Universal Testing and Treatment for HIV Infection in Botswana

TO THE EDITOR: Makhema et al. (July 18 issue)[1] report the results of the Ya Tsie trial that was conducted in Botswana from 2013 to 2018. In this trial, which evaluated the effect of increasing treatment coverage on preventing human immunodeficiency virus (HIV) infection, the incidence of HIV infection was approximately 30% lower in the intervention group than in the standard-care group.

The trial took place in 13 subdistricts: Barolong, Central Bobonong, Central Boteti, Central Mahalapye, Central Tutume, Kgatleng, Kweneng East, Kweneng West, Ngamiland West, Ngwaketse, North East, Serowe Palapye, and South East. We calculated annual migration rates among all 28 subdistricts in Botswana and found a high inflow and outflow of the population in many districts where the trial took place. This migration could have substantially decreased treatment coverage and hence reduced the effectiveness of the intervention. Therefore, increasing levels of treatment coverage throughout Botswana could have a much greater effect on reducing the incidence of HIV infection than indicated by the results of the Ya Tsie trial.

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No potential conflict of interest relevant to this letter was reported.

1. Makhema J, Wirth KE, Pretorius Holme M, et al. Universal testing, expanded treatment, and incidence of HIV infection in Botswana. N Engl J Med 2019;381:230-42.

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THE AUTHORS REPLY: We agree with Valdano and Blower that migration of persons between intervention communities and standard-care communities may have reduced the effect of our interventions on the incidence of HIV infection in our trial. Although we selected geographically isolated communities when possible, population mobility in Botswana is high. Viral phylogenetic analyses are under way to shed light on the role of mobility in HIV transmission.

We wish to highlight additional aspects of the results of three universal HIV test-and-treat trials (including ours) published by the *Journal* that suggest a potential public health effect of interventions.[1,2] First, over a follow-up period of approximately 3 years, these trials achieved among the highest reported population levels of HIV diagnosis, treatment, and viral suppression. Second, the effect of interventions on the incidence of HIV infection in the communities was consistent: all three trials showed an approximately 20 to 30% decrease in the annual incidence of HIV infection in communities that implemented universal testing and treatment (a decrease of 30% over a 3-year period in the intervention group in the Sustainable East Africa Research in Community Health trial). Finally, a sustained decrease in the incidence of HIV infection to this degree could lead to an even lower cumulative incidence of HIV infection over 10 years.[3]

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Since publication of their article, the authors report no further potential conflict of interest.

1. Havlir DV, Balzer LB, Charlebois ED, et al. HIV testing and treatment with the use of a community health approach in rural Africa. N Engl J Med 2019;381:219-29.
2. Hayes RJ, Donnell D, Floyd S, et al. Effect of universal testing and treatment on HIV incidence — HPTN 071 (PopART). N Engl J Med 2019;381:207-18.
3. Probert W. Model projections of the impact of the PopART intervention in the HPTN 071 (PopART) study. Presented at the 10th IAS Conference on HIV Science, Mexico City, July 21–24, 2019. abstract.

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