The HPTN 052 Final Results: Treatment for Prevention of Sexual Transmission of HIV-1

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The HPTN 052 trial was developed to evaluate whether antiretroviral therapy (ART) reduces sexual transmission of HIV.

STUDY OVERVIEW

The HPTN 052 trial started in April 2005 and ended May 3, 2015. HPTN 052 enrolled 1,763 HIV serodiscordant couples in Botswana, Brazil, India, Kenya, Malawi, South Africa, Thailand, the United States, and Zimbabwe (98% heterosexual). HIV-infected index participants had CD4 cell counts between 350–550 cells/mm³ at enrollment. Index participants were randomized to receive ART at enrollment (early arm), when their CD4 cell count fell to ≤250 cells/mm³, or when they developed an AIDS-defining illness (delayed arm). Detection of virologically linked transmission events was the primary endpoint; health benefits of earlier ART were also measured.

RESULTS

In April 2011 interim analysis demonstrated that early ART (combined with counseling and condoms) reduced HIV transmission by 96% (1) and improved the health of the HIV-infected participant (2).

After May 2011—responding to interim results—all subjects in the delayed arm were offered ART. Because it was assumed (and planned) that all subjects in the delayed arm would eventually receive ART the trial was continued to its conclusion, allowing measurement of the durability of ART mediated transmission prevention.

By May 2015, couples had been followed for 8,494 person-years. A total of 78 partner acquisition events were observed. Forty-six partner acquisitions were virologically linked, 26 were unlinked, and 6 could not be assessed (because viral required sequences could not be generated). Among the 46 linked transmission events, 3 were noted in the immediate arm, and 43 in the delayed arm, demonstrating that by intention-to-treat analysis ART (with condoms and counseling) reduced HIV transmission by 93%. However, intention-to-treat analysis fails to consider the actual usage of ART that is required for benefit. Accordingly, we further examined HIV transmission events observed when the infected person was provided ART. This included the three HIV transmission events observed in the immediate arm of the study and five transmission events in the delayed arm, where ART was provided because of falling CD4 count or after May 2011 (when everyone in the delayed arm was offered ART). In four of these transmission events ART therapy had failed; in the other four, the transmission occurred shortly before or after ART was started, suggesting incomplete suppression of viral replication. We do
not know the exact duration of treatment required after initiation of ART to ensure prevention of transmission.

The unlinked transmission events were observed in about 1/300 person-years of follow up.

SUMMARY

These results demonstrate that ART, combined with counseling and provision of condoms, provides highly effective and durable protection from HIV transmission in heterosexual serodiscordant couples. Early therapy also greatly benefits personal health. The maximal personal and public health benefits of ART require the earliest possible detection of HIV infection and ART management that leads to reliable suppression of viral replication.

RESOURCES

Abstracts from the 8th IAS Conference July 20, 2015 Vancouver, Canada

http://www.ias2015.org


REFERENCES
