

2018 IAS PrEP and HIV PREVENTION UPDATE

By Lynda Dee

The International AIDS Society's (IAS) conference was held in Amsterdam, the Netherlands from July 23-27, 2018. The IAS held their biannual science and community centered meeting this year. In alternate years, the IAS convenes their Pathogenesis Conference that is more science focused.

There were numerous important PrEP and HIV prevention sessions again this year. The following is an update on these presentations.

Data was presented by the CDC impact of PrEP on HIV Diagnoses in the US from 2012 to 2016. HIV diagnosis in the US declined by 18% from 2008 to 2015. Sadly, there will still be approximately, another 40,000 HIV diagnoses each year! The reasons for possible diagnosis decline were listed as lower testing frequency, lower sexual and needle sharing behavior, higher viral suppression in people with HIV and higher PrEP intake for at risk populations.

The CDC found that risk behaviors have not decreased, and that PrEP use increased from 2012 to 2015, independent of higher viral suppression. Unfortunately, whether lower viral suppression and PrEP use per se accounts for decreased HIV diagnoses technically remains unknown. Nevertheless, the CDC recommends that US states take steps to increase both PrEP use and viral suppression programs. These associations need to be studied in local counties to provide definitive causation data in various populations.

We know that the rate of new HIV infections has decreased in Baltimore since PrEP programs have been widely initiated. But the CDC has since decreased PrEP funding to Baltimore because our HIV transmission rates have decreased. RIDICULOUS!

Very exciting PrEP data confirming PrEP efficacy in gay couples was presented from the Partner 2 study. We know from a previous observational study known as TASP that included heterosexual and gay couples, but was not an exclusively gay study that there were no HIV infections in 343 discordant couples (one with and one without HIV) using PrEP after 12,000 condom free male sex acts in 3/4 of the couples.

The Partner 1 study also enrolled heterosexual as well as gay couples. There were 34,911 condomless anal sex acts in this study between discordant couples. The Partner 2 study enrolled 972 only gay couples, of which 480 also participated in the Partner 1 study. There were 76,991 sex acts without condoms in Partner 2. Again, there were no HIV infections between discordant couples. But there were some transmissions between casual sex partners. The infections occurred only after sex acts with random partners. This was confirmed by genetic testing which is able to confirm who transmitted HIV to a partner.

Both the TASP and Partner 1 data has now been confirmed by the Partner 2 study which tells us that the HIV negative person in a discordant couple would need to have unprotected sex for 400 years to be at risk for HIV infection!

In a study conducted by the City University of New York (CUNY), researchers found that PrEP use rose from 3% to 21% in gay men in the US. Their study reviewed condom use before, during and after PrEP use to determine if sexually transmitted infections (STIs), like syphilis and gonorrhea would significantly increase as a result of condomless sex. They reviewed 313 cases of adult gay men who used PrEP during at least one visit, tracking condomless anal sex with causal partners who were either HIV+ or of unknown HIV status to determine the probability of a rectal STI diagnosis.

Participants in this study were approximately 75% white, 2/3 had full time jobs and 50% were in relationships. Average condomless sex rose from 2.79 to 7.13 during PrEP use, but fell to 2.09 after PrEP was stopped. The rate of condomless sex acts also decreased after PrEP was discontinued.

The probability of rectal STIs rose significantly while people were on PrEP, but dropped significantly after PrEP was no longer used. These same results have been observed in other studies. Nevertheless, most people on PrEP have regular STI exams and are treated accordingly. CUNY researchers concluded that the benefit of PrEP use far outweighs the risk of STI increases while on PrEP.

Data from a nationwide analysis of PrEP use in 2,590 US adolescents aged 12-17 from 2015 to 2017 was presented by Gilead Sciences, the only company with an FDA approved PrEP regimen for HIV prevention. Gilead found that there is 15.4% PrEP use in people between 18 and 24 years old. But there is only 1.5% PrEP use in adolescents under 18. Surprisingly, PrEP usage was 83.5% female in adolescents under 18, while PrEP usage was 84.2% male in people 18 to 24. This data clearly demonstrates the need to improve PrEP awareness and engagement in at risk adolescent males. Hopefully, the FDA's recent PrEP indication change which approves PrEP for adolescents will help to promote PrEP use in more adolescents, especially male youths.

There are also exciting new prevention options in the research pipeline. We know from IAS 2017 that there is an ongoing ViiV study of long-acting cabotegravir for HIV prevention which is administered by intramuscular injections (IM) every 8 weeks, and from data presented earlier this year at CROI 2018 that Merck is developing oral MK-8591, a nucleoside reverse transcriptase inhibitor (NRTI) which is an attractive new drug because very small doses of MK-8591 may be able to achieve long-acting dosing intervals for HIV prevention. While ViiV's long-acting cabotegravir is much further ahead of Merck at this juncture, MK-8591 may make oral dosing as well as implantable dosing possible instead of requiring IM injections. Another important factor about drugs administered via implants is that if side effects develop, the implant can be removed, unlike drugs given by a long-acting IM injection.

Broadly neutralizing antibodies (bNAbs), a new prevention strategy, were also covered at the Amsterdam meeting. bNAbs may provide alternatives to the vaccine approach for HIV prevention. To date, bNAbs are still being studied in animals. Animal studies address safety issues before compounds are used in human studies. Single IV bNAb infusion combinations as well as IV infusion plus subQ injection combinations are being studied in monkeys. Thus far, in three different studies there have been 11 to 23 week, 18 to 37 week and 20 week HIV infection

delays in monkeys who were exposed to HIV. These results may eventually translate into annual or semi-annual prevention regimens. But even if all goes well, these regimens are still far into the future. They will probably also be very expensive. Similar single monoclonal antibody drugs often costing hundreds of thousands of dollars per year. We will need combinations of antibodies in the HIV prevention arena. I wonder if bNAbs will even be affordable in countries like the US let alone in the developing world.

We will do our best to keep you updated on all these new strategies. Stay tuned for more new exciting prevention data.