates of reported infections have also been rising in Oregon, although increases are not seen every year. The reason for the increasing trend is not clear. It could be that we’re getting better at identifying cases or it could be that with warmer temperatures there are just more opportunities for exposure.

In 2013, Oregon saw 27 (22 confirmed and 5 presumptive) cases of vibriosis, an increase from the 19 cases reported in 2012. The majority of reported cases 19 (70%) of the cases occurred in males. Twenty-two cases (82% of all reported cases last year) occurred during July–September. Of the 23 confirmed cases, 18 (82%) were *V. parahaemolyticus*, with one case each of *V. mimicus* and *V. alginolyticus* a co-infection (where two species were identified) of *V. cholerae* and *V. parahaemolyticus*.

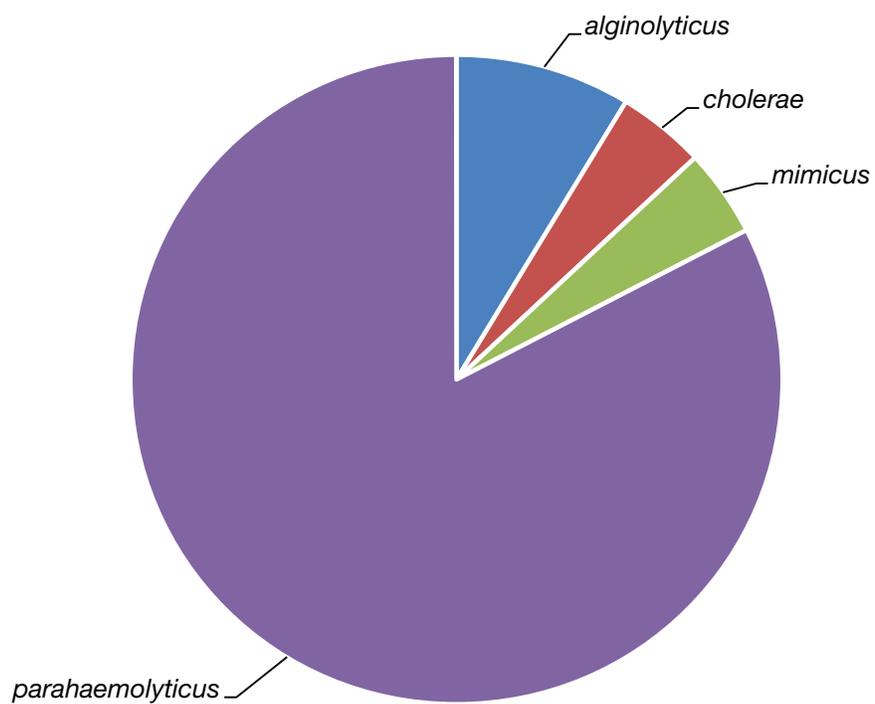
Vibrio infections: Oregon, 1988–2012



Vibriosis by onset month: Oregon, 2013



Vibriosis by species: Oregon, 2013



Prevention

- Avoid eating raw oysters or other raw shellfish.
- Cook shellfish (oysters, clams, mussels) thoroughly.

West Nile virus

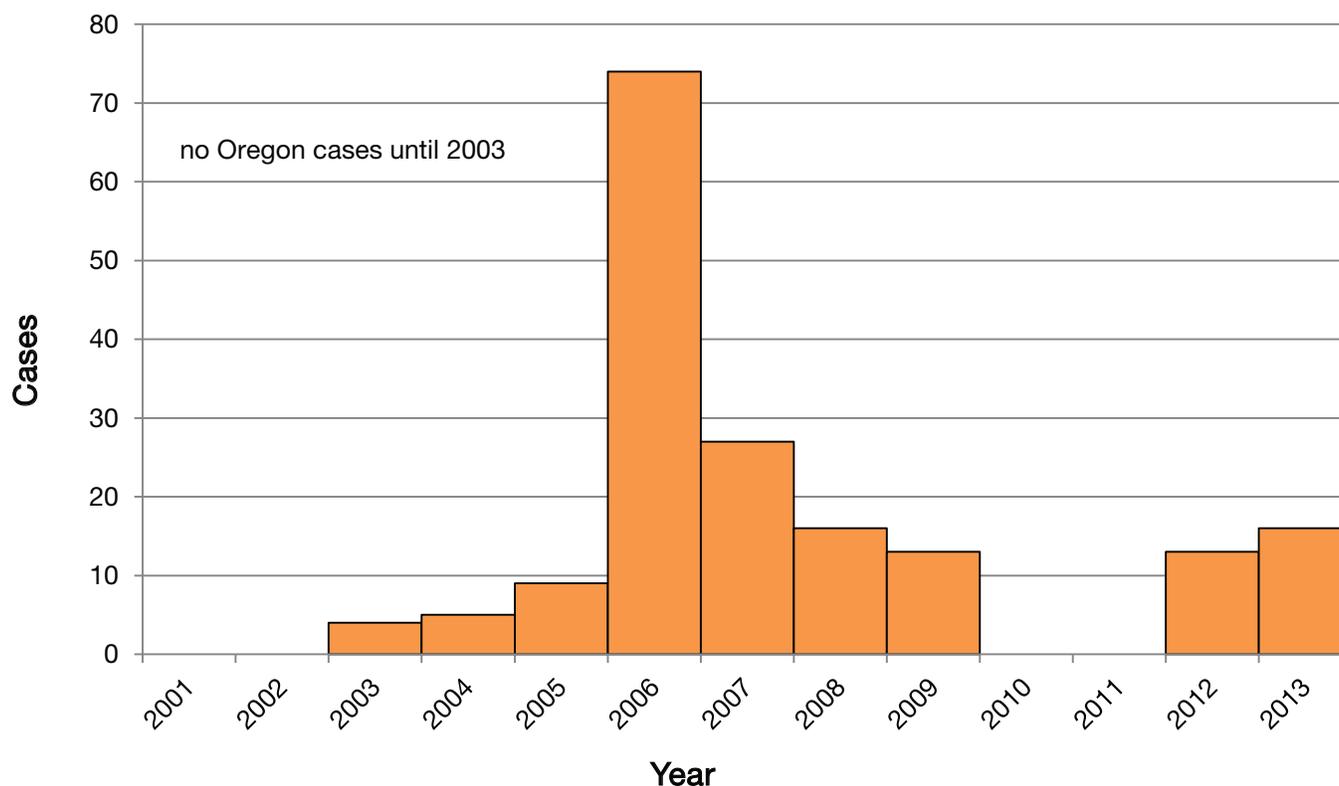
West Nile virus (WNV) first appeared in the United States on Long Island in 1999 and thence moved westward across the country. In Oregon, the first indigenous case was reported in 2004. West Nile virus is a mosquito-borne *flavivirus* that affects both animals and humans. Corvid birds (crows, ravens, jays, magpies) are the reservoir; humans and other animals are considered “dead-end” hosts — i.e., they may be infected and develop symptoms, but they do not transmit the infection further.

Of human beings infected, only about one in five will have any symptoms at all — typically

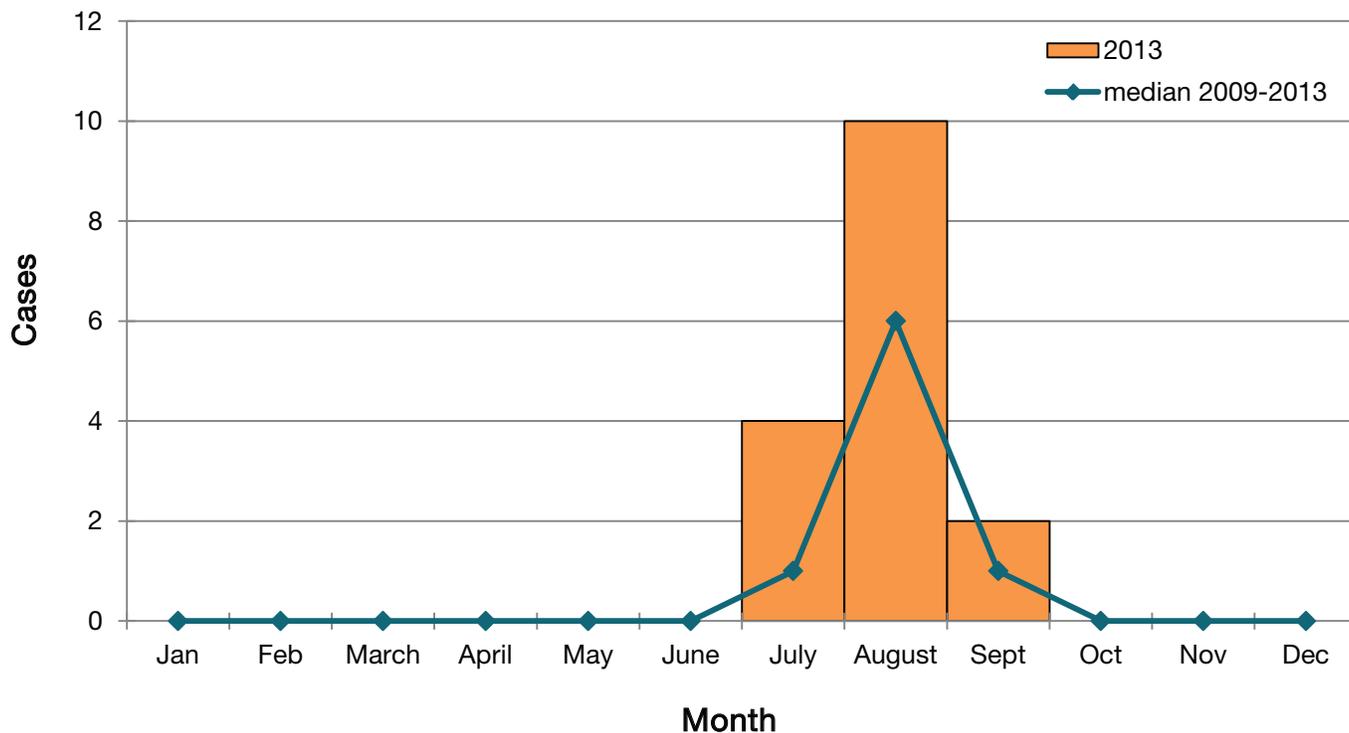
flu-like symptoms such as fever, headache and muscle aches. However, approximately one in 150 infected persons will have symptoms of central nervous system infection that may include neck stiffness, stupor, disorientation, tremors, convulsions, muscle weakness, paralysis and coma. The risk of getting West Nile virus in Oregon has been very low. Though most cases were in those aged 20–50 years, those over 50 years of age have the highest risk of developing serious illness. Incidence is highest in the summer months.

In 2013, sixteen human cases of West Nile virus were reported. In addition 88 mosquito pools, and two birds and six horses tested positive for WNV infection.

West Nile virus infection by year: Oregon, 2004–2013



West Nile virus infection by onset month: Oregon, 2013



Incidence of West Nile virus infection by county of residence: Oregon, 2005–2013



Confirmed WNV infections in Oregon, 2004–2013

Group	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Human	5	8	73	27	16	12	0	0	12	16
Horses	32	46	35	16	0	5	0	2	2	6
Birds	23	15	25	52	2	16	0	0	2	2
Mosquito Pools	0	11	22	28	16	262	4	3	71	88
Sentinel Chickens	0	15	0	11	0	0	0	0	0	0

Prevention:

- Avoid mosquito bites:
 - Use insect repellents when you go outdoors. Repellents containing DEET, picaridin, IR3535, and some oil of lemon eucalyptus and para-menthane-3,8-diol products provide longer-lasting protection. To optimize safety and effectiveness, repellents should be used according to the label instructions.
 - When weather permits, wear long sleeves, long pants, and socks when outdoors.
 - Take extra care during peak mosquito-biting hours.
- Mosquito-proof your home:
 - Install or repair screens on windows and doors to keep mosquitoes outside. Use your air conditioning, if you have it.
 - Reduce the number of mosquitoes around your home by emptying standing water from flowerpots, gutters, buckets, pool covers, pet water dishes, discarded tires, and birdbaths regularly.
- Report dead birds to local authorities.

Yersiniosis

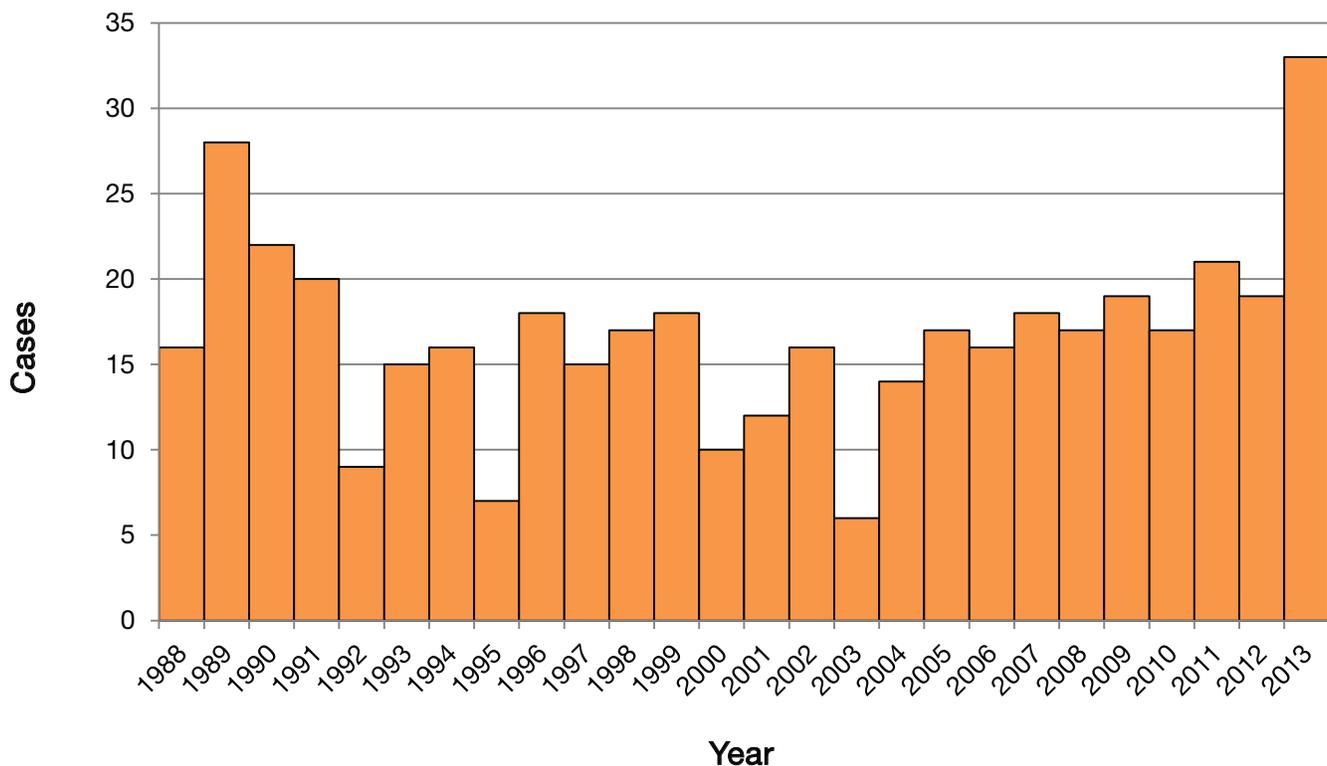
Yersiniosis is a bacterial infection characterized by (sometimes bloody) diarrhea, vomiting and abdominal pain. The main reservoir for *Yersinia* is the pig. Transmission occurs via the fecal-oral route through contaminated food and water, or through contact with infected people or animals. Preventive measures include cooking food thoroughly, avoiding cross-contamination with raw food of animal origin, and washing hands after handling food.

The incidence of yersiniosis in Oregon has been fairly stable over the years. Yersiniosis

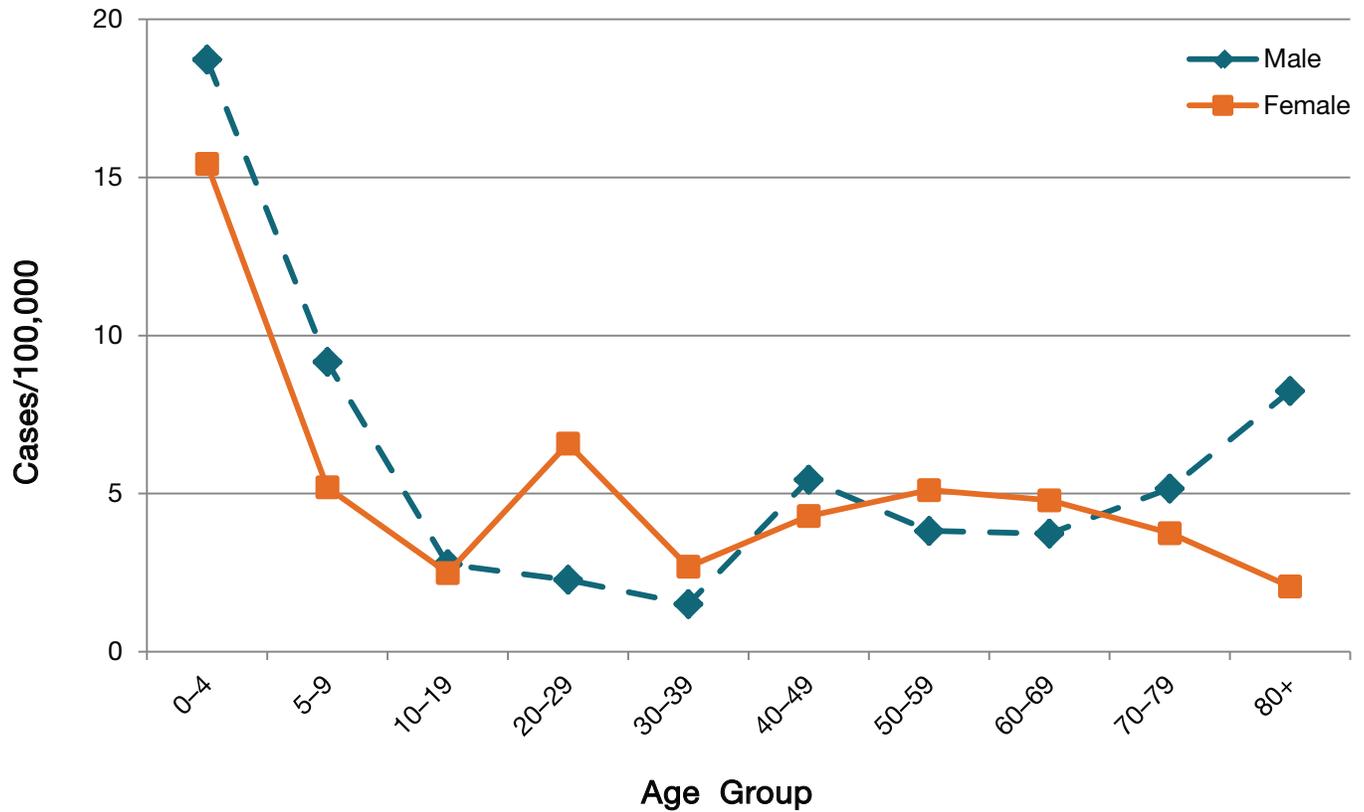
occurs throughout the year with no seasonality. The most common species is *Y. enterocolitica*. In 2013, there were 33 cases, the highest count since 1988. Twenty-eight were sporadic cases and five cases were part of a cluster. Twenty-eight were *enterocolitica*, two *frederiksenii*, one *intermedia*, one *mollaretii* and one pseudotuberculosis.

Infection with *Yersinia pestis*, also known as “plague,” is counted separately from other cases of yersiniosis. No cases of plague were reported in Oregon during 2013.

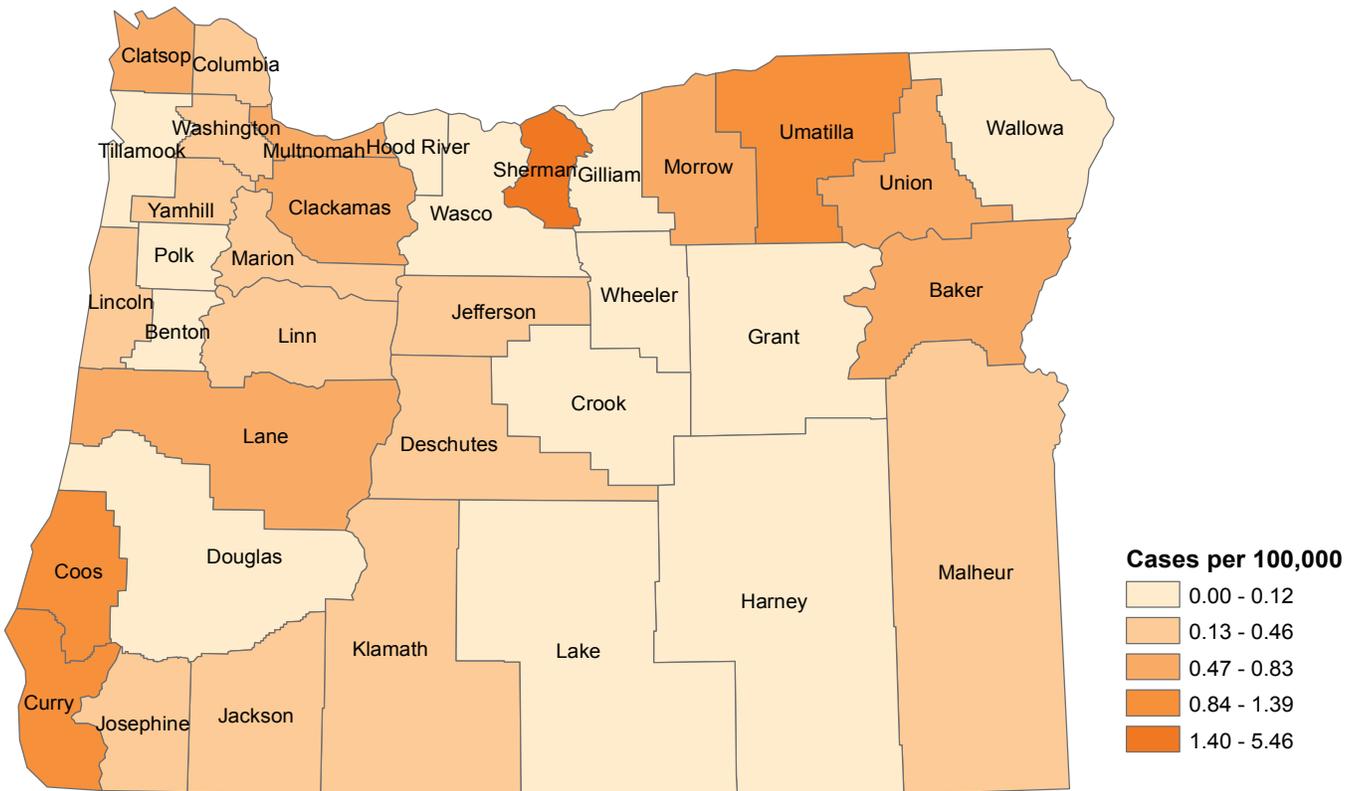
Yersiniosis by year: Oregon, 1988–2013



Yersiniosis by age and sex: Oregon, 2004–2013



Incidence of yersiniosis by county of residence: Oregon, 2004–2013



Prevention

- Avoid eating raw or undercooked pork.
- Consume only pasteurized milk or milk products.
- Wash hands with soap and warm water before eating and preparing food, after contact with animals, and after handling raw meat.
- After handling raw chitterlings, clean hands and fingernails scrupulously with soap and water before touching infants or their toys, bottles, or pacifiers.
- Prevent cross-contamination in the kitchen: use separate cutting boards for meat and other foods. Carefully clean all cutting boards, counter-tops, and utensils with soap and hot water after preparing raw meat.
- Dispose of animal feces in a sanitary manner.

Disease outbreaks

Oregon state and local health departments investigated 304 acute and communicable disease outbreaks in 2013, up from 220 in 2012 (a 28% increase). Forty-six percent (139) of these were outbreaks of calicivirus gastroenteritis. Thirty-two outbreaks were foodborne, 66 were respiratory, three were due to animal contact, two were waterborne. In 31 outbreaks the mode of transmission was undetermined. Sharing of respiratory secretions caused outbreaks of influenza (44) and pertussis (8), two outbreaks of measles and six outbreaks of chickenpox (varicella) can be considered airborne. Foods contaminated with a variety of salmonellae made folks ill at a variety of venues. Almost every outbreak

reinforces the tried-and-true public health mantras of “wash your hands” and “cover your cough.”

Gastroenteritis is by far the most commonly reported type of outbreak in Oregon, accounting for 220 (72%) of the 304 outbreaks investigated in 2013.

Thanks to rigorous stool specimen collection by local health investigators, 71% of gastroenteritis outbreaks had disease-causing agents identified, mostly caliciviruses (norovirus and sapovirus). The Oregon State Public Health Laboratory (OSPHL) now routinely tests for sapovirus, astrovirus and rotavirus when stool specimens are norovirus-negative.

Disease outbreaks, by etiology: Oregon, 2013

- 139 calicivirus (norovirus and sapovirus)
- 44 influenza
- 17 *Salmonella*
- 8 pertussis
- 6 chicken pox
- 4 Shiga toxin-producing *Escherichia coli* (STEC)
- 4 *Vibrio parahaemolyticus*
- 3 *Shigella*
- 2 respiratory syncytial virus
- 2 measles
- 2 *Cryptosporidium*
- 2 rhinovirus/influenza
- 1 *Clostridium perfringens*
- *Legionella*
- *Acinetobacter baumannii*
- parainfluenza virus
- scabies
- *Yersinia enterocolitica*
- 60 outbreaks had unknown etiologies.

Data as of 8/25/2014

Gastrointestinal outbreaks

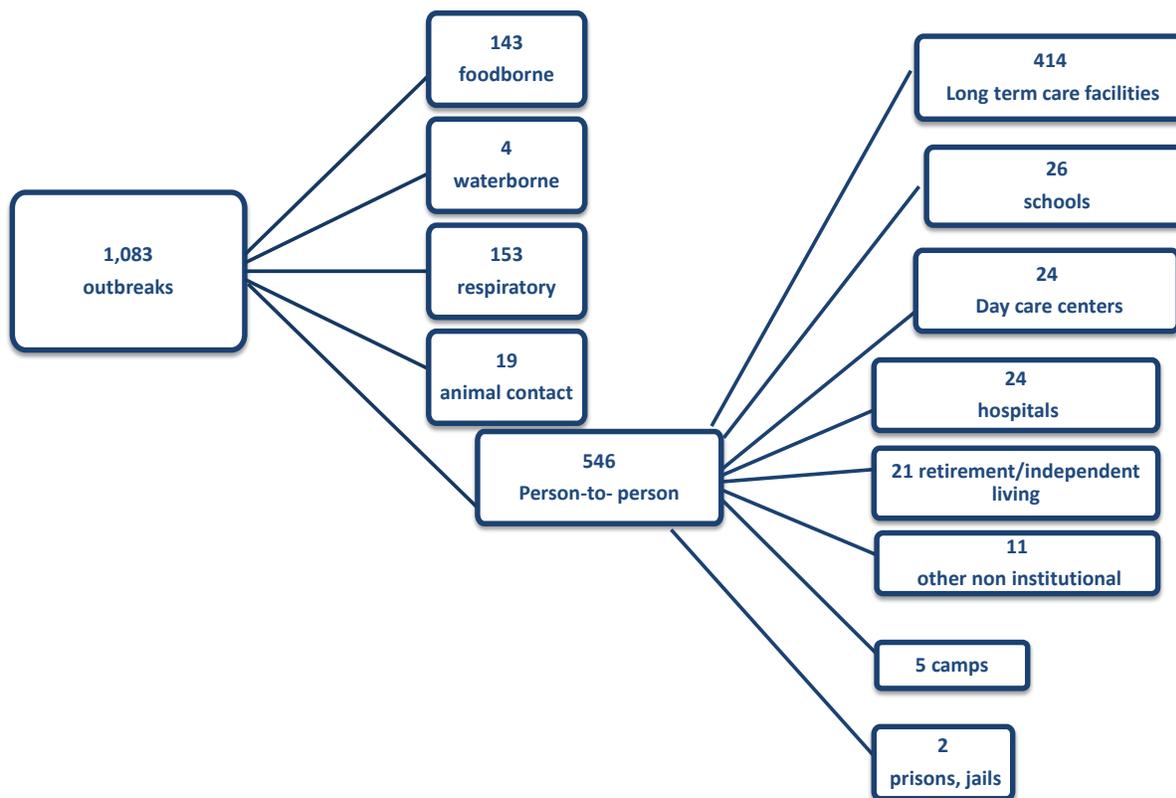
Person-to-person transmission was responsible for 142 of gastroenteritis outbreaks and foodborne transmission for 32. Transmission was undetermined (we couldn't figure it out) or unknown (we didn't have enough data to figure it out) in 39 of the outbreaks. More than 94% of person-to-person outbreaks happened in institutional cohorts, especially among those in long-term-care facilities (LTCFs).

In 2013, the case definition of a norovirus outbreak was modified to be more in line with national standards. Some outbreaks previously classified as indeterminate were reclassified as suspect norovirus. The new classification includes outbreaks where symptoms were classical of norovirus but no positive specimen was documented.

Confirmed and suspected norovirus outbreaks, Oregon, 2009-2013

	2009	2010	2011	2012	2013
Confirmed norovirus	78	124	71	114	109
Suspect norovirus	7	15	5	16	27

Gastroenteritis outbreaks by transmission modes and settings: Oregon, 2009–2013

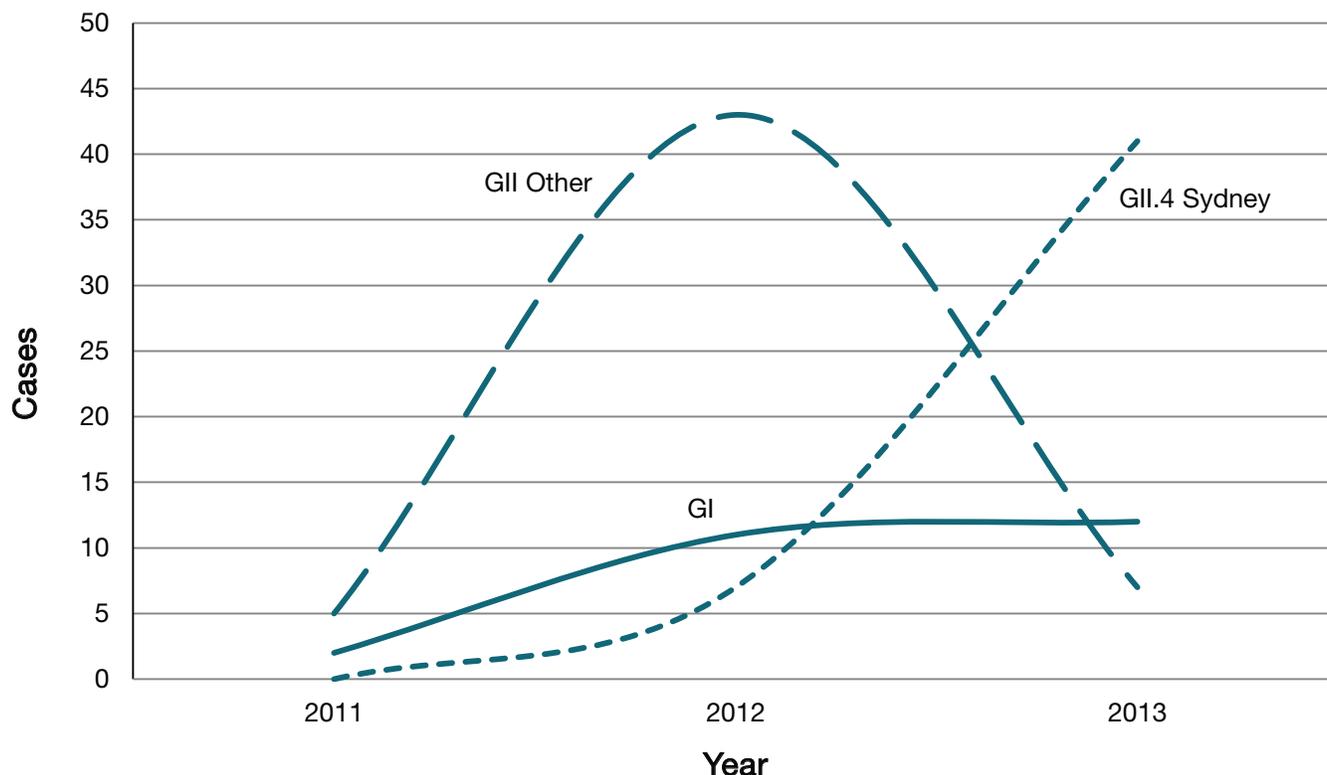


Norovirus outbreaks in long-term care facilities

Norovirus infection causes nausea, vomiting, diarrhea, muscle aches, fever and abdominal cramps, which can result in dehydration. Symptoms typically resolve within a day but can remain for up to three days. Norovirus is highly transmissible and persons typically get norovirus by eating contaminated food containing infected stool or vomit particles. In 2012–2013, norovirus infected 5524 staff and residents in Oregon LTCFs. More females (73%) than males (27%) were afflicted. Norovirus or norovirus-like illness was more common among residents (68%) than among staff (32%) at LTCFs.

The OSPHL began genotyping specimens associated with gastrointestinal outbreaks in late 2012. Norovirus genogroup GII genotype 4 New Orleans was predominant in 2011 and 2012 accounting for 33 (24%) of 136 total confirmed norovirus outbreaks among Oregon LTCFs. In late 2012, a new norovirus strain of genogroup II, genotype 4 originating in Sydney, Australia (GII.4 Sydney) became the predominant norovirus strain and caused a severe norovirus season globally and in the United States. In 2013, GII.4 Sydney was responsible for 41 (47%) of 88 confirmed norovirus outbreaks among Oregon LTCFs.

Norovirus sequences in Oregon LTCFs, 2011-2013 (n=132 laboratory confirmed outbreaks)



Norovirus outbreaks in long-term-care facilities by county of occurrence and year of investigation: Oregon, 2004–2013

County	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Baker	0	1	2	1	0	1	1	0	2	1	9
Benton	1	2	3	3	4	1	1	3	0	5	23
Clackamas	5	5	13	13	11	6	17	6	4	6	86
Clatsop	2	0	1	4	2	2	5	1	3	1	21
Columbia	0	0	0	1	1	1	1	0	0	3	7
Coos	0	1	1	2	2	2	2	1	2	2	15
Crook	0	0	0	0	2	1	0	0	0	2	5
Curry	1	0	1	0	0	0	0	0	0	1	3
Deschutes	0	2	8	5	9	6	5	3	11	4	53
Douglas	3	1	4	4	3	0	4	2	1	4	26
Grant	0	0	2	1	1	0	0	0	0	0	4
Harney	0	0	0	1	1	0	0	0	0	0	2
Hood River	0	0	2	1	1	2	1	2	3	3	15
Jackson	8	6	7	8	4	7	4	2	3	2	51
Jefferson	0	0	1	0	0	0	0	0	0	0	1
Josephine	1	1	5	2	3	0	1	0	0	2	15
Klamath	1	0	2	2	2	0	2	5	2	1	17
Lake	0	1	0	0	0	0	0	0	0	0	1
Lane	8	5	9	13	11	8	14	6	9	9	92
Lincoln	0	3	0	0	1	1	2	1	1	3	12
Linn	1	1	4	2	7	0	5	3	5	4	32
Malheur	1	0	0	1	1	0	0	0	0	0	3
Marion	7	7	16	18	20	7	9	7	14	12	117
Morrow	0	0	0	1	0	0	0	0	0	0	1
Multnomah	6	2	6	14	13	20	14	21	21	32	149
Polk	1	1	3	3	3	5	2	1	2	3	24
Tillamook	0	0	0	0	1	1	1	1	1	0	5
Umatilla	2	0	2	3	1	0	2	3	3	2	18
Union	0	1	0	3	1	0	0	2	1	0	8
Wasco	0	1	4	0	1	2	2	1	2	3	16
Washington	0	0	13	12	10	11	9	4	14	10	83
Yamhill	3	0	6	6	6	2	9	4	4	4	44
Total	51	41	115	124	123	87	114	79	108	119	958

Data as of 5/19/2014

Selected low incidence conditions, Oregon, 2004-2013

Condition	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Babesiosis	0	0	0	0	0	1	0	1	0	0
Botulism	6	2	0	1	2	0	1	3	6	4
Brucellosis	0	1	0	2	1	3	1	1	0	2
Ciguatera	0	0	0	0	0	0	0	0	1	1
Colorado Tick Fever	1	0	0	0	3	1	0	1	1	0
Cyclosporiasis	0	25	2	0	0	0	0	0	1	0
Dengue Fever	1	7	2	4	7	4	9	3	4	7
Ehrlichiosis	0	0	1	1	1	3	0	5	0	1
Encephalitis, SLE	0	0	0	0	0	0	0	0	0	0
Filariasis	0	1	0	0	0	0	0	0	0	0
Hantavirus pulmonary	0	2	1	1	0	2	3	2	2	1
Leprosy	2	2	1	0	1	2	0	0	0	0
Leptospirosis	1	1	1	0	1	0	0	1	0	0
Measles	0	2	2	2	1	0	0	3	1	6
Mumps	0	0	19	1	1	2	3	4	6	3
Plague	0	0	0	0	0	0	2	1	2	0
Psittacosis	1	1	3	1	1	0	0	0	0	2
Q fever	4	2	0	2	1	4	3	2	4	3
Relapsing Fever	4	1	2	0	4	3	0	0	3	1
Rocky Mtn Spotted fever	2	2	2	2	3	0	1	0	1	2
Rubella	0	1	0	0	0	0	0	0	0	1
Taeniasis	0	5	2	3	8	50	3	5	5	0
Tetanus	1	0	0	0	0	0	0	0	0	1
Tularemia	2	2	3	3	4	1	3	5	0	3
Typhus (murine)	0	1	0	0	0	0	0	0	0	3

Data as of 5/19/2014

Selected cases of notifiable diseases year*, Oregon 1993–2003

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Campylobacteriosis	712	656	626	702	736	698	599	568	598	575	597
Chlamydiosis*	5539	5494	5468	5442	5254	5857	6131	7110	7504	7200	7498
Cryptosporidiosis	21	19	42	37	34	127	35	22	60	40	36
<i>E. coli</i> O157 (STEC)	253	111	94	102	92	107	68	134	91	204	101
Giardiasis	1000	937	897	899	879	892	792	673	535	431	406
Gonorrhea*	1191	977	854	886	773	880	905	1039	1145	929	982
<i>H. influenzae</i>	11	25	27	32	36	41	49	30	38	57	42
Hepatitis A	581	1366	2929	883	387	430	248	164	106	61	62
Acute hepatitis B	282	232	186	164	131	186	122	123	166	126	118
Acute hepatitis C	1	1	7	23	12	9	29	18	15	13	16
Legionellosis	1	0	0	0	0	1	2	1	4	9	17
Listeriosis	10	11	13	15	11	18	17	6	12	9	5
Lyme	8	6	22	17	21	19	13	12	14	13	16
Malaria	14	16	23	23	26	16	22	41	14	14	10
Measles	4	2	1	14	0	3	9	0	3	0	3
Meningococcal disease	101	136	118	114	109	85	75	71	65	44	60
Pertussis	105	67	57	57	49	89	61	104	66	193	438
Rabies, animal	7	13	4	6	12	5	4	7	4	14	7
Salmonellosis	346	337	345	381	366	344	422	300	288	337	427
Shigellosis	158	166	174	151	195	187	102	159	115	106	211
Early Syphilis*	72	43	22	19	24	13	14	31	22	46	72
Tuberculosis	153	165	156	188	161	156	123	119	123	111	106
<i>Vibrio parahaemolyticus</i>	0	0	0	0	7	7	3	7	6	16	6
West Nile virus	0	0	0	0	0	0	0	0	0	0	
Yersiniosis	15	16	7	18	15	17	18	10	12	16	6

Data as of 5/19/2014 * Case Counts by onset year except for conditions noted with * indicating counts by date of report

Selected cases of notifiable diseases year*, Oregon 2004–2013

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Campylobacteriosis	656	647	652	729	703	733	863	984	913	851
Chlamydiosis*	8690	9018	9578	9867	10861	11497	12338	13688	13497	14263
Cryptosporidiosis	32	69	84	164	64	224	218	219	218	276
<i>E. coli</i> O157 (STEC)	68	158	107	85	68	84	119	136	193	189
Giardiasis	443	417	426	463	452	429	483	438	387	362
Gonorrhea*	1302	1562	1459	1238	1258	1113	1078	1490	1469	1741
<i>H. influenzae</i>	49	54	55	68	55	57	69	75	67	84
Hepatitis A	67	47	46	35	27	19	17	11	9	29
Acute hepatitis B	120	106	80	61	47	50	44	32	28	34
Acute hepatitis C	17	19	27	22	33	26	22	24	38	14
Legionellosis	8	15	22	14	18	19	18	24	32	27
Listeriosis	7	11	13	8	6	19	17	10	15	7
Lyme	25	24	19	27	38	42	42	37	49	42
Malaria	19	13	15	16	4	12	16	23	12	14
Measles	0	2	2	2	1	0	0	3	1	6
Meningococcal disease	61	56	41	32	38	39	32	31	26	12
Pertussis	625	622	112	111	178	258	281	328	910	485
Rabies, animal	6	8	25	12	13	11	17	17	17	10
Salmonellosis	416	417	428	336	429	440	511	367	403	375
Shigellosis	87	127	121	87	94	56	58	57	92	55
Early Syphilis*	57	58	49	26	43	85	107	169	311	404
Tuberculosis	106	103	81	94	75	89	87	74	61	73
<i>Vibrio parahaemolyticus</i>	12	9	19	8	12	19	26	7	19	27
West Nile virus	3	8	73	27	16	12	0	0	13	16
Yersiniosis	14	17	16	18	17	19	17	20	20	33

Data as of 5/19/2014 * Case Counts by onset year except for conditions noted with * indicating counts by date of report

Selected Oregon communicable disease case counts by county of residence, 2013

	AIDS/HIV diagnosis	Campylobacteriosis	Chlamydia*	Cryptosporidiosis	<i>E. coli</i> O157 infection	Giardiasis	Gonorrhea*	<i>Haemophilus influenzae</i>	Hepatitis A	Hepatitis B (acute)	Hepatitis B (chronic)	Hepatitis C (acute)	Hepatitis C (chronic)
Baker	0	2	29	111	0	0	1	0	2	0	0	0	20
Benton	3	21	347	3	6	8	22	2	1	1	8	0	38
Clackamas	16	87	890	14	16	34	96	7	2	1	43	5	281
Clatsop	0	4	91	4	0	9	12	3	0	1	5	0	54
Columbia	1	17	121	2	1	4	10	1	0	3	5	0	64
Coos	0	10	171	2	1	3	11	2	1	0	4	0	128
Crook	0	10	45	0	1	1	5	1	0	0	1	0	29
Curry	1	4	36	0	0	1	1	0	0	0	0	0	33
Deschutes	4	45	530	2	6	18	12	5	0	0	5	1	187
Douglas	3	17	289	11	3	7	23	2	0	0	5	0	155
Gilliam	0	0	0	0	0	1	0	0	0	0	0	0	1
Grant	0	3	19	0	2	5	0	1	0	0	0	0	0
Harney	0	5	26	1	0	0	0	0	0	0	0	0	8
Hood River	1	5	48	0	2	0	2	0	0	0	3	0	15
Jackson	7	30	740	9	6	14	151	10	2	3	8	0	236
Jefferson	1	7	87	0	0	1	13	1	0	0	3	0	57
Josephine	1	9	255	0	3	4	37	3	0	1	4	0	104
Klamath	1	14	271	3	7	2	26	1	0	0	3	0	69
Lake	0	3	16	0	1	1	0	0	0	0	1	0	13
Lane	5	75	1368	7	16	23	216	9	3	1	30	2	445
Lincoln	1	9	100	6	3	5	3	2	1	0	1	1	88
Linn	5	27	353	9	9	11	11	6	0	0	3	0	146
Malheur	2	8	125	0	3	1	17	2	0	0	2	0	63
Marion	13	47	1359	10	28	10	68	4	2	3	28	1	409
Morrow	0	4	25	0	0	0	0	0	0	0	1	0	8
Multnomah	102	239	3933	34	28	131	788	13	4	12	202	1	1,244
Polk	8	9	274	0	1	3	13	4	0	0	5	0	46
Sherman	0	2	5	1	0	0	0	0	0	0	0	0	3
Tillamook	0	6	51	10	3	3	4	0	0	0	2	0	27
Umatilla	1	16	289	1	5	4	21	1	0	0	4	0	105
Union	0	3	75	3	2	3	1	0	3	0	0	0	13
Wallowa	0	5	8	0	0	1	0	0	0	0	0	0	1
Wasco	1	1	103	0	0	1	11	0	0	1	3	0	30
Washington	28	87	1838	30	28	48	153	3	8	5	85	1	326
Wheeler	0	0	2	0	0	0	0	0	0	0	0	0	2
Yamhill	4	18	346	1	8	5	13	1	0	2	4	0	122
Total	209	849	14,265	274	189	362	1,741	84	29	34	468	12	4,570

Data as of 5/19/2014???

Selected Oregon communicable disease case counts by county of residence, 2013

	Legionellosis	Listeriosis	Lyme disease	Meningococcal disease	Pertussis	Rabies, animal	Salmonellosis	Shigellosis	Early Syphilis*	Tuberculosis	West Nile virus	Total
Baker	0	0	0	0	0	1	3	0	0	0	0	171
Benton	0	0	1	0	10	0	5	1	2	2	1	482
Clackamas	2	1	1	2	31	1	40	5	24	1	0	1646
Clatsop	0	0	0	0	2	0	5	0	0	0	0	172
Columbia	0	1	0	0	0	0	3	0	0	0	0	203
Coos	1	0	0	0	19	0	5	0	1	0	0	283
Crook	0	0	0	0	0	0	8	0	0	0	0	86
Curry	0	0	0	0	0	0	1	0	1	0	0	71
Deschutes	0	0	1	0	6	1	19	0	1	0	0	824
Douglas	0	0	3	0	3	0	7	1	0	1	0	509
Gilliam	0	0	0	0	0	0	0	0	0	0	0	3
Grant	0	0	1	0	0	2	0	0	0	0	0	38
Harney	0	0	0	0	0	0	1	0	0	0	2	43
Hood River	0	0	1	0	0	0	4	0	1	0	0	73
Jackson	2	0	8	0	23	1	16	4	8	3	0	1270
Jefferson	0	0	0	0	1	0	2	0	0	1	0	189
Josephine	1	1	6	0	56	3	5	0	0	0	0	490
Klamath	0	0	2	0	51	0	4	0	0	1	0	457
Lake	0	0	0	0	0	0	0	0	0	0	0	37
Lane	4	0	1	2	114	0	32	1	21	4	1	2356
Lincoln	0	0	1	0	1	0	4	0	1	1	0	219
Linn	1	0	1	1	21	0	11	5	3	0	1	620
Malheur	0	0	0	0	1	0	4	0	0	0	11	209
Marion	0	1	0	3	53		35	13	23	15	0	2048
Morrow	0	0	0	0	0	0	1	0	0	0	0	33
Multnomah	9	0	12	2	55	0	61	18	238	31	0	6,865
Polk	0	1	1	0	6	0	18	0	2	1	0	405
Sherman	0	0	0	0	0	0	1	0	0	0	0	9
Tillamook	0	0	0	0	0	1	2	0	1	0	0	103
Umatilla	1	0	1	0	0	0	11	0	1	0	0	446
Union	0	0	0	0	1	0	1	0	0	0	0	106
Wallowa	0	0	0	0	0	0	0	0	0	0	0	21
Wasco	0	0	1	1	1	0	4	0	2	1	0	152
Washington	5	2	0	1	26	0	43	7	70	8	0	2,865
Wheeler	0	0	0	0	0	0	0	0	0	0	0	3
Yamhill	1	0	0	0	4	0	19	0	4	3	0	543
Total	27	7	42	12	485	10	375	55	404	73	16	24,050

Data as of 5/19/2014???

Infections, diseases and conditions reportable by clinicians: 2013

REPORT IMMEDIATELY

Anthrax (*Bacillus anthracis*)
 Botulism (*Clostridium botulinum*)
 Cholera (*Vibrio cholerae* O1, O139, or toxigenic)
 Diphtheria (*Corynebacterium diphtheriae*)
 Hemorrhagic fever caused by viruses of the filovirus (e.g., Ebola, Marburg) or arenavirus (e.g., Lassa, Machupo) families
 Influenza (novel)¹
 Marine intoxication (intoxication caused by marine microorganisms or their by products (e.g., paralytic shellfish poisoning, domoic acid intoxication, ciguatera, scombroid)
 Measles (rubeola)
 Plague (*Yersinia pestis*)
 Poliomyelitis
 Rabies (human)
 Rubella
 SARS (Severe Acute Respiratory Syndrome or SARS-coronavirus)
 Smallpox (variola)
 Tularemia (*Francisella tularensis*)
 Yellow fever
 Outbreaks and uncommon illnesses (any known or suspected common-source outbreak; any uncommon illness of potential public health significance)

REPORT WITHIN 24 HOURS (including weekends and holidays)

Haemophilus influenzae (any isolation or identification from a normally sterile site)
Neisseria meningitidis
 Pesticide poisoning

REPORT WITHIN ONE WORKING DAY

Animal bites (of humans)
 Arthropod vector-borne disease (babesiosis, California encephalitis,
 Colorado tick fever, dengue, Eastern equine encephalitis, ehrlichiosis,
 Kyasanur Forest disease, St. Louis encephalitis, West Nile fever,
 Western equine encephalitis, etc.
 Brucellosis (*Brucella*)
 Campylobacteriosis (*Campylobacter*)
 Chancroid (*Haemophilus ducreyi*)
 Chlamydiosis (*Chlamydia trachomatis*; lymphogranuloma venereum)
 Creutzfeldt-Jakob disease (CJD) and other transmissible spongiform encephalopathies
 Cryptococcosis (*Cryptococcus*)
 Cryptosporidiosis (*Cryptosporidium*)
 Cyclosporiasis (*Cyclospora cayetanensis*)
Enterobacteriaceae family isolates found to be non-susceptible to any carbapenem antibiotic
Escherichia coli (Shiga-toxigenic, including *E. coli* O157 and other serogroups)
 Giardiasis (*Giardia*)
 Gonococcal infections (*Neisseria gonorrhoeae*)
 Hantavirus
 Hemolytic uremic syndrome

Infections, diseases and conditions reportable by clinicians: 2013 (continued)

Hepatitis A	Pertussis (<i>Bordetella pertussis</i>)
Hepatitis B (acute or chronic infection)	Psittacosis (<i>Chlamydophila psittaci</i>)
Hepatitis C (acute or chronic infection)	Q fever (<i>Coxiella burnetii</i>)
Hepatitis D (delta)	Relapsing fever (<i>Borrelia</i>)
Hepatitis E	<i>Rickettsia</i> (all species: Rocky Mountain spotted fever, typhus, others)
HIV infection (does not apply to anonymous testing) and AIDS	Salmonellosis (<i>Salmonella</i> , including typhoid)
Influenza (laboratory-confirmed) death of a person <18 years of age	Shigellosis (<i>Shigella</i>)
Lead poisoning ²	Syphilis (<i>Treponema pallidum</i>)
Legionellosis (<i>Legionella</i>)	<i>Taenia</i> infection (including cysticercosis and tapeworm infections)
Leptospirosis (<i>Leptospira</i>)	Tetanus (<i>Clostridium tetani</i>)
Listeriosis (<i>Listeria monocytogenes</i>)	Trichinosis (<i>Trichinella</i>)
Lyme disease (<i>Borrelia burgdorferi</i>)	Tuberculosis (<i>Mycobacterium tuberculosis</i> and <i>M. bovis</i>)
Malaria (<i>Plasmodium</i>)	Vibriosis (other than cholera)
Mumps	Yersiniosis (other than plague)
Pelvic inflammatory disease (PID, acute, non-gonococcal)	

Footnotes

ORS 409.050, 433.004; OAR 333-018-0000 to OAR 333-018-0015
(http://arcweb.sos.state.or.us/pages/rules/oars_300/oar_333/333_018.html)

1. Influenza A virus that cannot be subtyped by commercially distributed assays
2. “Lead poisoning” means a blood lead level of ≥ 10 $\mu\text{g/dl}$.

Diseases, infections, microorganisms and conditions reportable by laboratories: 2013

BACTERIA

Bacillus anthracis
Bordetella pertussis
Borrelia
Brucella
Campylobacter
Chlamydia trachomatis
Chlamydophila psittaci
Clostridium botulinum
Clostridium tetani
Corynebacterium diphtheriae
Coxiella burnetii
 Enterobacteriaceae family isolates found to be non-susceptible to any Carbapenem antibiotic
Ehrlichia/Anaplasma
Escherichia coli (Shiga-toxigenic)⁶
Francisella tularensis
Haemophilus ducreyi
Haemophilus influenzae^{5,7}
Legionella
Leptospira
*Listeria monocytogenes*⁵
*Mycobacterium bovis*⁵
*Mycobacterium tuberculosis*⁵
Neisseria gonorrhoeae
Neisseria meningitidis^{5,7}
Rickettsia
*Salmonella*⁵
*Shigella*⁵
Treponema pallidum
*Vibrio cholerae*⁵

*Vibrio, non-cholerae*⁵

*Yersinia, pestis*⁵

*Yersinia, non-pestis*⁵

FUNGI

Cryptococcus 5

PARASITES

Babesia

Cryptosporidium

Cyclospora

Giardia

Plasmodium

*Taenia solium*⁸

Trichinella

VIRUSES

Arboviruses¹

Arenaviruses¹⁰

Filoviruses¹⁰

Hantavirus

Hepatitis A⁹

Hepatitis B⁹

Hepatitis C

Hepatitis D (delta)

Hepatitis E

Hemorrhagic fever viruses¹⁰

HIV infection and AIDS

Influenza, novel strain¹¹

Measles (rubeola)

Mumps

Polio

Diseases, infections, microorganisms and conditions reportable by laboratories: 2013 (continued)

Rabies	• Any other arthropod-borne viruses ¹
Rubella	» California encephalitis
SARS-coronavirus	» Colorado tick fever
Variola major (smallpox)	» Dengue
West Nile	» Eastern equine encephalitis
Yellow fever	» Kyasanur Forest
	» St. Louis encephalitis

OTHER IMPORTANT REPORTABLES

- Any “uncommon illness of potential public health significance” ¹
- Any outbreak of disease ¹
- All blood lead testing results, but lead poisoning should be reported within one local health department working day ¹²
- All CD4 counts and HIV viral loads
- Creutzfeldt-Jakob disease (CJD) and other prion illnesses

Footnotes

1. Oregon Revised Statute 433.004; Oregon Administrative Rule 333-018 (http://arcweb.sos.state.or.us/pages/rules/oars_300/oar_33/333_018.html)
2. Refer to <http://www.healthoregon.org/lhd> for a list of local health departments, reporting FAQs, and more details about what to report. When in doubt, report.
3. ORS 433.004 and OAR 333-018-0013 (http://arcweb.sos.state.or.us/pages/rules/oars_300/oar_33/333_018.html); Manual for Mandatory Electronic Laboratory Reporting (<http://www.healthoregon.org/elresources>)
4. ORS 431.262; OAR 333-018 (http://arcweb.sos.state.or.us/pages/rules/oars_300/oar_333/333_018.html); OAR 333-026-0030 http://arcweb.sos.state.or.us/pages/rules/oars_300/oar_333/333_026.html)
5. Isolates must be forwarded to the Oregon State Public Health Laboratory (phone, 503-693-4100).
6. All confirmed or suspect isolates of *E. coli* O157, and all non-O157 Shiga-toxin-positive broths, must be forwarded to the Oregon State Public Health Laboratory (phone 503-693-4100).
7. Report only isolates from normally sterile sites (e.g., neither sputum nor throat cultures).
8. Report cysticercosis and all undifferentiated *Taenia* spp. (e.g., eggs in stool O & P).
9. IgM-positive HAV and HBV serum specimens must be forwarded to the Oregon State Public Health Laboratory.
10. Hemorrhagic fever caused by viruses of the filovirus (e.g., Ebola, Marburg) or arenavirus (e.g., Lassa, Machupo) families are reportable.
11. Influenza A virus that cannot be subtyped by commercially distributed assays.
12. “Lead poisoning” means a blood lead level of at least 10 micrograms per deciliter.



REV (11/14) OHA 8600