CD Summary

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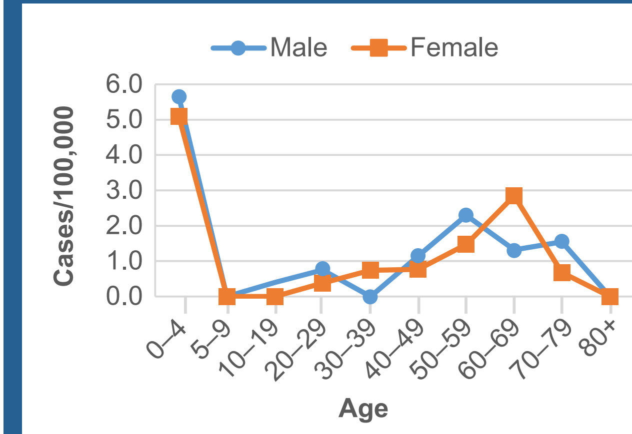
Ebbs and flows of disease reporting in Oregon, 2015

That other *Mycobacterium*

Oregon surveillance for extrapulmonary disease caused by nontuberculous mycobacteria (NTM) started in January of 2014.

NTM are environmental organisms, usually associated with water and soil; more than 100 different species have been identified. Disease-causing NTM species frequently identified in the United States include: *M. avium* complex, *M. marinum, M. abscessus, M. chelonae, M. fortuitum, M. kansasii* and (in certain regions) *M. xenopi*.

Figure 1. Incidence of extrapulmonary nontuberculous mycobacterial disease (NTM) by age and sex, Oregon, 2015



In addition to the more common pulmonary infections, NTM cause cutaneous bone, joint, lymph node and central nervous system (CNS) disease. Cutaneous infections typically result from direct inoculation during trauma, surgical or medical procedures or tattooing; or from contamination of breaks in skin during whirlpool or pedicure baths. These soft tissue infections manifest as purplish nodules that drain and may ulcerate or scar. Disseminated extrapulmonary disease typically strikes immunocompromised patients, (e.g., those with HIV, cancer, or transplants). Symptoms include cough, fatigue, weight loss, fever and night sweats. Ninety-eight extrapulmonary NTM infections were reported among Oregon residents in 2014 and 2015. The median case age was 55 (range, 1–92) years, 51 (52%) were female, and 37 (38%) were hospitalized at the time of specimen collection. Tissue and wound cultures accounted for 46 (47%) of the cases. *M. avium* complex was the most frequently reported species (42 [43%]); 16 of those were from children 1–4 years of age.

In Oregon, the highest rates of infection were reported among children <5 years of age (Figure 1). Healthy children present with lymphadenitis: large, red, tender nodes that can drain or ulcerate.

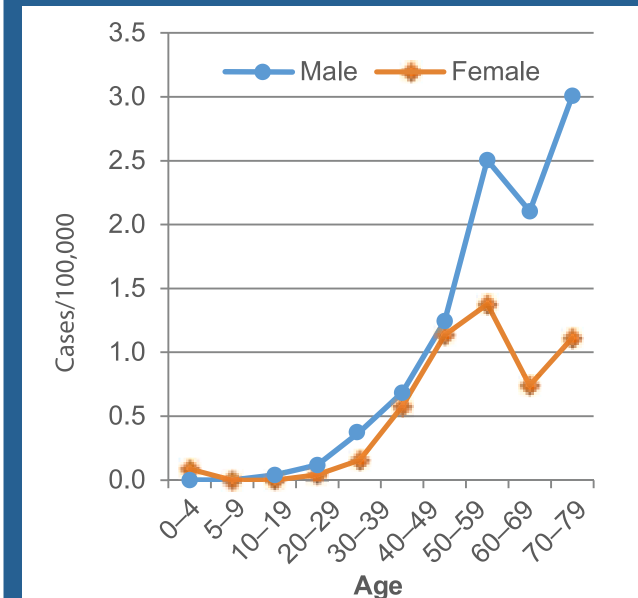
In immunocompetent individuals, infections are usually curable with a 2–3 drug regimen administered for 2–6 months, depending on site of infection. Proper treatment requires identification of the infecting species. Empiric antimicrobial treatment directed at the offending species should be adjusted as needed after testing its susceptibility. For those with disseminated disease, cure is difficult to achieve without restoration of the immune system.

Three NTM clusters were detected during 2014–2015. An *M. fortuitum* cluster comprised 7 cases who had prosthetic joint replacement surgery. A 2-case cluster of *M. fortuitum* infections was associated with abdominoplasty in an ambulatory surgery center. Two *M. haemophilum* cases followed art work at a common tattoo parlor.

Legionella lurking

Legionellosis is usually an acute respiratory tract infection that begins two to 14 days after exposure to *Legionella* spp. Symptoms include high fever, chills and cough, in addition to headache and muscle aches. Very similar to other causes of pneumonia, diagnosis is rarely obvious, and routine respiratory cultures will not yield the organism. Available confirmatory diagnostic tests include urine antigen detection, direct fluorescent antibody staining, and culture on special media. Infections are treatable with fluoroquinolone or macrolide antibiotics.

Figure 2. Legionellosis by age and sex, Oregon, 2015



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. *Legionella* is transmitted through aerosolization of contaminated water; it is not transmitted from person to person. Risks for infection include older age, smoking, chronic lung disease (like emphysema), renal insufficiency, diabetes and immune deficiency.

Legionellosis became reportable in Oregon in 2001 and nationally in 2009. Rates of reported illness have increased each year, both in Oregon and nationally. The cause of the rise is unknown; however, increases in older persons and those with underlying diseases, along with increased case detection and reporting may have been playing a role (Figure 2).

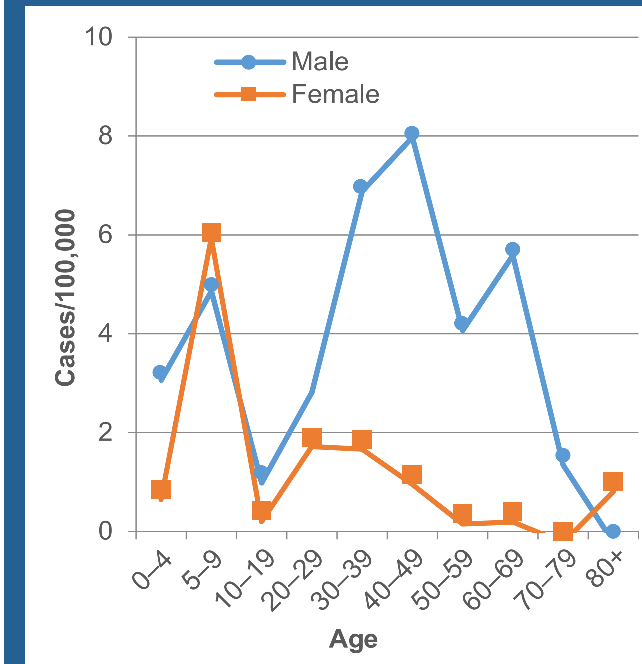
In 2015, 50 cases of legionellosis were reported among Oregonians; 96% were hospitalized and five died. Though no outbreaks occurred on Oregon soil, two large outbreaks occurred in the Bronx, bringing national attention to outdated and ill-maintained plumbing systems.[1] None of the 50 Oregon cases reported travel to New York City during their exposure periods. However, due to multiple outbreaks in hospitals, health care settings, and apartment complexes, a new industry standard for prevention of *Legionella* growth and transmission in water systems in buildings was published in 2015.[2]

Shigellosis swells in the city

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*. Humans are the only known reservoir. *Shigellosis is* transmitted from person to person, and as few as ten organisms can cause illness. Historically the rates have been highest among children 1–4 years of age.

Since June 2015, an outbreak of *Shigella sonnei* infections has struck residents across 19 states. In total, 175 infections have been reported, with 102 occurring in Oregon, making it the largest outbreak of confirmed shigellosis in state history. The overwhelming majority of cases in this multistate outbreak have been among men (Figure 3), particularly among men (who have sex with men (MSM). In Oregon, the outbreak spread among MSM and then among homeless persons in Portland. The *Shigella sonnei* strain in this outbreak has been resistant to ampicillin, trimethroprim/sulfmethoxazole, and azithromycin — but susceptible to ciprofloxacin. We recommend that clinicians order a stool culture on patients suspected as having shigellosis to obtain antibiotic susceptibilities.

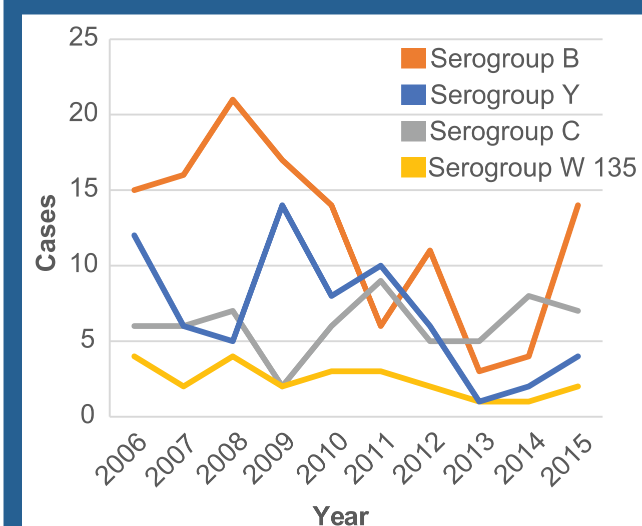
Figure 3. Shigellosis by age and sex, Oregon, 2015



Menacing meningococcus

After a decade of decline, meningococcal disease in Oregon has risen a bit. In 2013, Oregon's rate of 0.3 per 100,000 was the lowest rate recorded and close to the national rate of 0.2 per 100,000. However, since 2013, however, Oregon's case counts have increased, with serogroup B in the lead (Figure 4). A seven-case outbreak of serogroup B disease, including one fatal case, struck the University of Oregon during January–May. All but one case were among students 18–20 years of age. Close contacts of each case received antibiotic prophylaxis in accordance with CDC recommendations. Mass vaccination clinics using a newly licensed 3-dose serogroup B vaccine were held in March 2015, after the fourth case had come to light, with follow-up clinics in May and October.

Figure 4. Meningococcal disease by serogroup, Oregon, 2006–2015



Non-0157 STECs lead the pack in Oregon

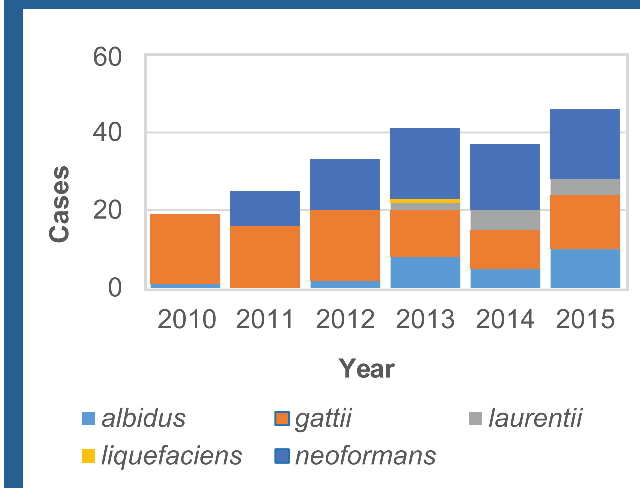
With increasing deployment of diagnostic kits that identify not just *Escherichia coli* O157 but any Shiga toxin-producing *E. coli* (STEC) comes an appreciation of the significant role that other STEC play as human pathogens. In the U.S. (and in Oregon), O26, O45, O103, O111, O121 and O145 have been the most common "other" serogroups — i.e., the non-O157 serogroups that collectvely make up about half of reported STEC cases. Over the past 10 years, the number of O157 cases reported statewide has ranged between 57 and 106 annually. After being relatively steady during 2008–2011, the rate began to increase, and reached a peak of 2.7 cases per 100,000 persons in 2013. In 2015, the rate was 2.6 per 100,000.

Reported infections by non-O157 STEC serogroups have increased steadily from single digits in 2007 and 2008 to 109 confirmed cases in 2015. Of the 215 confirmed STECs serotyped in 2015, 106 (49%) were O157, and 109 (51%) were non-O157, including O26 (56), O103 (17), O121 (10) and 18 other serogroups. Fifty-six cases were hospitalized; two died. Eleven cases developed hemolytic uremic syndrome; all but one had STEC O157.

Fungus among us

Infection by *Cryptococcus* became reportable in Oregon on August 19, 2011, though public health officials have tracked voluntarily reported cases since 2004. Seventy-six cases occurred among Oregon residents in 2015. Among culture-confirmed cases the most common infection was *C. neoformans* (18), followed by *C. gattii* (14) (Figure 5). Cryptococcal infection is now frequently diagnosed by antigen detection rather than by culture. The antigen is not species-specific; it does not distinguish *C. neoformans* from *C. gattii.*

Figure 5. *Cryptococcus* by species and year, Oregon, 2010–2015



Forty-nine percent of interviewed cases had no history of travel outside of Oregon in the 13 months before illness onset, and so were apparently acquired in Oregon. There is no potential for zoonotic or person-to-person transmission.

Previously healthy persons appear to be at low risk. Most infections are among immunocompromised or chronically ill persons.

Treatment with extended courses of antifungal agents (six months or longer) is recommended. For current treatment information, see guidelines published by the Infectious Diseases Society of America: www.idsociety.org/Index.aspx.

Ebbing of the acute hepatitides

Implementation of routine vaccination of children against both hepatitis A and hepatitis B in resulted in a dramatic decrease in their incidences in Oregon, with rates of each less than 1 per 100,000 persons during 2015.

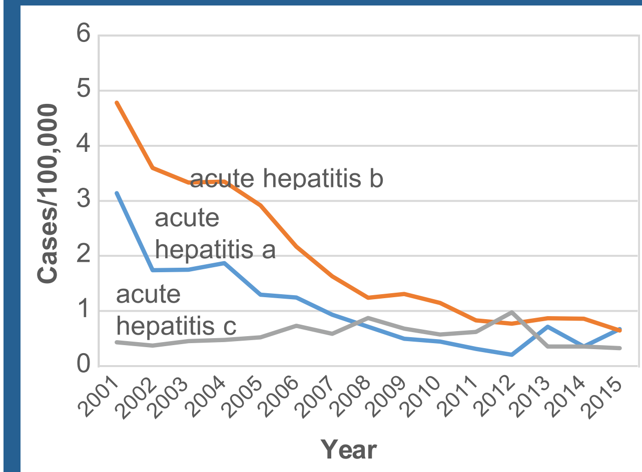
In 2015, Oregon logged 27 cases of acute hepatitis A — nearly double the 14 cases reported in the previous year (Figure 6).* Eight of the 27 cases were acquired by venturing outside of Oregon or

* but a far cry from the 2.927 reported in 1995

from household members with foreign travel, often to countries with high rates of hepatitis A, such as Mexico, India, Haiti, and Indonesia. Fifteen cases had no identifiable risk for factor hepatitis A. Sixty-three percent of cases were >40 years of age.

Oregon local health department officials investigated and reported 26 cases of acute hepatitis B in 2015. Half of the cases were male. Eighty-one percent were interviewed; the most commonly reported risk factors included dental care, health care interaction, contact with a case, injection drug use (IDU) and sexual risk factors such as a history of multiple sexual partners and men having sex with men (MSM). No risk factor was identified for 23% of cases.

Figure 6. Acute hepatitides, Oregon, 2001–2015



On average during 2005–2015, 23 acute hepatitis C cases were reported annually in Oregon. In 2015, 13 cases were reported nine (69%) of these were <40 years of age, and 8 (62%) were female. Injection drug use remains the predominant risk factor reported by cases (75%) who were interviewed.

Miscellany

Other notable conditions reported in Oregon in 2015 included six cases of tularemia, five cases of Rocky Mountain spotted fever, four cases of *Taenia* infection, three cases of type A botulism, three cases of tickborne relapsing fever, two each of anaplasmosis, babesiosis, Q fever, and plague, and single cases of tetanus, trichinosis, West Nile virus infection and Zika.

References

1. New York Department of Health. New cooling tower regulations go into effect; press release (7/19/2016); www.health.ny.gov/press/releases/2016/2016-07-19_legionella_regulations_in effect.htm Accessed 27 Jan 2017.
2. Centers for Disease Control and Prevention. Developing a water management program to reduce *Legionella* growth and spread in buildings: A practical guide to implementing industry standards. See www.cdc.gov/legionella/maintenance/wmp-toolkit.html. Accessed 27 Jan 2017

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