Can the "Test and Treat" Strategy
Bring an end to the HIV/AIDS Epidemic

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Introduction

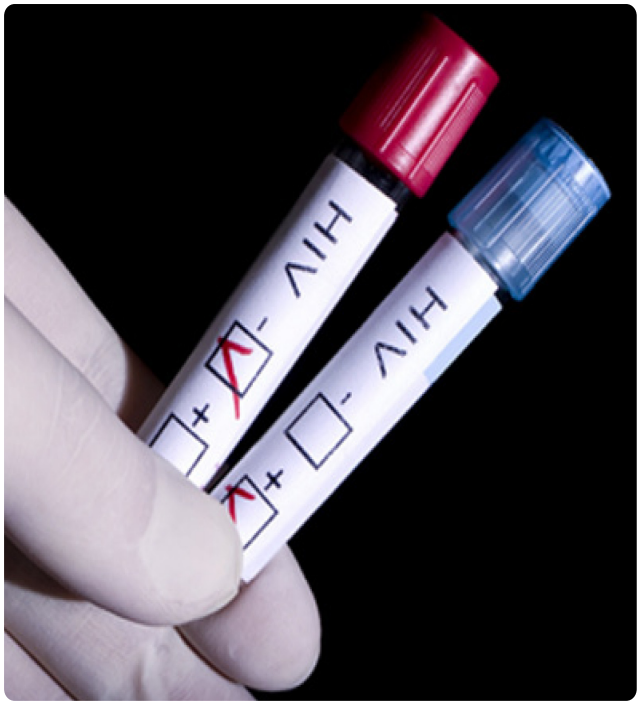
This brief guide addresses a series of questions related to understanding the test and treat strategy and the implications and challenges associated with fully implementing this strategy in order to reduce HIV incidence.

What is test and treat?

Test and treat is a potentially important theoretical public health strategy that could dramatically reduce new HIV infections annually and help end the HIV/AIDS pandemic. Based on the seminal work of Montaner and colleagues (2006) that postulated that the widespread use of ART can decrease HIV incidence, later on Granich and colleagues (2008) developed mathematic models to assess the certainty of this approach. The test and treat strategy involves among other activities the implementation of an annual voluntary universal HIV testing program for persons older than 15 years and the immediate initiation of antiretroviral therapy (ART) for all persons who test positive for HIV regardless of their CD-4 T-cell count or viral load. The implementation of a test and treat policy in the United States would contribute to achieving the goals of the National HIV/AIDS Strategy by: 1) reducing new infections, 2) increasing access to care and optimizing health outcomes, and 3) reducing HIV-related health disparities. In current public discourse, the "test and treat" strategy is also known as "treatment as prevention."

What is the rationale behind test and treat?

The test and treat strategy is based on two related individual and public health observations. First, persons infected with HIV who are successfully treated with ART can reduce the amount of virus (viral load) in their system to undetectable levels, and research has shown that individuals with a suppressed or undetectable viral load can be less infectious and therefore have a lower probability of transmitting the virus to others (DeCook et al., 2009). Second, communities with broad uptake of ART have observed reduced rates of new HIV infections (Das et al., 2010; Donnell et al., 2010). Based on the association between ART and individual viral load, and community viral load and HIV incidence, it is reasonable to consider using treatment of individuals infected with HIV as a means of reducing the rate of new HIV infections.



What evidence supports test & treat?

Accompanying the scale up of ART over the past 15-20 years has been an observed decrease in new HIV diagnoses in surveillance data and ecological and cohort studies. In several studies of HIV serodiscordant heterosexual couples, use of ART by the infected partner is associated with a decreased risk of HIV transmission to the uninfected partner (Bunnell et al., 2006; Del Romero et al., 2010; Donnell et al., 2010). Also, the results of the HIV Prevention Trials Network (HPTN) 052 Study, which provided definitive proof that antiretroviral treatment reduces the rate of sexual transmission of HIV-1 (Cohen et all., 2011). ecological and cohort studies, data have suggested a decrease in HIV incidence in communities with high ART coverage (Das et al., 2010; Fang, et al., 2004; W ood et al., 2009). In addition, a number of simulation models have indicated that the scale up of ART has the potential to reduce dramatically new HIV infections and end the HIV/AIDS epidemic (Granich et al., 2008; Velasco-Hernandez et al., 2002; Walensky et al., 2008). These and other studies provide evidence supporting the use of ART for HIV prevention and the need to expand voluntary universal HIV testing services in order to identify persons who are unaware of their HIV positive status and who may unknowingly pass the virus to others.

What are the key componenets of test and treat?

In order for test and treat to be effective in reducing the rate of new HIV infections at a population level, it requires the following key components:

The strategy requires that a large enough proportion of the population test for HIV in order to reduce the number of HIV-infected persons who are unaware of their HIV status. It calls for voutlary universal HIV testing on an annual basis as well as social mobilization efforts to engage policy makers, service providers, communities, and other stakeholders to increase testing uptake, particularly among hard-to-reach populations.

The strategy requires that a large enough proportion of individuals who test HIV-positive be immediately linked into HIV medical care in order to decrease the number of HIV-positive persons who are not in care. Medical care systems need to have in place programs, policies, and procedures (e.g., peer health navigation programs, culturally competent medical providers, evidence-based linkage programs such as ARTAS, co-located HIV testing and HIV medical services, transportation, etc.) to ensure that individuals are linked to appropriate care services once they receive their HIV diagnosis.

The strategy requires that a large enough proportion of individuals who are HIV-positive initiate appropriate antiretroviral therapy in order to decrease the number of HIV-positive persons who are not on ART. Access and cost of medication are key issues that need to be addressed to ensure that ART is available to everyone that needs it.

The strategy requires that a large enough proportion of HIV-positive individuals who are taking ART be virally suppressed in order to reduce the number of HIV-positive persons who are infectious. This requires that individuals take their medications consistently in order to reduce the amount of each of these components needs to be achieved at the highest levels possible in order for the test and treat strategy to be effective in reducing the rate of new HIV infections. Additionally, individuals need to receive support services for other co-morbid conditions that may affect their HIV care, such as screening and treatment for STDs, hepatitis and tuberculosis. They will also need to obtain referrals to other services like mental health and substance use treatment that may negatively affect their testing behaviors, engagement with and retention in HIV medical care, and adherence to medication. Protecting human rights and patient confidentiality also are critical elements in the implementation of the test and treat strategy as well as ensuring health equity.

What are the individual and public health benefits of test and treat?

Individual health benefits:

It would be unethical to attempt to implement the test and treat strategy without individuals deriving some benefit from starting ART immediately upon receiving an HIV diagnosis. Since the advent of ART, clinicians, federal health agencies, and consumer advocates have had an ongoing debate about when to start treatment. The U.S. Department of Health and Human Services (DHHS) guidelines for initiating ART have continued to change throughout the course of the epidemic. The most recent guidelines recommend that HIV-positive individuals initiate ART sooner rather than later in their diagnosis (DHHS, 2013).

- The reasons for starting ART soon after an HIV diagnosis include:
- preventing irreversible damage to the immune system in HIV-positive persons who are relatively healthy;
- lowering the risk of non-AIDS related diseases; and
- further reducing the risk of death (Hirsch, 2008).

If implemented, test and treat would contribute to earlier initiation of ART and improved health outcomes for persons recently diagnosed with HIV infection. In addition, use of ART can suppress the level of virus in the body to undetectable levels thus decreasing the possibility of transmitting the virus to a spouse or sexual partner. If used properly, ART can transform an HIV diagnosis from a terminal illness to a chronic, manageable condition with a normal life expectancy.

Public health benefits:

There are multiple public health benefits that may be realized with full implementation of a test and treat strategy. First, HIV-positive individuals who are on ART and achieve undetectable viral loads have a reduced probability of transmitting the virus to others, thus contributing to a decrease in HIV incidence in their community (Quinn et al., 2000). Second, evidence from previous studies suggest that persons who receive an HIV-positive diagnosis dramatically reduce sexual activity, which also reduces HIV transmission (Marks et al., 2005; Marks et al., 2006). The expansion of universal HIV testing would contribute to an increased awareness of HIV status and a related decrease in risky sexual activity. Finally, full implementation of a test and treat strategy has the potential to prevent millions of new infections annually and lead to elimination of the HIV/AIDS epidemic (Granich et al., 2008).

What are the implementation challenges to test and treat?

While the test and treat model identified by Granich and colleagues shows a potential for rapidly reducing HIV incidence and prevalence within 50 years, it is not without debate. A number of research questions related to implementation remains unanswered. For example, what is the specific relationship between the stage of HIV infection and efficiency of transmission and its associated impact on reducing HIV incidence? What is the impact of this strategy on the development and spread of drug resistant strains of HIV? What is the impact of the strategy on individual risk taking behaviors or behavioral disinhibition? What is the cost-effectiveness of fully implementing the strategy for society as a whole?

A number of existing structural challenges may limit full implementation of a test and treat strategy. A primary challenge is overcoming the low rates of HIV testing despite current HHS recommendation for routine HIV testing. There are also structural challenges associated with linking and engaging individuals into care (e.g., lack of health insurance, lack of culturally competent medical providers, etc.). The funding necessary to ensure medication availability may also hinder full implementation. The current lack of agreement when to initiate ART, medication adherence issues and concerns surrounding potential side effects related to long-term use of ART may block full adoption of the strategy. Current disparities in access to HIV medical services, and concerns related to stigma and coercion may limit uptake of necessary services to achieve desired outcomes.

Pilot and feasibility studies are currently underway to help answer some of these questions. For example, the HIV Prevention Trials Network (HPTN) 065 study aims to evaluate the feasibility of an expanded community-level test, link to care, plus treat strategy in the U.S. It is being conducted in the Bronx, NY and Washington, DC.

The study will provide key information that would guide the design of a large scale, randomized clinical trial of full implementation of a test and treat strategy in the U.S. More information on the HPTN 065 study can be found at http://www.hptn.org/research_studies/hptn065.asp. In addition, the ongoing START (Strategic Timing of AntiRetroviral Treatment) study can provide additional information regarding the effects of early treatment on health outcomes of HIV-positive persons. Additional information about the study is available at http://insight.ccbr.umn.edu/start/

Refernces:

Bunnell R, Ekwaru JP, Solberg P, et al. (2006). Changes in sexual behavior and risk of HIV transmission after antiretroviral therapy and prevention interventions in rural Uganda. AIDS, 20, 85–92.

Cohen M, Chen Y, McCauley, et al (2011) Prevention of HIV Infection with Early Antiretroviral Therapy. N Engl J Med, 365: 493-505.

Das M, Chu PL, Santos GM, et al. (2010). Decreases in community viral load are accompanied by reductions in new HIV infections in San Francisco. PLoS One, 5, e11068.

De Cock KM, Gilks CF, Lo YR, Guerma T. (2009). Can antiretroviral therapy eliminate HIV transmission? Lancet, 373, 7–9.

Del Romero J, Castilla J, Hernando V, Rodriguez C, Garcia S. (2010). Combined antiretroviral treatment and heterosexual transmission of HIV-1: cross sectional and prospective cohort study. BMJ, 340, c2205.

Department of Health and Human Services (DHHS). (2013). Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents. Accessible at: http://aidsinfo.nih.gov/guidelines. Accessed on 3-20-13.

Donnell D, Baeten JM, Kiarie J, et al. (2010). Heterosexual HIV-1 transmission after initiation of antiretroviral therapy: a prospective cohort analysis. Lancet, 375, 2092–8.

Fang CT, Hsu HM, Twu SJ, et al. (2004). Decreased HIV transmission after a policy of providing free access to highly active antiretroviral therapy in Taiwan. Journal of Infectious Diseases, 190, 879–85.

Granich RM, Gilks CF, Dye C, De Cook KM, & Williams BG. (2009). Universal voluntary HIV testing with immediate antiretroviral therapy as a strategy for elimination of HIV transmission: a mathematical model. Lancet, 373, 48-57.

Hirsch MS. (2008). Initiating therapy: when to start, what to use. Journal of Infectious Diseases, 197(suppl 3), S252–60.

Marks G, Crepaz N, Senterfitt JW, Janssen RS. (2005). Meta-Analysis of High-Risk Sexual Behavior in Persons Aware and Unaware They are Infected With HIV in the United States: Implications for HIV Prevention Programs. Journal of Acquired Immune Deficiency Syndromes, 39(4), 446-53.

Marks G, Crepaz N, Janssen RS. Estimating Sexual Transmission of HIV from Persons Aware and Unaware that they are Infected with the Virus in the USA. AIDS, 20(10), 1447-50.

Montaner J, Hogg R, Wood E. et al.(2006) The Case for Expanding Access to Highly Active Antiretroviral Therapy to Curb the Growth of the HIV Epidemic. Lancet, 368: 531-36.

Quinn TC, Wawer MJ, Sewankambo N, et al; Rakai Project Study Group. (2000). Viral load and heterosexual transmission of human immunodeficiency virus type 1. N Engl J Med, 342(13), 921-929.

Velasco-Hernandez JX, Gershengorn HB, & Blower SM. (2002). Could widespread use of combination antiretroviral therapy eradicate HIV epidemics? Lancet Infect Dis, 2, 487–93.

Walensky RP, Wood R, Weinstein MC, et al. (2008). Scaling up antiretroviral therapy in South Africa: the impact of speed on survival. Journal of Infectious Diseases, 197, 1324-32.

Wood E, Kerr T, Marshall BD, et al. (2009). Longitudinal community plasma HIV-1 RNA concentrations and incidence of HIV-1 among injecting drug users: prospective cohort study. BMJ, 338, b1649.

Image Refernces:

160633092.jpg [Photograph]. (2013). Retrieved Aug. 29, 2013, from: http://mediad.publicbroadcasting.net/p/shared/npr/201209/160633092.jpg

4retroviral-hiv.jpg [Photograph]. (2013). Retrieved Aug. 29, 2013, from: http://http://c3e308.medialib.glogster.com/media/78/7874d8a03dbe01fa77f69b45247eb2dfbc9e7fcaaa4d2b8349add29463fba5c0/4retroviral-jpg-hiv.jpg

hivtest.jpg [Photograph]. (2013). Retrieved Aug. 29, 2013, from:http://a57.foxnews.com/global.fncstatic.com/static/managed/img/Health/660/371/hiv%20test.jpg?ve=1

HIV-Test.jpg [Photograph]. (2013). Retrieved Aug. 29, 2013, from:http://www.housingworks.org/i/blog/HIV-Test.jpg

la-heb-hiv-test-and-treat-20130318-001.jpg [Photograph]. (2013). Retrieved Aug. 29, 2013, from:http://www.trbimg.com/img-514777f6/turbine/la-heb-hiv-test-and-treat-20130318-001/600/600x332

clinic2.jpg [Photograph]. (2013). Retrieved Aug. 29, 2013, from:http://hiv.ucsf.edu/images/clinic2.jpg

treatment-1.jpg [Photograph]. (2013). Retrieved Aug. 29, 2013, from: http://aids.gov/images/aids-infographics/treatment-1.jpg

HIVDrugs.jpg [Photograph]. (2013). Retrieved Aug. 29, 2013, from: http://www.takepart.com/sites/default/files/styles/landscape_main_image/public/

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