HIV Test and Treat: Challenges to Overcome

March 10, 2011 By David Evans

Several presentations at the 18th Conference on Retroviruses and Opportunistic Infections (CROI), which ran from February 27 to March 2 in Boston, documented the remaining challenges with the design, evaluation and implementation of HIV "test and treat" programs, whereby aggressive methods are employed to test and diagnose all people with HIV, link them to care and—when appropriate—get them on antiretroviral (ARV) treatment.

Test and Treat to Prevent Transmission

The test and treat initiative embodies two theories: First, that early diagnosis and treatment will limit the risk of both AIDS- and non-AIDS-related health problems in people living with the virus and, two, that reducing viral load to undetectable levels—in as many people within a community as possible—will greatly reduce the rate of ongoing transmission of HIV.

Two large studies are exploring the feasibility of rolling out aggressive testing, linkage to care and ARV treatment protocols in U.S. communities with the most severe epidemics. In the meantime, HIV experts are relying on the findings of smaller studies exploring the affects of early diagnosis and treatment on community viral loads and HIV transmission rates in specific regions.

Signs of Success, but Reasons for Concern

Two presentations at this year's CROI—one from San Francisco, where the epidemic remains largely centered among men who have sex with men (MSM), and one from Baltimore that was focused on injection drug users (IDUs)—added further evidence that lowering HIV levels within a community might reduce new HIV cases. However, defining how to measure, evaluate or use community viral load data remains controversial, and several other presentations documented some of the remaining challenges to test and treat rollout.

In one study, Fabienne Laraque, MD, MPH, from the New York City Department of Health and Mental Hygiene and her colleagues sought to identify geographic and demographic patterns related to the likelihood of lower or higher community viral load. Laraque's team found that the factors associated with high incidence and prevalence rates of HIV—high rates of poverty, crime, lack of access to care and other social challenges—are the same factors that contribute to high community viral loads.

Laraque also found that the same demographic groups that tend to have the worst levels of adherence to treatment, engagement in care and success while on ARVs in many other studies—regardless of when treatment is recommended or started—were the least likely to have undetectable viral loads in her study. These included younger people, females, blacks and Latinos.

A second presentation, by Amanda Castel, MD, MPH, from George Washington University in Washington, DC, had remarkably similar findings among residents in the District of Columbia. She reported that the highest levels of community viral load and the lowest retention in care (nearly 50 percent of HIV-positive people did not have a viral load test available for analysis, a factor Castel attributed to the high migration patterns in and out of DC) were also the communities with the "highest poverty [and] unemployment and lowest proportion of high school graduates."

Increasing HIV testing, keeping people in care and suppressing viral loads in these communities will likely be no easier than it is to treat most other types of chronic diseases in the same communities. Special efforts will ultimately be needed to document and implement programs that work best for each type of challenge, be it sexual or drug-using networks that are resistant to interventions or communities with high rates of poverty, incarceration and migration in and out of care.

How to Measure and Evaluate Test and Treat

Kate Buchacz, PhD, from the U.S. Centers for Disease Control and Prevention (CDC), who cochaired the session at CROI on community viral load, concluded the session by laying out some of the key challenges in evaluating whether reducing community viral load actually works—in other words, whether test and treat works.

One very important and potentially confounding factor includes the fact that roughly 20 percent of HIV-positive people remain undiagnosed, either because they aren't in care or haven't been tested yet for HIV. Also most studies look at new HIV diagnoses, but not the actual number of people becoming newly infected. It is possible, therefore, that reductions in new diagnoses (many of whom might be in people who have actually been HIV positive for a long time) might really be because of other factors, including older ramp-ups of other prevention methods.

Moupali Das, MD, MPH, from the San Francisco Department of Public Health, and Julio Montaner, MD, from the British Columbia Centre for Excellence in HIV/AIDS in Vancouver, did offer evidence that in those two cities, some of these confounding factors had been accounted for. In both cities, Das and Montaner explained, data do exist on new HIV infections, and that these also track well with their findings that decreases in community viral load are strongly linked to reductions in new HIV diagnoses.

However, Buchacz pointed out that all studies will have to struggle to factor in the degree to which undiagnosed individuals—most of whom likely have detectable and even high levels of virus—are able to keep an epidemic smoldering.

The Whole Prevention Package Is Necessary

This was the focus of a final presentation, made by Viviane Lima, PhD, who works with Montaner in Vancouver. She and her colleagues estimated the chance of HIV transmission among MSM in Vancouver over time, even when people with HIV are highly adherent to their ARV regimens.

They found that after the first year of treatment, the likelihood of an HIV-positive person transmitting HIV was exceptionally low, regardless of whether the HIV-positive partner was the receptive partner (the “bottom”) or the insertive partner (the “top”). However, it often takes several months after starting treatment for a person’s virus levels to become undetectable, and during the first year of treatment there is a small, but still higher risk of passing on HIV. Also, if people have unprotected anal sex with many different partners during this period, the epidemic among MSM is not likely to wane.

Lima pointed out that additional prevention programs will still be urgently needed in epidemics where prevalence and HIV risk remain high.

“While the power of HAART to decrease infection remains strong and substantial, these results show that other interventions coupled with full [ARV] coverage of all medically eligible HIV-infected individuals can provide a tremendous chance to lessen the epidemic among MSM,” she and her coauthors concluded.

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