

>> Protect the population from communicable diseases



The reduction in death and disability due to communicable diseases is one of the great achievements of the 20th century. Despite this overall success, communicable diseases continue to affect the health of individuals and communities throughout Oregon. Disparities exist for populations that are at greatest risk, while emerging communicable diseases pose new threats to everyone.

Oregon's state health improvement plan focuses on protecting the population from:

- Foodborne illnesses;
- Health care-associated infections;
- Sexually transmitted diseases; and
- Hepatitis C infections.

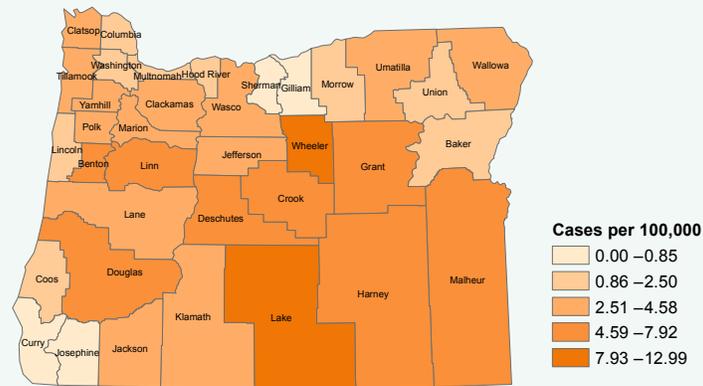
Foodborne illnesses

Foodborne illness affects 1 in 6 Americans (or 48 million people) each year. Most people who become sick with a foodborne illness will recover without any lasting health consequences. However, for some, a foodborne illness will have serious long-term health outcomes, including kidney failure, chronic arthritis, brain and nerve damage, and death. Of the 48 million people who are affected each year, 128,000 are hospitalized and 3,000 will die.¹ The annual economic burden of foodborne illness is \$77.7 billion in the United States.²

Escherichia coli O157 (*E. coli*) is one of the most dreaded causes of stomach and intestinal irritation and inflammation (infectious gastroenteritis). Bloody diarrhea is a hallmark of this pathogen, but the real risks are anemia and kidney failure (hemolytic uremic syndrome, or HUS), especially among children under 10 years of age. Approximately 6% of people who contract *E. coli* will develop these complications, and 3 to 5% of HUS cases die.³

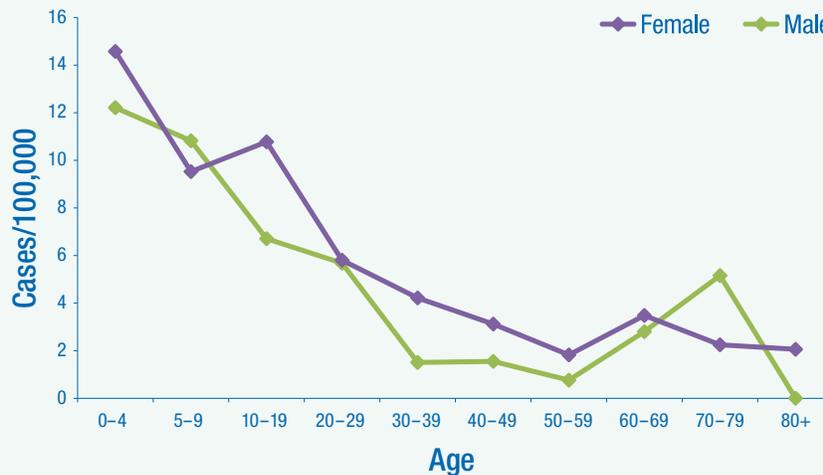
Over the past 10 years, the annual number of *E. coli* cases reported statewide has ranged between 61 and 149. After being relatively steady during 2008–2011, the number increased to 111 cases in 2012 and 106 cases in 2013.³

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



Source: Orpheus

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



Source: Orpheus

Strategies to prevent foodborne illnesses

To improve food safety in Oregon, the public health system must implement and maintain strategies to prevent outbreaks through investigation and routine monitoring. Tracking individual cases and investigating outbreaks requires significant resources and collaboration between the public health and health care systems. Other work includes ensuring health care providers and other partners are adequately trained and have resources to identify and treat cases of foodborne illness. Efforts are also needed to improve food safety in restaurants and other places where people consume food.

Health care-associated infections

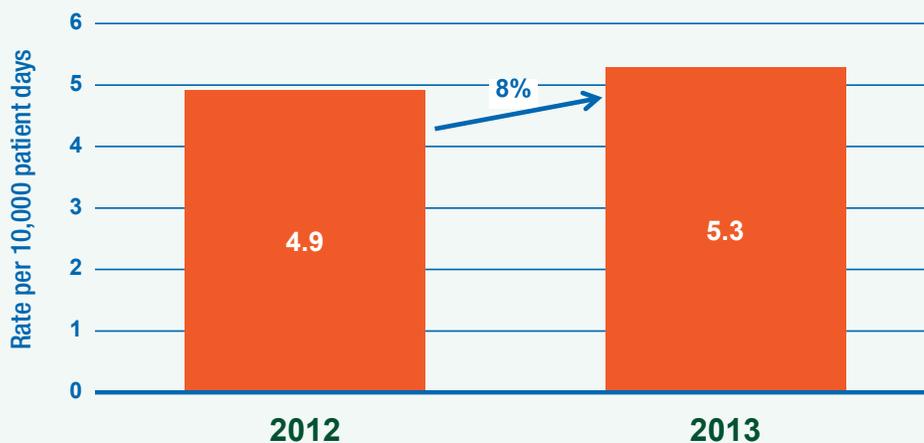
Health care-associated infections affect people who are receiving health care. These individuals often have other health conditions that put them at risk of life-threatening complications if they develop a health care-associated infection. Health care-associated infections can result in the need for additional treatment, more days in the hospital, stronger or more antibiotics, and higher costs to patients and the health care system.

Clostridium difficile infection (CDI) is the leading cause of health care-associated infection and it is spreading into community settings. CDI causes half a million infections and 14,000 deaths annually, and adds more than \$1 billion in health care costs in the United States.⁴

CDI is a toxin-producing bacterium that causes diarrhea and more serious intestinal conditions like colitis (bowel inflammation) and bowel perforation. The primary risk factor for developing CDI is recent administration of antibiotics (within the previous three months). The spread of CDI is preventable by hand washing and appropriate antibiotic use.

While Oregon does not have a mechanism for collecting information about the prevalence of CDI across Oregon communities, all hospitals in Oregon report counts of CDI cases monthly as part of Oregon's Mandatory Healthcare-Associated Infection Reporting Program. In addition Oregon is one of ten Emerging Infections Program (EIP) sites participating in a national health surveillance project. The Oregon EIP conducts population-based health surveillance for CDI among residents in Klamath and Deschutes counties.⁵

Reported cases of health care-onset *C. difficile* infections, Oregon, 2012–2013



NHSN does not conduct surveillance for neonatal intensive care units, labor and delivery units, and well-baby nurseries. These are excluded from the rate calculations.

Source: National Healthcare Safety Network (NHSN)

Out of 370,073 patient admissions reported by Oregon hospitals in 2013, 2,039 (0.55%) had CDI present on admission or acquired CDI during that admission.

Of the 2,039 admissions with CDI identified:

- 36% had CDI onset during hospitalization;
- 44% had CDI present on admission with onset in the community; and
- 20% had CDI present on admission with onset associated with a previous admission.⁶

CDI rates are highest in females, Whites and people aged 65 and older. Recurrence is common and occurs in 21% of individuals affected by the infection.⁶

Strategies to prevent health care-associated infections

Ensuring appropriate notification of CDI on transfer and increasing infection control capacity will have a dramatic impact on reducing health care-associated infections, including CDI. Work is also needed to reduce unnecessary prescriptions of antibiotics. This requires a broad array of partners working together and using a multi-disciplinary approach to educate the public about appropriate use of antibiotics.

Sexually transmitted infections

Sexually transmitted infections (STIs) are a significant health problem in the United States. CDC estimates nearly 20 million new sexually transmitted infections occur every year in this country, half among young people aged 15–24.⁷ Each of these infections poses a threat to an individual's immediate and long-term health and well-being. In addition to increasing a person's risk for acquiring and transmitting HIV infection, STIs can lead to severe reproductive health complications, such as infertility and ectopic pregnancy. STIs lead to nearly \$16 billion in annual health care costs.⁷

Human immunodeficiency virus (HIV)

HIV is a virus spread through bodily fluids that affect specific cells of the immune system (T cells). Over time, HIV can destroy so many of these cells that the body cannot fight off infections and disease. Having HIV can also increase the risk of getting certain cancers. Most people who do not receive treatment will eventually (over years) become ill and die of complications of HIV infection.

With treatment (called antiretroviral therapy), most people with HIV infection can lead long and healthy lives. This is especially true if they start HIV treatment when their immune system is still relatively strong.

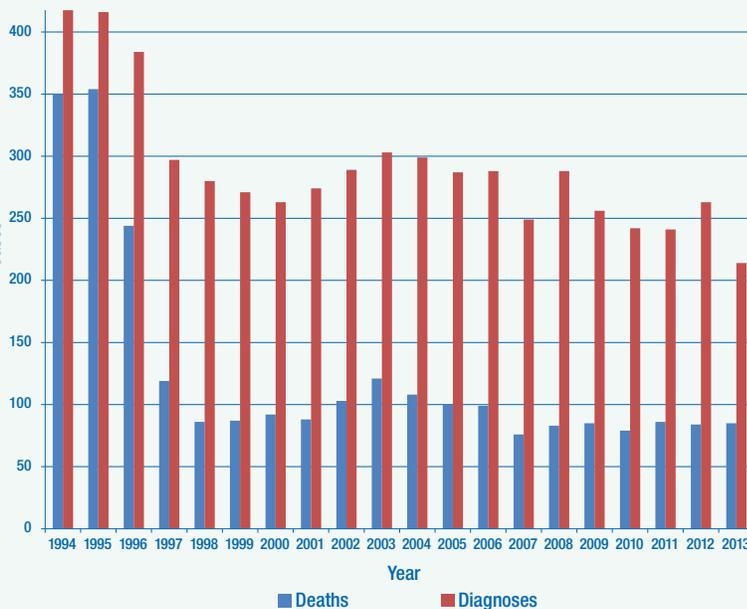
There are approximately 50,000 new HIV infections each year in the United States, and about 1.2 million people currently living with the disease. Approximately 14% of these people do not know they are infected.⁸

HIV/AIDS remains an important public health concern in Oregon. Oregon's decline in new diagnoses of HIV, from 19 cases per 100,000 in 1997 to 7 cases per 100,000 in 2012, is the result of a combination of factors, including earlier diagnosis, behavior changes, reduction in infection from a pregnant woman to her baby, and reduced infectiousness of HIV-infected people who are taking antiretroviral therapy. However, the number of people living with HIV/AIDS continues to grow, presenting new challenges for prevention and clinical services.⁹

In Oregon, men are more likely to be infected with HIV than women. From 2008 to 2012, diagnosis rates were seven times higher for men relative to women (12.1 vs. 1.6 per 100,000). Men who have sex with men account for 72% of all male cases.⁹

African Americans and Hispanics continue to be more likely than non-Hispanic Whites to become infected with HIV. From 2008–2012, diagnosis rates were 3.8 times higher among African Americans and 1.6 times higher among Hispanics compared to non-Hispanic Whites.⁹

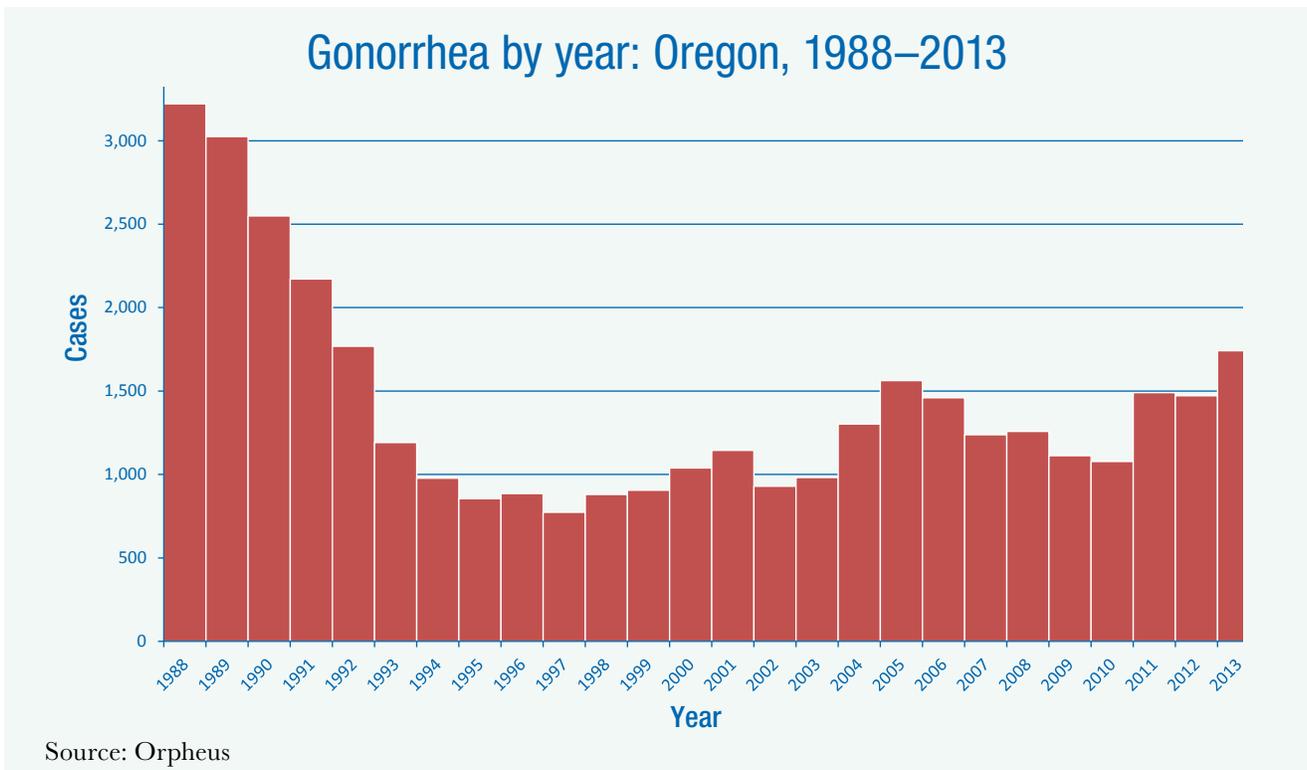
Oregon cases of HIV infection, diagnoses and deaths, 1981–2013



From 2008–2012, the average age at diagnosis was 37.7 years for males and 36.5 for females. New diagnoses have recently increased among younger age groups. Rates of new diagnoses among males aged 20–24 years remained elevated (22.4 per 100,000) compared to the diagnosis rate prior to 2005 (13.1 per 100,000).⁹

Gonorrhea

Women are more likely than men to be infected with gonorrhea, but men are more likely to develop symptoms. Gonorrhea can cause pelvic inflammatory disease or tubal pregnancy in women if left untreated. Because individuals may not experience symptoms, routine screening is essential to prevent further spread of disease.



Of concern, gonorrhea infections have progressively developed resistance to the antibiotics commonly prescribed to treat the infection.

The incidence of gonorrhea has been increasing in Oregon over the last decade. From 2002 to 2012, between 25 and 45 cases of gonorrhea per 100,000 were reported in Oregon each year.¹⁰

Racial and ethnic disparities are evident when looking at the proportion of cases of gonorrhea. African Americans (188.3 per 100,000) and American Indians (46.2 per 100,000) in Oregon are disproportionately affected by gonorrhea as compared to Whites (28.7 per 100,000).¹⁰

Strategies to reduce STIs

Reducing the spread of STIs in Oregon will require a combination of clinical and population interventions, ongoing assessment to monitor trends and discover outbreaks, and policy development. Clinical interventions focus on adhering to current screening and treatment guidelines, including the use of expedited partner therapy, and long-term care for people living with HIV. Population interventions include identifying communities at greatest risk and ensuring adequate resources exist within the community to support prevention efforts.

Hepatitis C

Hepatitis C is an infection of the liver that results from the hepatitis C virus. Hepatitis C is usually spread when the blood from a person infected with the virus enters the body of someone who is not infected. Acute hepatitis C refers to the period of several months after a person is first infected. Symptoms during this time may be mild, or may be severe and require hospitalization.

Approximately 20% of acute hepatitis C infections clear on their own within the first six months; however, the majority of people will become chronically infected. Hepatitis C can cause serious health problems such as liver disease, liver failure and liver cancer. Of every 100 people infected with hepatitis C, about 75 to 85 will become chronically infected. Of those:

- 60–70 will develop chronic liver disease;
- 5–20 will develop cirrhosis over a period of 20–30 years; and
- 1–5 will die from cirrhosis or liver cancer.¹¹

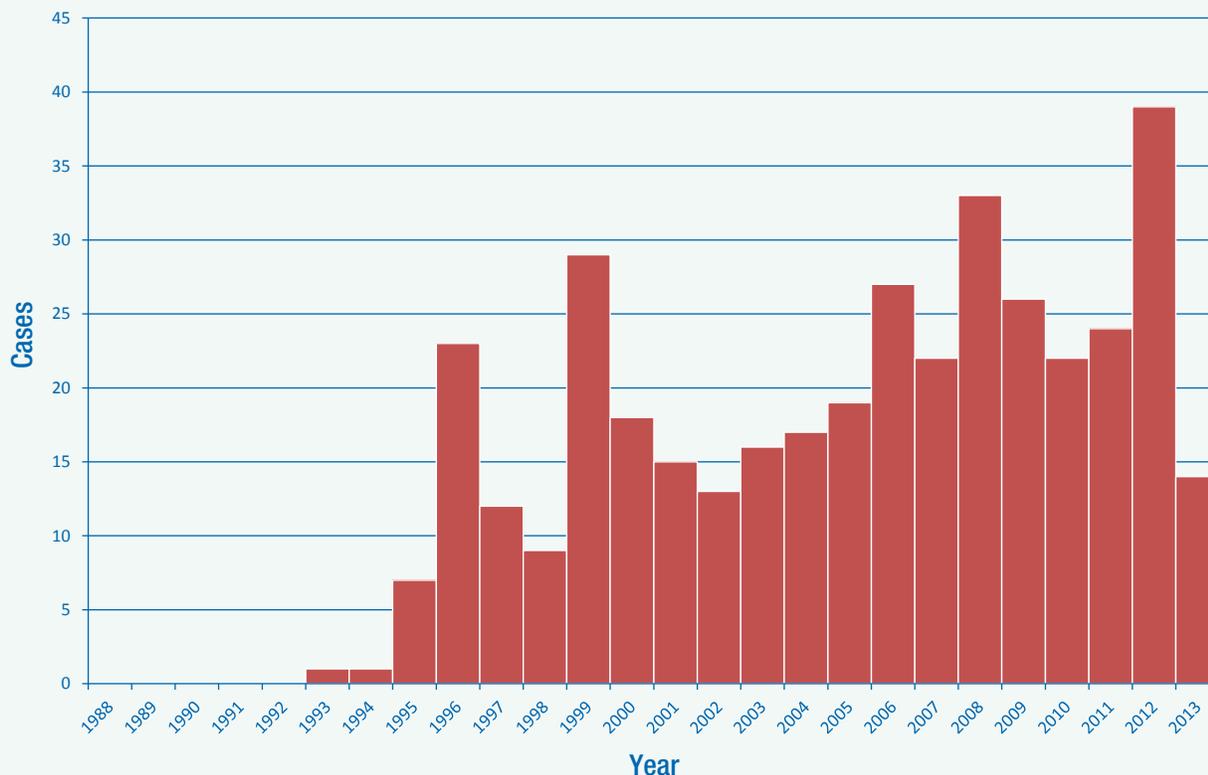
Today, most people become infected with hepatitis C by sharing needles, syringes or any other equipment to inject drugs. Sexual transmission of hepatitis C is possible, although rare. Having a sexually transmitted disease or HIV, sex with multiple partners or rough sex appears to increase a person's risk for hepatitis C.¹¹

Positive laboratory results for hepatitis C infection became reportable in Oregon in 2005. Since then, 47,232 persons with hepatitis C have been reported. Studies have estimated 50% of persons living with hepatitis C have not been diagnosed, suggesting as many as 95,000 Oregonians could be infected.

In Oregon, the burden of hepatitis C disproportionately affects African Americans and American Indians compared to Whites. Rates of reported cases of hepatitis C infection are more than twice as high, cases of liver cancer are 50% higher, and hepatitis C-related deaths are twice as high in African Americans (15.7 per 100,000) and American Indians (15.9 per 100,000) compared to Whites (8.6 per 100,000).¹²

Two-thirds of hospitalizations in Oregon due to hepatitis C from 2008–2012 occurred in men.¹²

Acute hepatitis C Oregon incidence rate per year, 1993–2013



Source: Orpheus hepatitis C surveillance and American Community Survey, June 2014

Strategies to reduce hepatitis C infections

A multi-pronged approach that includes partners from across the health care and public health sector is needed to reduce and prevent hepatitis C infections. Key strategies include enhancing surveillance activities, expanding capacity for provider and community education, expanding access to testing and treatment, and targeting interventions toward injection drug users.

Priorities, strategies and measures

Priority targets

Gonorrhea in women aged 15–44 years

Target: 86 cases/100,000

Baseline: 96 cases/100,000 (2014)

Data source: Orpheus

HIV infections in Oregon residents

Target: 4.5 cases/100,000

Baseline: 5.5 cases/100,000 (2013)

Data source: Orpheus

Hospital-onset *Clostridium difficile* infections

Target: SIR .57

Baseline: SIR .76 (2013)

Data source: National Healthcare Safety Network

Infections caused by Shiga toxin-producing *Escherichia coli* infections in children less than 10 years old

Target: 1.4/100,000 of laboratory-confirmed *E. coli*

Baseline: 1.6/100,000 (2010–2014)

Data source: Orpheus

Population interventions

Strategy 1: Reduce infections caused by pathogens commonly transmitted through food

Justification: Foodborne illnesses such as *Salmonella* cause disease in the general population, especially threatening young children and the elderly. Twenty one percent of Oregon *Salmonella* infections from 2010–2014 were reported in children less than 10 years of age. Eighteen percent of Oregon *Salmonella* infections from 2010–2014 were reported in people older than 60 years of age.

Measure 1.1: Infections caused by *Salmonella* species commonly transmitted through food

Target: 11.4 cases/100,000

Baseline: 10.3 cases/100,000 (2013)

Data source: Orpheus, FoodNet

Measure 1.2: Maintain the proportion of reference and specialty testing in support of norovirus outbreak investigations

Target: Greater than 90% of qualifying outbreaks are tested, sequenced and reported within seven working days

Baseline: 100% (2014)

Data source: Laboratory Information System

Measure 1.3: Infections caused by *Campylobacter* commonly transmitted through food

Target: 22 cases/100,000

Baseline: 25.8 cases/100,000 per year (2010–2014 average)

Data source: Orpheus

Strategy 2: Reduce non-judicious antibiotic prescriptions

Justification: Overuse of antibiotics when not clinically indicated can lead to antibiotic resistant bacteria. Adverse health outcomes are rare when providers are conservative when prescribing antibiotics, and patient satisfaction increases in proportion to the health care provider's commitment to providing education in place of an antibiotic prescription.

Measure 2.1: Rate of non-judicious prescriptions

Target: 40% prescribing for bronchitis

Baseline: 47% (2012)

Data source: All Payer All Claims database

Health equity interventions

Strategy 1: Identify people living with HIV who have not been receiving HIV-proficient care, and support engagement in care

Justification: People with HIV infection who are treated with anti-HIV medications and have very low numbers of viral copies in circulating blood, rarely, if ever, transmit HIV. While the estimated proportion of people with HIV with evidence of “viral suppression” (viral load <200 copies/ml) in the state is already high relative to the rest of the nation (71% in 2013), Oregon ultimately aspires to achieve viral suppression in 90% of diagnosed cases. State and local staff will search multiple sources for contact information for people with reported HIV

infection but without recent laboratory test results, and attempt to contact them to confirm they are not receiving regular medical care. People who are confirmed out of care will be offered assistance to reestablish care. Reengagement in care will be monitored by evidence of resumption of laboratory testing.

Measure 1.1: Proportion of people living with HIV in Oregon that have a suppressed viral load within the previous 12 months

Target: 90%

Baseline: 71% (2013)

Data source: Orpheus

Strategy 2: Reduce new hepatitis C infections among African Americans, American Indians and other disproportionately affected groups.

Justification: This target is consistent with Healthy People 2020 objective IID-26.

Measure 2.1: New asymptomatic hepatitis C cases per 100,000 reported annually

Target: .25 new cases per 100,000

Baseline: .38 new cases per 100,000 (2013)

Data source: Orpheus

Strategy 3: Reduce norovirus infections in long-term care facilities

Justification: Norovirus is the most common foodborne viral pathogen in the United States. It is often found in Oregon's long-term care facilities (LTCF) afflicting the vulnerable elderly population. In 2010–14, 67% of outbreaks in LTCF were confirmed as norovirus, affecting more than 3,500 Oregonians.

Measure 3.1: Number of norovirus outbreaks reported by long-term care facilities within the previous 12 months

Target: 60 norovirus outbreaks

Baseline: 80 norovirus outbreaks (average, 2010–2014)

Data source: Outbreaks database

Strategy 4: Promote routine syphilis screening for men who have sex with men

Justification: Increasing the frequency of screening and proportion of men who have sex with men who get screened regularly is an effective method to control syphilis transmission. Oregon Health Authority maintains “Oregon Reminders,” a free internet-based text, telephone and email automated system that reminds users to test for HIV and other sexually transmitted infections, take prescribed medications on a schedule and complete other health-related tasks. Oregon Reminders is available to everyone but targeted to men who have sex with men.

Measure 4.1: Active Oregon Reminders users receiving periodic reminders to test for sexually transmitted infections

Target: 1,388 users

Baseline: 1,156 users, 2015

Data source: Oregon Reminders

Measure 4.2: Proportion of men with HIV who have sex with other men and participate in the Oregon Medical Monitoring Project with evidence of having been tested for syphilis in the preceding 12 months

Target: 80%

Baseline: 65% (2015)

Data source: Medical Monitoring Project

Health system interventions

Strategy 1: Create incentives for private and public health plans and health care providers to prevent communicable diseases

Justification: Incentive measures and alternative payment methodologies ensure health plans and health care providers are working on a common set of priority areas designed to improve care and access, eliminate disparities and contain health care costs. The measures currently focus on public health plans, but measures will be expanded to include private insurers as data become available.

Measure 1.1: Number of public health plans that receive an incentive or shared savings payment for communicable disease prevention

Target: 16 CCOs, PEBB and OEBC carriers

Baseline: 0 CCOs, PEBB and OEBC unknown (2015)

Data source: OHA Metrics and Scoring, PEBB and OEBC contracts

Measure 1.2: Number of public health plans that incorporate communicable disease prevention in alternative payment methodologies for contracted providers

Target: 16 CCOs, PEBB and OEBC carriers

Baseline: Unknown, developmental measure (2015)

Data source: CCO Transformation Plans, PEBB and OEBC contracts

Strategy 2: Promote annual chlamydia screening of women aged 15–24 by health care providers

Justification: Chlamydia infections are the leading cause of tubal infertility and chronic pelvic pain among U.S. women. Most chlamydia infections are asymptomatic. Diagnosis and treatment hinges on regular screening of women aged 16–24 years who are at highest risk for chlamydia infection and subsequent sequelae that are preventable by early recognition and treatment. Annual screening of sexually active women in this age group is consistent with Healthy People 2020 Objectives STD-3 and STD-4.

Measure 2.1: Proportion of women aged 15–24 years screened annually for chlamydia

Target: 59%

Baseline: 54% (2013)

Data source: All Payer All Claims database

Strategy 3: Promote use of expedited partner therapies by health care providers and local health departments

Justification: Expedited partner therapy includes partner-delivered therapy in which men and women with chlamydia infection or gonorrhea are given medicine or prescriptions to deliver to their sex partners to treat presumed infection without a medical visit. Oregon law permits this practice and the Centers for Disease Control and Prevention list it among effective practices for controlling sexually transmitted disease. This is likely to be most effective for chlamydia infections where reinfection is common and the number of infections far exceeds the capacity of local health departments to elicit, contact and treat all partners of cases.

Measure 3.1: Proportion of women aged 15–44 years diagnosed with chlamydia or gonorrhea that received partner-delivered expedited therapy

Target: 20% of cases

Baseline: Unknown, developmental measure (2015)

Data source: Orpheus

Strategy 4: Improve hospital capacity to detect and prevent health care-associated infections

Justification: The Association for Professionals in Infection Control and Epidemiology (APIC), recommends a 1:100 ratio of infection preventionists to beds to prevent health care-associated infections.

Measure 4.1: Percentage of hospitals that meet the APIC-recommended 100:1 ratio for infection preventionists

Target: 100%

Baseline: 67% (2014)

Data source: National Healthcare Safety Network

Strategy 5: Educate clinicians about foodborne disease assessment and prevention

Justification: Physicians and other health care professionals are likely points of contact for index cases in food-related disease outbreaks. It is important that clinicians and other health care providers have information and tools to recognize suspicious symptoms, disease clusters and etiologic agents.

Measure 5.1: Percentage of CD Summaries distributed that focus on foodborne disease assessment and prevention

Target: 20%

Baseline: 12% (2014)

Data source: Acute and Communicable Disease Prevention section

¹ Centers for Disease Control and Prevention. Estimates of Foodborne Illness in the United States. 2014. Retrieved from: www.cdc.gov/foodborneburden/.

² Bottemiller, H. Annual Foodborne Illness Costs \$77 Billion, Study Finds. Food Safety News. 2012. Retrieved from: www.foodsafetynews.com/2012/01/foodborne-illness-costs-77-billion-annually-study-finds/#.VUPXQfC3F9k.

³ Oregon Health Authority, Public Health Division, Acute and Communicable Disease Prevention Section. Communicable Disease Annual Report – 2013. *Escherichia coli* 0157 (STEC) infection. 2013. Retrieved from: <https://public.health.oregon.gov/DiseasesConditions/CommunicableDisease/DiseaseSurveillanceData/Annual-Reports/Pages/2013.aspx>.

⁴ Centers for Disease Control and Prevention. CDC Vital Signs. 2012. Available at: www.cdc.gov/vitalsigns/hai/stoppingcdifficile/.

⁵ Oregon Health Authority, Public Health Division, Acute and Communicable Disease Prevention Section. HAI Surveillance. Retrieved from: <https://public.health.oregon.gov/DiseasesConditions/CommunicableDisease/HAI/Surveillance/Pages/index.aspx>.

⁶ Oregon Health Authority, Public Health Division, Acute and Communicable Disease Prevention Section. 2013 Oregon HAI Report. 2014. Retrieved from: https://public.health.oregon.gov/DiseasesConditions/CommunicableDisease/HAI/Documents/Reports/hai_report_2009_2013.pdf

⁷ Centers for Disease Control and Prevention. CDC Fact Sheet: Reported STDs in the United States: 2013 National Data for Chlamydia, Gonorrhea, and Syphilis. 2014. Retrieved from: www.cdc.gov/nchhstp/newsroom/docs/std-trends-508.pdf.

⁸ Centers for Disease Control and Prevention. About HIV/AIDS. HIV Basics. 2015. Retrieved from: www.cdc.gov/hiv/basics/whatishiv.html.

⁹ Oregon Health Authority, Public Health Division, HIV/STD/TB Program. Epidemiologic Profile of HIV/AIDS in Oregon. 2014. Retrieved from: <https://public.health.oregon.gov/DiseasesConditions/CommunicableDisease/DiseaseSurveillanceData/HIVData/Documents/EpiProfile.pdf>.

¹⁰ Oregon Health Authority, Public Health Division, HIV/STD/TB Program. Gonorrhea in Oregon. 2014. Retrieved from: <http://public.health.oregon.gov/DiseasesConditions/CommunicableDisease/DiseaseSurveillanceData/STD/Documents/9987-STD-Gonorrhea.pdf>.

¹¹ Centers for Disease Control and Prevention. Hepatitis C: General Information. 2015. Retrieved from: <http://www.cdc.gov/hepatitis/HCV/PDFs/HepCGeneralFactSheet.pdf>.

¹² Oregon Health Authority, Public Health Division. Hepatitis C Infections in Oregon: September 2014. 2014. Retrieved from: <https://public.health.oregon.gov/DiseasesConditions/HIVSTDViralHepatitis/AdultViralHepatitis/Documents/Hepatitis-C-in-Oregon.pdf>.