Can HIV testing plus linking HIV+ people to care and treatment reduce HIV transmission?

University of California San Francisco
UCSF
Center for AIDS Prevention Studies (CAPS)
Technology and Information Exchange (TIE) Core

Prepared by Dana Van Gorder, Project Inform

Fact Sheet: 27R November 2010

Why is this an important question?

Despite major progress against HIV, 21% of HIV+ people in the US are unaware that they are positive[1] and an estimated 33% of those who know they are HIV+ are not engaged in care and treatment for their infection.[2] Another 38% of newly diagnosed HIV+ individuals test so late that they receive an AIDS diagnosis at the same time as, or within one year of, learning they are positive.[3] There were an estimated 56,300 new HIV infections per year between 1996 and 2006.[4] Clearly, the US can and must do better in responding to the HIV/AIDS epidemic.

One way to increase the percentage of HIV+ people engaged in care and treatment for their infection and improve their health outcomes is to focus on coordinating or co-locating HIV testing, care and treatment, social services and prevention programs. Increasing the percentage of HIV+ people who know their serostatus and are receiving care and antiretroviral treatment could also have benefits for HIV prevention.[5]

The National HIV/AIDS Strategy places testing and linkage to care, treatment and support services at the heart of the effort to improve the health outcomes of HIV+ individuals and prevent new infections.[6] What is the scientific basis for this approach, how might it actually be implemented, and will it have the desired results in the real world?

Can HIV testing and linking HIV+ persons to care plus treatment reduce HIV incidence?

Although it is not proven conclusively, there are strong data showing that HIV treatment reduces an individual's viral load and thus the potential for them to transmit HIV.[7,8] A Swiss study concluded that HIV+ individuals whose virus was suppressed at or below 50 copies for more than six months and who had no STIs were very unlikely to transmit the virus to HIV- partners through sexual contact.[8]

A study of over 3,000 serodiscordant heterosexual couples in Africa found a much lower transmission rate when the HIV+ partner was receiving treatment (only 1 seroconversion for a rate of 0.37 per 100 person years), compared to couples where the HIV partner was not receiving treatment (102 seroconversions, for a rate of 2.24 per 100 person years).[9]

Mathematical models predict some level of reduction in new HIV cases from high levels of participation in testing and treatment.[10] A study in San Francisco found that expansion of HIV treatment was linked to a reduction in "community viral load," the estimated average viral load of all HIV+ persons in a community. This reduction was thought to be at least partly responsible for declines in new HIV cases in San Francisco in recent years.[11] Additionally, studies in British Columbia, Canada have suggested that reductions in the number of new HIV infections among injection drug users may also be linked to expanded HIV treatment.[12]

How can this be accomplished?

One possible approach is called Testing and Linkage to Care Plus, or TLC+, a framework for integrating HIV testing, care and treatment, social services and prevention-with-positives activities into a comprehensive initiative that can be implemented by individual providers or jurisdictions.[13] This approach is not new; many providers and jurisdictions have been implementing TLC+ in whole or part for some time. TLC+ proponents have argued that this approach should be replicated nationwide. A study is being conducted in Washington, DC and the Bronx, NY on the feasibility of the TLC+ approach in highly impacted urban settings.[14]

TLC+ is a reframing of the "Test & Treat" concept, which generally seeks to achieve near universal knowledge of serostatus and treatment of all individuals found to be HIV+ in order to improve health outcomes and reduce incidence.[13] The TLC+ approach emphasizes informed patient choice in HIV care decisions and the importance of securing social services in order to successfully engage and retain HIV+ people in care and treatment.[15] TLC+ acknowledges that supporting HIV+ persons' participation in primary medical care and needed social services is more likely to engage them in addressing HIV than immediately encouraging them to start HIV treatment.

Elements of TLC+ include:

- Expanding and promoting HIV testing both as a routine part of medical care population-wide and through programs targeting individuals who are members of high-risk groups or engaging in high-risk behaviors
- Linking newly diagnosed HIV+ individuals ASAP to a primary care provider, and innovative programs to re-engage previously diagnosed individuals who have fallen out of care or treatment
- Assessing and meeting the social services needs of HIV+ people in order to support their initial engagement in care
- Measuring CD4s and viral load and thoroughly counseling patients about the role of HIV treatment in assuring individual health and preventing transmission of HIV, as well as options for when to start treatment
- Testing for STIs, TB and hepatitis B and C
- Supporting retention in care and treatment adherence by ensuring ongoing linkage to needed social services and support
- Prevention-for-positives counseling and linkage to services that support engagement in safe behaviors

Should HIV+ people be on treatment to prevent HIV transmission?

The potential benefits of HIV treatment, both for the individual and community, have much to do with when an individual decides to initiate HIV treatment and how much support they have to remain adherent to treatment. Earlier treatment might benefit both individual and community health.

Federal treatment guidelines recommend starting treatment at 500 CD4s or below, and support consideration of treatment at 500 or above.[16] Some providers, notably the San Francisco Department of Public Health, are now offering HIV treatment to all diagnosed HIV+ people, and even encouraging consideration of treatment at 500 CD4s and above. Providers should fully inform their HIV+ patients about the risks and benefits of either treatment strategy. A current study called START seeks to determine the risks and benefits of initiating HIV treatment at different CD4 thresholds.

It is essential that HIV+ people make treatment decisions primarily to benefit their own health, with secondary consideration of the possible benefits for prevention. In keeping with values of patient empowerment and informed choice, providers can explain to an HIV+ person that engaging in treatment might help them in their goal of preventing transmission, but the choice of whether, when and why they decide to take medications must be left in the patient's hands.

What are concerns about TLC+?

Concerns have been raised that expanded HIV testing and treatment of HIV+ people as a prevention intervention is intended to replace behavioral prevention programs. However, behavioral counseling and other forms of support for safe behaviors are an important component of the TLC+ model. Additionally, successful HIV prevention must take many forms and should include educational, behavioral, structural and biomedical interventions.

Concerns have also been raised that describing the possible benefits of treatment for prevention may cause HIV+ people who are taking medications to abandon safe sex and syringe use behaviors. However, a range of studies have shown that HIV+ people on treatment do not exhibit increased sexual risk behavior, even when they achieved an undetectable viral load.[17]

Most HIV+ people are concerned about not infecting others and make efforts to prevent transmission.[18] Nevertheless, it is essential to counsel HIV+ patients to practice safe sex, including condom use, whether on treatment or not and whether they achieve undetectable viral loads or not.

What steps needs to be take place to implement TLC+ nationally?

The concepts behind TLC+ are contained in the National HIV/AIDS Strategy, and it is critical that the federal government achieve unprecedented coordination in the planning and funding of this approach across all agencies, as well as with state and local governments and AIDS service organizations.

TLC+ may take several years to be fully implemented because it depends upon the thoughtful coordination of surveillance, testing, care and treatment, social services and prevention programs and their funding streams to support it. TLC+ also demands improved reimbursement and targeting of HIV testing activities, and increased coverage of the cost of care and treatment, which could be achieved largely through effective implementation of national health care reform.

The Ryan White Program will need to be reconfigured to support the high level of staffing necessary to link HIV+ people to care, treatment and social services when it is reauthorized by Congress in 2013.

Says who?

1. Centers for Disease Control and Prevention. HIV in the United States. Fact Sheet. July 2010.

2. HRSA. HIV/AIDS Bureau. Outreach: Engaging people in HIV care. August 2006.

3. Valdiserri RO. Late HIV diagnosis: Bad medicine and worse public health. *PLoS Medicine*. 2007; 4:e200.

4. Hall HI, Song R, Rhodes P, et al. Estimation of HIV Incidence in the United States. *JAMA*. 2008;300:520-529.

5. Cohen J. Treatment as Prevention. *Science*. 2010;327:1196-1197.

6. Office of the White House. National HIV/AIDS Strategy for the United States. July 2010.

7. CDC. Effect of antiretroviral Therapy on risk of sexual transmission of HIV infection and superinfection. Fact sheet. August 2009.

8. Engsig F, Omland L, Larsen M, et al. Risk of high-level viraemia in HIV-infected patients on successful antiretroviral treatment for more than 6 months. *HIV Medicine*. 2010.

9. Donnell D, Baeten JM, Kiarie J, et al. Heterosexual HIV-1 transmission after initiation of antiretroviral therapy: a prospective cohort analysis. *Lancet*. 2010;375:2092-2098.

10. Granich RM, Gilks CF, Dye C, et al. Universal voluntary HIV testing with immediate antiretroviral therapy as a strategy for elimination of HIV transmission: a mathematical model. *Lancet*. 2009;373:48-57.

11. Das M, Chu PL, Santos G-M, et al. Decreases in community viral load are accompanied by reductions in new HIV infections in San Francisco. *PLoS ONE*. 2010;5:e11068.

12. Montaner J, Wood E, Kerr T, et al. Association of expanded HAART coverage with a decrease in new HIV diagnoses, particularly among injection drug users in British Columbia, Canada. Presented at the CROI. 2010.

13. Project Inform. TLC+: Testing, Linkage to Care and Treatment.

14. El-Sadr W. TLC-Plus: Feasibility of an enhanced test, link-to-care plus treat approach for HIV prevention in the US.

15. Statement on ART as prevention: Scaling down HIV requires scaling up human rights, testing and treatment. Sign-on letter from the International Council of AIDS Service Organizations. 2009.

16. Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents. Department of Health and Human Services. 2009;1-161.

17. Crepaz N, Hart TA, Marks G. Highly active antiretroviral therapy and sexual risk behavior: A meta-analytic review. *JAMA*. 2004;292:224-236.

18. Marks G, Crepaz N, Senterfitt JW, et al. Meta-analysis of high-risk sexual behavior in persons aware and unaware they are infected with HIV in the United States. *Journal of AIDS*. 2005;39:446-453.

Special thanks to the following reviewers of this Fact Sheet: Julia Dombrowski, Reuben Granich, Peter Kilmarx, Kim Koester, Monica Ruiz, George Rutherford, Allison Zerbe

Reproduction of this text is encouraged; however, copies may not be sold, and the University of California San Francisco should be cited as the source. Fact Sheets are also available in Spanish. To receive Fact Sheets via e-mail, send an e-mail to listserv@listserv.ucsf.edu with the message "subscribe CAPSFS first name last name." ©2010, University of CA. Comments and questions about this Fact Sheet may be e-mailed to CAPS.Web@ucsf.edu.