

PopART: Universal testing and treatment to stop HIV spread



Here, Professor of Epidemiology & International Health Richard Hayes explores and details the PopART study and other trials of Universal Testing and Treatment, a promising strategy to reduce HIV spread

The incidence of new HIV infections has decreased over the past decade, but much too slowly to meet the UNAIDS targets aimed at “eliminating” HIV as a major public health problem by 2030. There are around 38 million people worldwide living with HIV, and 1.5 million new infections each year. Clearly, more effective prevention strategies are needed if the elimination target is to be met.

Using HIV infection treatment as prevention

Antiretrovirals are drugs used to treat HIV and have had a major impact on morbidity and mortality from HIV over the past 20 years. These drugs can also be used to prevent people becoming infected with HIV, in three ways. First, people who are HIV-negative can take antiretrovirals before they have sex to protect themselves from infection, a strategy called “pre-exposure prophylaxis”; second people who may have been exposed to HIV can take antiretrovirals shortly after they have had sex, called “post-exposure prophylaxis”.

Third, we now know that when people living with HIV infection are taking antiretroviral therapy (ART), and so long as they are “virally suppressed” (their viral load measured from a blood sample is at an undetectable level), then they cannot transmit HIV through sex with their partners. This means that ART has two major benefits. First, it protects the health of people living with HIV so that they do not become seriously ill. Second, it prevents them from transmitting HIV to their sexual partners, and so reduces HIV incidence at population level.

Universal testing and treatment

Treatment as prevention can only work effectively if most people with HIV know their status and are linked to care so that they can start ART as soon as possible and stay on treatment so that they remain virally suppressed. Unfortunately, many people do not get tested for HIV and so their HIV infection is not diagnosed. And among those who are diagnosed, not everyone is linked to care so that they can be offered ART and supported to keep taking it. So, while numbers taking ART have increased over the years, not enough are on ART to ensure steep reductions in new infections.

The strategy known as universal testing and treatment (UTT) was proposed in a paper in *Lancet* in 2009(1). The idea was that in highly endemic areas, such as countries in East and Southern Africa with generalised HIV epidemics, everyone in the community is offered an HIV test (universal testing) regularly so that all HIV infections (including new ones) can be diagnosed promptly. The other part of the strategy was that once diagnosed, people living with HIV are linked promptly to care and offered immediate ART (universal treatment).

Does universal testing and treatment (UTT) work?

At the time UTT was first proposed, many questioned whether it could be delivered because of the practical difficulties of ensuring high HIV testing and ART coverage of an entire community. Also, at that time, treatment guidelines specified that ART should only be initiated once a patient’s immune status (measured by the CD4 count) had reached a low level. Since then, evidence has shown that it is best for ART to be started immediately for all people with HIV, and by 2016 guidelines had changed to recommend universal treatment irrespective of CD4 count for everyone living with HIV(2).

Meanwhile, four randomised trials were conducted in East and Southern Africa to test whether universal testing and treatment could be delivered in practice, and what impact that would have on HIV incidence at population level. The largest of these trials was the HPTN 071(PopART) trial, conducted in 21 urban and peri-urban communities in Zambia and South Africa, in areas with high HIV prevalence and incidence. 14 of the communities were randomly chosen to receive the PopART intervention, the other 7 acting as “control” communities. The intervention was delivered by lay health workers called Community HIV-care Providers (CHiPs) who went door-to-door offering HIV testing each year,

supporting those diagnosed HIV- positive to link to care, and providing other services. A random sample of around 48,000 adults was chosen from these communities and tested for HIV annually to measure the rate of new infections.

What did PopART and the other UTT trials show?

The PopART trial showed that it was feasible to deliver the intervention and highly acceptable to the community. High coverage was achieved, and the UNAIDS 90-90-90 targets were reached, meaning that 90% of people living with HIV knew their status, 90% of those were on ART, and 90% of those were virally suppressed, meaning that around 70% of people living with HIV were virally suppressed(3). The overall effect of the intervention was to reduce HIV incidence in the intervention communities by about 20%, a statistically significant effect(4). Subsequent mathematical modelling has shown that, if sustained, the effect of the PopART intervention would increase, exceeding 50% well before 2030, and is likely to be highly cost-effective.

Three other trials of UTT were carried out, in Uganda, Kenya, Botswana and South Africa. Taking the results of the four trials together, there is clear evidence that universal testing and treatment is a feasible strategy and where high levels of viral suppression can be achieved it can reduce HIV incidence by around 20-30%(5).

Key messages for HIV control

- A “universal” approach to HIV testing and treatment is feasible and acceptable and can make an important contribution to achieving the new UNAIDS 95-95-95 targets for HIV elimination, especially in high-incidence settings.
- The specific approach to delivering UTT can be adapted according to the local epidemic and context, but there is a need to ensure regular testing to identify new cases, linkage to prevention and re-engagement of those no longer in care.
- Innovative approaches can be used to increase the sustainability and affordability of service delivery, including broader community-based services, for example, including TB, STIs and NCDs.

Reference

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3. Floyd S, Shanaube K, Yang B, et al. HIV testing and treatment coverage achieved after 4 years across 14 urban and peri-urban communities in Zambia and South Africa: an analysis of findings from the HPTN 071 (PopART) trial. *PLoS Med* 2020; 17: e1003067.

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