

ENDING NEW HIV INFECTIONS IN OREGON: THE CASE FOR UNIVERSAL TESTING

The good news: In Oregon, new Human Immunodeficiency Virus (HIV) diagnoses and Acquired Immune Deficiency Syndrome (AIDS) deaths peaked more than twenty years ago and have been gradually declining since (figure 1).

The bad news: In Oregon, 221 people were diagnosed with HIV and 82 people died of HIV-related causes in 2016, despite two decades of concerted public health prevention, control, and treatment efforts.

But we are not deterred! Oregon has a plan (www.endhivoregon.org/) to end new HIV infections by fully implementing three established strategies: 1) effective anti-retroviral therapy (ART) for all diagnosed infections; 2) optimal utilization of HIV pre-exposure prophylaxis (PrEP) and traditional prevention strategies (e.g. condoms, syringe exchange); and 3) universal HIV testing. This *CD Summary* reviews Oregon HIV data and provides the rationale for universal screening, an essential (but currently weak) leg of the 3-legged stool.

OREGON DATA

By the end of 2016, 7,157 Oregonians were known to be diagnosed with HIV. The Centers for Disease Control and Prevention (CDC) estimates an additional 1,100 Oregonians are HIV-infected, but unaware (corresponding to 0.4 with undiagnosed HIV per 1,000 population).¹ The rate of new HIV infections in Oregon has been declining and is less than half the U.S. rate (figure 2).

Importantly, the 1,100 people who are unaware of their HIV infection are the source for 50%–70% of the approximately 200 new diagnoses annually. Moreover, 31% of HIV infections in Oregon are diagnosed at a late stage (i.e. AIDS at diagnosis), when treatment is more complicated and prognosis poorer.

Figure 1. HIV diagnoses in Oregon and deaths in Oregon, 1981–2016

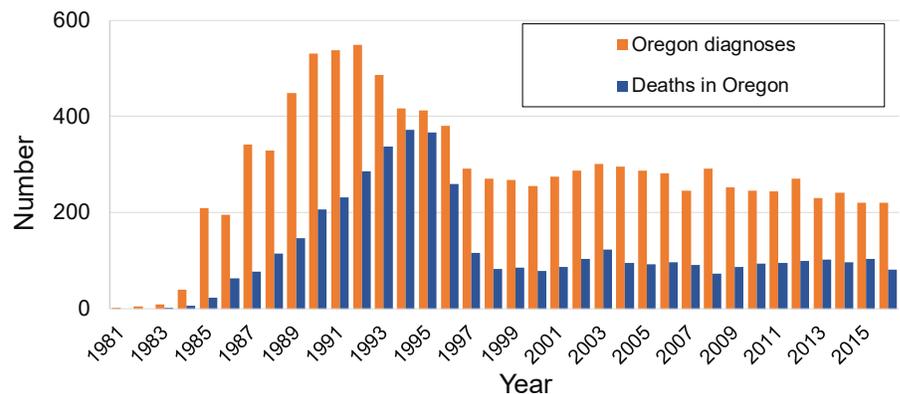
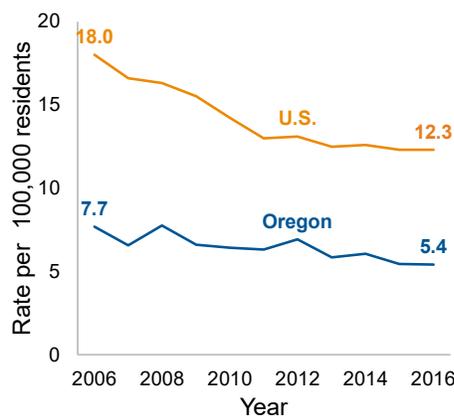


Figure 2. HIV diagnoses by year, Oregon and U.S.



Source: Oregon reportable diseases database (Orpheus) and CDC (U.S. data)

HIV SCREENING DATA

The US Preventive Services Task Force recommends that every person in the U.S. aged 15–65 years be tested at least once for HIV infection. USPSTF gives it its strongest recommendation grade, A.² Yet, Oregon Behavioral Risk Factor Surveillance Survey data indicate that only 38% of adult Oregonians aged ≥18 years report having ever had an HIV test not done as part of an insurance application. This is even lower than estimates from the National

Health and Nutrition Survey during 2007–2010 that indicate only 45% of U.S. adults had been tested for HIV.³

JUSTIFICATION

In the past, the case for universal HIV screening in Oregon was questionable because: its cost-effectiveness was not entirely convincing; Oregon has a low prevalence of HIV infection; and specific consent is required (also noted: tracking once in a lifetime screening in electronic medical records is challenging). However, the scale has tipped.

Cost-effectiveness. Previously, universal screening for HIV was considered only cost effective for a prevalence of >1 undiagnosed infections per 1,000 population (more than twice the Oregon estimate of 0.4 per 1,000). This recommendation, however, did not account for the current practice of immediate initiation of antiretroviral therapy (ART) after diagnosis, enabling full suppression of viral replication which eliminates risk of HIV transmission to uninfected sex partners. In addition, past cost-effective analyses used lower estimates of ART effectiveness because the ARTs available at the

time were more likely than current ARTs to fail from poor adherence and emergent drug resistance.

A more recent cost-effectiveness study that incorporates savings from fewer HIV cases (due to earlier diagnosis of unrecognized infection and initiation of ART, leading to less HIV transmission) indicates that universal HIV screening of all adults will not only be cost-effective in Oregon but cost-saving.⁴ HIV testing costs approximately \$32 per person and saves \$418,000 in lifetime treatment costs for each HIV infection prevented, even for a low prevalence of undiagnosed HIV in the population, such as that estimated in Oregon.

Oregon Estimates. Some simple math helps emphasize this conclusion. We estimate that 60% of Oregon adults (~1.6 million) have not been tested for HIV. At \$32 per person, it will cost \$52 million to test all 1.6 million previously untested people. Approximately 10 new HIV infections are transmitted per 100 people with undiagnosed infection per year. If one assumes that all 1,100 undiagnosed people are detected by universal testing and, on average, diagnosed a year earlier than they would have been without a push for universal testing, we can expect to avert 110 HIV infections with universal one-time testing, saving Oregon \$46 million. Even without assigning any value to reduced morbidity and increased survival, universal screening earns back \$46 million of the \$52 million initial investment, while preventing 110 HIV infections in Oregonians.

As mentioned, approximately 0.04% (4 in 10,000) of Oregon adults have undiagnosed HIV; however, 6 in 10 have never been tested for HIV. Viewed from that perspective, universal HIV screening is relevant to the majority of Oregon adults who visit health care providers. Similar to other preventive health measures (e.g. screening for colon cancer or measuring serum lipids) some benefit of HIV screening accrues to newly diagnosed individuals by reducing morbidity and cost of care. However, most cost savings and health utility of universal HIV screening accrue to others in the population (and their health insurers) who will not acquire HIV.

Hard-to-Reach Populations. Some argue that even universal screening in health care settings would not identify some people with undiagnosed

HIV. This is true to the extent that people with undiagnosed HIV don't visit health care settings. However, 84% of U.S. adults have had at least one contact with a health care professional within the past year, and even homeless people typically visit ambulatory care and emergency departments more frequently than people with stable housing.⁵

Test Accuracy. To avoid false positive tests, sensitivity and specificity of a screening test must be high. In the case of modern enzyme-linked HIV screening tests, these exceed 99%. If one assumes 99.5% specificity and sensitivity of screening tests and undiagnosed HIV prevalence of 4 in 10,000 adults, every 10,000 screening tests will result in recognition of all 4 true positives and approximately 50 false positives. Current practice is to confirm all positive HIV screening tests with another type of immunologic test or a test for viral RNA, thereby eliminating diagnostic confusion in nearly every case.

Consent Required, Counseling Onerous. Since 2012 neither informed consent nor prescribed pre- or post-test counseling have been required for HIV testing in Oregon. In health care settings, Oregon law only requires that patients be advised when an HIV test is intended and offered an opportunity to decline. This can be done in writing or verbally. Information about HIV testing and the right to decline can even be transmitted via signs posted in the health care settings or via standard general medical consents for care typically signed at the first health care visit.

HOW DO WE GET THERE?

We rely on clinicians to do their personal best to ensure that every adolescent and adult patient has had at least one HIV test, and advise them of the need for periodic future testing. We don't actually believe, however, that we can achieve universal HIV testing by convincing each individual healthcare provider to initiate screening for every patient one by one. Clinical expertise should be saved for addressing positive test results.

Opt-out Testing. To achieve universal testing, offices, clinics, emergency rooms, hospitals, and integrated health care systems will need to make systematic changes to routinize recommended preventive screenings. Health care providers can advocate for statewide laws or policies that

require routine opt-out testing for HIV. Routine opt-out testing might involve modifying intake procedures to include a routine advisory that HIV testing is recommended for all adolescents and adults, unless the patient explicitly declines testing.⁶

To achieve universal testing, emergency departments and urgent care settings will also need to implement such practices because they may serve as the only source of healthcare for the homeless and uninsured.⁷ Emergency departments can address concerns about inability to locate and notify patients with positive tests by conducting rapid tests, or by agreements with local health departments to assume responsibility for notification and follow-up of patients who test positive.

FOR MORE INFORMATION

- Centers for Disease Control and Prevention has detailed information on HIV testing guidelines from health care providers, program managers and laboratorians. www.cdc.gov/hiv/guidelines/testing.html
- The Public Health Division has detailed information on the HIV testing process in Oregon for providers and their patients www.oregon.gov/oha/PH/DISEASES/COND/STDVIRAL/HEPATITIS/HIVPREVENTION/Pages/HIVTestProcess.aspx

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