Expansion of HIV screening cost-effective in reducing spread of AIDS, Stanford study shows

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An expanded U.S. program of HIV screening and treatment could prevent as many as 212,000 new infections over the next 20 years and prove to be very cost-effective, according to a new study by Stanford University School of Medicine researchers.

The researchers found that screening high-risk people annually and low-risk people once in their lifetimes was a worthwhile and cost-effective approach to help curtail the epidemic. The screening would have to be coupled with treatment of HIV-infected individuals, as well as programs to help change risky behaviors.

"We find that expanded screening and treatment could offer substantial health benefits, preventing 15 to 20 percent of new cases," said Elisa Long, PhD, first author of the study. "And the strategy of one-time screening of low-risk individuals and annual screening of high-risk individuals is very cost-effective."

Long, now an assistant professor of operations management at Yale University, began the study while a graduate student at Stanford, working with Margaret Brandeau, PhD, professor of management science and engineering, and Douglas K. Owens, MD, MS, a senior researcher at the Veterans Affairs Palo Alto Health Care System and a professor of medicine at Stanford.

The study is the first to use a national model of HIV transmission to gauge the impact of scaling up screening and treatment. It will be published in the Dec. 21 issue of the Annals of Internal Medicine.

An estimated 21 percent of HIV-infected individuals in the United States are not aware they carry the deadly virus and may continue to spread it to others, according to the Centers for Disease Control and Prevention. Some 56,000 people are newly infected with the virus every year in the country, according to CDC figures.

In 2006, the federal agency revised its guidelines to recommend that all patients ages 13 to 64 be screened for HIV, and many other professional groups, such as the American College of Physicians, advise routine patient screening as well. Still, universal screening, followed by treatment, has never been achieved in this country. So the researchers set out to see how the course of the epidemic might change with a scaled-up program involving screening or treatment or both.

They projected that 1.23 million people would become newly infected in the next 20 years if things remained as they are today. Some 74 percent of new infections would be among high-risk individuals, particularly men who have sex with men and intravenous drug users.

The researchers found that if all adults United States were screened annually, regardless of risk, the cost would be staggering — exceeding $750,000 per quality-adjusted life year gained. QALY is a measure of how long people live and their quality of life.

But screening everyone in the general population just once, together with yearly screening of high-risk individuals, would be significantly more cost-effective: It would have a cost of less than $25,000 per QALY gained. At that price, "screening is a good value for the money," Owens said, comparable to other widely accepted programs, such as breast

cancer mammography and screening for type-2 diabetes.

Screening alone, however, would not be sufficient to stem the epidemic, but would have to go hand in hand with treatment, the researchers found.

"If you scale up screening but those people don't get treatment, you don't get as much benefit," Owens said. "If you scale up treatment but still have a lot of people who aren't identified, then they aren't going to benefit. You do the most for health outcomes by scaling up these programs together. They are synergistic."

Treating patients is important because it avoids complications and costly hospitalizations and also makes it less likely they will transmit the virus to others because the amount of virus in their systems is low. If 75 percent of individuals identified as HIV-positive receive access to therapy, the health outcomes are improved and the program provides better value at $22,000 per QALY gained, the researchers calculate.

That combination strategy could prevent an estimated 17.3 percent of new infections, or 212,000 new cases, the researchers found.

This expanded screening and treatment program still wouldn't eliminate the epidemic, as at-risk individuals would still have to change their behaviors. If men who have sex with men reduce their number of sexual partners by half and intravenous drug users cut needle sharing by the same amount, 65 percent of all new infections would be prevented, the researchers found. That would reduce the incidence of HIV to approximately 20,000 new cases per year, the researchers calculate.

"So in terms of eliminating the epidemic, targeting high-risk individuals with effective prevention programs is going to be necessary," Long said.