New Algorithms Could Help Providers ID PrEP Candidates

Electronic prompts for clinicians to recommend Truvada to people at risk for HIV could help increase PrEP's impact.

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Two research teams have each developed computer algorithms that could help health care providers identify individuals who are good candidates for Truvada (tenofovir disoproxil fumarate/emtricitabine) as pre-exposure prophylaxis (PrEP).

The teams, one based in California and the other in Massachusetts, published their respective findings in a pair of papers in The Lancet HIV. Each constructed computer models that relied on medical records of vast populations of people to predict their risk of HIV based on individual demographic and clinical data that health care providers typically plug into electronic health records in everyday practice.

Then a machine-learning algorithm teased out the factors associated with a higher risk for HIV among these populations.

The California study relied on medical record data of 3.7 million people seeking health care at Kaiser Permanente Northern California. This team's HIV-risk-prediction model relied on factors that included sex, race, residence in a neighborhood with a high rate of new diagnoses of the virus, erectile dysfunction drug use, and testing for and diagnosis with sexually transmitted infections (STIs).

This model identified 2% of the population as good PrEP candidates and successfully identified 46% of the men who were living with HIV, but it was not able to identify any of the HIV-positive women.

"Although risk-prediction tools are imperfect and cannot replace the clinical judgment of skilled providers, our algorithms can help prompt discussions about PrEP with the patients who are most likely to benefit from it," Julia Marcus, PhD, MPH, lead author of the California-based study and an assistant professor of population medicine at the Harvard Pilgrim Health Care Institute and Harvard Medical School, said in a press release.

The researchers in Massachusetts analyzed data on 1.2 million people receiving care at Atrius

Health, as well as the entire patient population of Fenway Health, a community health center in Boston that specializes in sexual health care. This risk-prediction model looked at sex, race, the primary language people spoke, and tests, diagnoses or prescriptions to treat STIs.

This model indicated that 1.8% of the Atrius Health population were good PrEP candidates as were 15.3% of those receiving care at Fenway Health. Additionally, the model was able to identify 37.5% of the new cases of HIV at Atrius Health as well as 46.3% of those at Fenway Health.

According to Douglas Krakower, MD, lead author of the Massachusetts-based study and an assistant professor at Beth Israel Deaconess Medical Center and Harvard Medical School, "Integrating these prediction models into primary care with routine, comprehensive HIV risk assessments by clinicians could play an important role in increasing the prescription of PrEP and preventing new HIV infections."

To read the Massachusetts-based study abstract, click here.

To read the California-based study abstract, click here.

To access a commentary on the two studies published in The Lancet HIV, click here.

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