Universal voluntary HIV testing and immediate antiretroviral therapy

In Reuben Granich and colleagues’ mathematical model on the benefits of antiretroviral therapy for HIV prevention (Jan 3, p 48),1 everyone is tested and everyone with HIV is treated immediately (irrespective of CD4+ cell count). However, the relation of this theoretical model to reality rests entirely on the veracity of the assumptions employed.

First, the hypothesis that suppressive antiretroviral therapy can reduce HIV transmission within a sexual partnership is plausible, but unproven. Several studies have shown that antiretroviral therapy suppresses HIV in genital secretions, and two observational studies2 3 have reported greatly reduced HIV transmission in couples when the infected person received antiretroviral therapy. However, neither the magnitude nor the durability of this benefit is known. Accordingly, the US National Institutes of Health has launched a randomised trial (clinicaltrials.gov identifier NCT00745811) designed to answer these questions.

Second, although detection of all HIV-infected people through widespread testing is a desirable goal, no evidence exists that this can be accomplished even in wealthy countries highly committed to HIV prevention.

Third, the decision to treat everyone irrespective of CD4+ cell count should not be taken lightly. Little doubt exists that suppressing HIV benefits the HIV-infected person. However, much of the immune damage to the host occurs during acute HIV infection4—a phase of the disease not detected by most current strategies. These “invisible” patients with acute HIV infection might contribute disproportionately to the spread of HIV.5 They have not been factored into most mass treatment models because they cannot be readily detected.

Additionally, we do not know the long-term toxic effects of many of the best antiretroviral therapy regimens; cardiovascular complications are of no small importance.

The WHO model1 challenges us to marry treatment and prevention. The time has arrived for the drug discovery and treatment communities to fully embrace the public health benefits of antiretroviral therapy. Using drug combinations that will render patients durably less contagious can only be viewed as a salutary benefit of required therapy. Perhaps, in the coming years, it will turn out that we can provide enough antiretroviral therapy to enough people to curb the epidemic. The job now is to be realistic in our expectations and to generate the essential data to lay the tracks so the treatment-for-prevention train can leave the station.

We declare that we have no conflict of interest.

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Their assumptions about the effect of this strategy are highly optimistic: they assume that HIV-infected people would reduce risk behaviour by an average of 40%; that second-line therapy is immediately available on failure of first-line; and that antiretroviral therapy reduces infectiousness by 99%. This level of reduction is unlikely.6

Granich and colleagues calculate that an eradication phase would only be possible if HIV-infected individuals start antiretroviral therapy at a CD4+ T-cell threshold of about 1150 cells per μL. But this would be impossible since the average CD4+ count immediately after seroconversion is about 884 cells per μL in Africa.7 Even if the average testing frequency is once per year it would be difficult to catch early seroconversions since diagnoses will occur an average of 6 months after seroconversion.

Various theoretical studies have indicated that increasing treatment coverage can substantially reduce incidence if supplemented with behaviour change,4 but the epidemiological impact is likely to be moderate unless testing rates increase substantially. Even in resource-rich settings there is a large proportion of people at high risk who are never tested for HIV.8

Therefore, although universal treatment should be strived towards, the notion that universal testing and treatment at high CD4+ concentrations can be attained in the foreseeable future seems unrealistic. The important message from the study is that large increases in testing and early treatment can have a substantial preventive effect at the population level. The paper should be a call to promote serious international discussion between public-health officials, clinicians, and other researchers about the viability of this intervention strategy, the ethics of individualism versus utilitarianism, and the possibility of using prevention funds to further increase treatment access.

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