International HIV Conference Reveals Exciting Progress in Global HIV Fight

Highlights from the research presented at the 9th International AIDS Society Conference on HIV Science in Paris.

August 22, 2017 By Benjamin Ryan

The fight to combat the global HIV epidemic is charting exciting progress on numerous fronts. This includes a rapidly increasing proportion of those living with the virus on treatment as well as falling infection and AIDS-related death rates. Additionally, there have been various promising advances in research into new antiretroviral (ARV) treatments and forms of pre-exposure prophylaxis (PrEP), not to mention vaccines and means of prompting long-term viral remission that may allow some people with the virus to stop taking daily drugs.

The more than 7,000 HIV researchers and advocates who attended the 9th International AIDS Society Conference on HIV Science (IAS 2017), which took place in Paris from July 23 to 26, learned of these and other signs of great hope for the future of the worldwide epidemic. However, they were also confronted with the finer details of the considerable challenges ahead, most notably flat or declining funding from wealthy donor nations for efforts to fight the epidemic in poorer nations.

To follow is a summary of the major findings presented at the conference. Click on the hyperlinks for greater detail about any of the studies. For a complete newsfeed of all IAS 2017 reporting, click here.

Linda-Gail Bekker, PhD, the International AIDS Society (IAS) President and International Scientific Chair of IAS 2017 in Paris, speaking at the opening sessionBenjamin Ryan

Global Treatment

A major announcement from Joint United Nations Programme on HIV/AIDS (UNAIDS) kicked off the conference: An estimated half of all people living with HIV worldwide,19.5 million out of 36.7 million, are now on ARV treatment. According to a lengthy UNAIDS report on the state of the global epidemic, in 2016 an estimated 70 percent of the global HIV population had been diagnosed, 77 percent of those diagnosed were on ARVs and 82 percent of those on ARVs had a fully suppressed viral load. Since 2014, UNAIDS has pushed nations to get each of those three figures to 90 percent, otherwise known as the 90-90-90 targets.

Treatment rates have soared while new infections and AIDS-related deaths have dropped considerably in eastern and southern Africa in particular. Meanwhile, Central Asia and Eastern Europe is the only major region that has seen a worsening epidemic, with its HIV infection rate rising 60 percent and its AIDS-related death rate rising 27 percent during the 2010s.

UNAIDS

UNAIDS

Excitingly, a highly reliable survey conducted in Swaziland and presented at IAS 2017 found that in just five years the hard-hit nation had doubled the proportion of its HIV population on ARVs while cutting its new infection rate in half.

Velephi Okello of the Swaziland Ministry of Health at IAS 2017 in ParisBenjamin Ryan

Globally, people with HIV are starting ARV treatment progressively earlier. However, the median CD4 count at treatment initiation remains above 350, indicating that considerable work needs to be done to move closer to treating everyone living with the virus, as recommended by the World Health Organization (WHO).

The continued flat funding seen in recent years for the effort to fight HIV in lower-income nations threatens progress in treating HIV on a grand scale. One analysis presented at the conference projected that if funding continues only at current levels, the proportion of people with the virus on treatment and virally suppressed will stagnate accordingly.

Jessica McGillen, PhD, presents a key slide that projects the impact of U.S. funding on viral suppression rates in 18 sub-Saharan African nations.Courtesy of Benjamin Ryan

Another threat to progress fighting global HIV is WHO's finding that HIV drug resistance is on the rise. In numerous nations recently surveyed, 10 percent of those starting HIV treatment had a strain of virus resistant to some of the most widely used ARVs.

HIV Treatment as Prevention

Yet another study has seen no transmissions within a large cohort of partners when the HIV-positive member of a mixed-HIV-status couple is on ARVs and has an undetectable viral load. Between the Opposites Attract study reported at the Paris conference and the previously reported PARTNER study, there are now data on about 35,000 condomless sex acts between such gay male partners without a single HIV transmission. The PARTNER and HPTN 052 studies have also seen no transmissions between heterosexual partners within such a context. The PARTNER study is currently in a new phase to gather more data from gay male couples.

According to scientific experts discussing these collected research findings at the Paris conference, the risk of transmitting HIV through condomless sex when an individual has an undetectable viral load is so vanishingly small that it is effectively zero.

Another study presented at the conference raised worries about how poor adherence to ARVs among youths may compromise the powerful effects of HIV treatment as prevention. An analysis

of 13- to 24-year-olds receiving ARV treatment in Philadelphia found that about one in six were episodically at high risk of transmitting the virus.

Philadelphia Istock

Viral Remission

Anthony S. Fauci, MD, director of the National Institute of Allergy and Infectious Diseases (NIAID), says he no longer talks about an effort to develop an HIV cure, per se. Instead, he prefers the goal of prompting “viral remission” or “post-treatment control” of the virus, in which an individual maintains an undetectable viral load without daily ARV treatment. Conference attendees learned that a 9-year-old South African child has been in such a state for eight years, following just 40 weeks of ARV treatment begun after the child contracted the virus at birth.

Anthony S. Fauci, MD, director of the National Institute of Allergy and Infectious Diseases (NIAID), speaking at IAS 2017Benjamin Ryan

An additional presented case study described how a man who contracted HIV only days before starting Truvada (tenofovir disoproxil fumarate/emtricitabine) as PrEP and who was quickly put on a full HIV treatment regimen spent seven months off treatment before experiencing a viral rebound.

HIV Prevention, Including Vaccines

A major push in the HIV research field is to find effective so-called broadly neutralizing antibodies against the virus for use in vaccines, as PrEP or as treatment. Addressing concerns about how to mass-produce such antibodies, one team of researchers found that they could prompt their production by immunizing calves.

In an early-stage study, one HIV vaccine candidate showed promise by prompting a robust immune response in a small collection of volunteers. Pending the results of another study, this vaccine may go into an advanced global trial as soon as late 2017.

Following definitive studies showing that voluntary medical male circumcision reduces female-to-male HIV transmission by about 60 percent, there has been a massive effort to circumcise men in sub-Saharan Africa in recent years. Research over the past few years has begun to show that this endeavor has likely driven down infection rates among men. Now, a study presented at IAS 2017 indicated that women also likely benefit from the male circumcision push, with lower rates of associated HIV and herpes simplex virus type 2.

Cancer

A major forum exploring how much HIV and cancer treatment researchers have to learn from and share with one another as they develop highly advanced forms of treatment preceded the conference. The two fields share the goal of overcoming the immune system's inability to combat a malignant force, be it a tumor or HIV-infected immune cells.

HIV Drug Development

The long-acting injectable regimen of cabotegravir and Edurant (rilpivirine) given every four or eight weeks successfully suppressed HIV over a 96-week period among 90 percent of participants in a major trial.

Gilead Sciences recently applied for approval from the U.S. Food and Drug Administration (FDA) of its new combination tablet of the experimental integrase inhibitor bictegravir plus the contents of the company's Descovy (emtricitabine/tenofovir alafenamide). The FDA granted the tablet priority review; a decision is expected by February 12, 2018. A study presented at IAS 2017 found that compared with other approved regimens, this combination had fewer side effects and was similarly effective in suppressing HIV among those starting ARVs for the first time.

Another study found that the first single-tablet regimen containing a protease inhibitor, specifically Prezista (darunavir), was highly effective in suppressing HIV. When combined with Tybost (cobicistat) and Descovy (emtricitabine/tenofovir alafenamide), Prezista led to a continued undetectable viral load among 96 percent of those who switched from a successful multi-tablet ARV regimen.

Additionally, a recent study found that among first-timers to HIV treatment, a new single-tablet combo regimen containing the investigational non-nucleoside reverse transcriptase inhibitor doravirine, Epivir (lamivudine) and Viread (tenofovir disoproxil fumarate) causes fewer central nervous system and metabolic side effects and is as effective as Atripla (efavirenz/tenofovir disoproxil fumarate/emtricitabine).

PrEP

Researchers are fast at work exploring new forms of PrEP to help address issues such as toxicity, adherence and the need for novel, female-specific forms of HIV prevention.

One study validated ongoing advanced research into a long-acting injectable form of PrEP, finding that long-acting cabotegravir given every eight weeks was well tolerated and yielded drug levels expected to afford maximum protection against HIV. Additionally, a study of a vaginal ring form of PrEP given to teenage girls in the United States found that an ARV-containing monthly ring was safe and that the participants used it well.

Various studies addressed the ongoing question of how starting PrEP affects sexual risk taking and rates of sexually transmitted infections (STI) among men who have sex with men (MSM). An

analysis of British MSM on Truvada for HIV prevention found that they tended to fold PrEP into their set of personal HIV risk-reduction rules, sometimes easing those rules when taking PrEP. Self-reporting indicated that the men did not tend to simply abandon condoms wholesale. Meanwhile, a long-term study of MSM in the United States found that those who started PrEP tended to proceed to report higher rates of condomless sex with casual partners, in particular with HIV-positive partners.

At London's 56 Dean Street, the city's main sexual health clinic catering to MSM, gonorrhea diagnoses fell 24 percent between 2015 and 2016 while HIV rates dropped 42 percent. This occurred as use of PrEP soared among men using the clinic's services and as the clinic, instigated impressive new policies to encourage HIV and STI testing and to treat individuals for both types of infections as soon after diagnosis as possible.

The 56 Dean Street clinic in LondonBenjamin Ryan

PrEP use in the United States continues to increase, reaching the current estimate of 136,000 users. However, the rate of increase in those starting PrEP seen in each progressive quarter has slowed (in other words, about the same number of people are beginning PrEP each quarter). Troublingly, PrEP use is apparently still largely relegated to white MSM age 25 and older, raising concerns that those at the very highest risk for the virus, young Black MSM in particular, will for the most part fail to benefit from the highly effective HIV prevention method that has now been on the market for five years.

A new analysis found that the non-daily dosing protocol for PrEP, known as on-demand PrEP, studied in the French and Canadian IPERGAY trial of high-risk MSM worked well even when the men had sex infrequently. There have been concerns that the high level of protection seen among men in the study, who were instructed to take Truvada only in the couple of days surrounding sex, was likely a by-product of the fact that the men tended to have sex so frequently that they often wound up maintaining a relatively steady level of Truvada in their bloodstream—rather than the result of the particulars of the dosing protocol.

A separate study of Dutch MSM examined the reasons why they preferred on-demand versus daily PrEP, as well as their reasons for switching between the protocols or stopping them altogether. An expectation of better adhering to one protocol over another was found to be a major deciding factor. Additionally, a national survey of U.S. MSM found that concerns about the cost of PrEP and associated side effects are major barriers to men using Truvada for prevention.

Hanne Zimmermann, MSc, presents findings from the AmPrEP study interviews of Dutch men on on-deman or daily PrEP at IAS 2017 in Paris.Courtesy of Benjamin Ryan

HIV/Hepatitis C Coinfection

A study presented at the conference found that—just as is the case with other major direct-acting antiviral treatments for HCV—AbbVie's newly approved Mavyret (glecaprevir/pibrentasvir) treatment for all genotypes of hepatitis works very well among those coinfected with HIV. During

the current era of highly effective hep C treatments, which began in late 2013, HIV is considered no impediment to the successful treatment of HCV.

Another study of individuals coinfected with HIV and HCV found that the impact to overall health and risk of death of a hep C cure is greatest among those with advanced fibrosis of the liver. Consequently, researchers stress the importance and urgency of treating HCV among this population.

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