HIV testing is an integral component to HIV prevention strategies and a gateway to treatment and care. Knowledge of one’s HIV status may act to mobilize support networks, increase sensitivity and decrease stigma, open dialogue regarding future plans and status disclosure, and discourage risk behaviors [1]. Over the past decade, as the expansion of ARTs in the developing world has made medications and treatment more widely available, international parties have sought to examining ways to rapidly increase HIV testing on a global scale and to link positive individuals to available treatment and care. Proponents have sought a model that would respond to a larger community of individuals than those actively seeking testing via VCT [2-4], including provider-initiated opt-out testing. Concurrently, the uptake of HIV testing has increased dramatically across the developing world. Even so, lack of knowledge of HIV status remains an important programmatic barrier to initiating ART support [5].

Since 1998, the MEASURE DHS Project’s Demographic and Health Surveys (DHS) and AIDS Indicator Surveys (AIS) have collected nationally-representative data from women and men about whether they have ever been tested for HIV and if they received the test results. Additionally, since 2001, anonymous, informed, and voluntary HIV testing has been conducted in 47 DHS/AIS surveys. Within the past decade, the MEASURE DHS project has noted a marked increase in testing uptake in sub-Saharan Africa, sometimes by more than ten-fold. These demographic patterns of divergence in HIV testing uptake over time and across countries in the post-ART era are important to recognize and understand, both to evaluate previous outreach programs and to shed light on opportunities for additional growth.

Drawing on data from 15 sub-Saharan African countries with repeated surveys over the past decade—Cameroon, Congo-Brazzaville, Ethiopia, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Nigeria, Rwanda, Senegal, Tanzania, Uganda, and Zimbabwe—this paper analyzes demographic divergence in HIV testing uptake increases within and across countries, with special attention to HIV positive adults.

Testing uptake by sex and residence is shown over time for all 15 countries is shown in Figure 1. Countries have been grouped into four broad categories: (A) countries characterized by higher uptake among urban residents, regardless of sex; (B) countries characterized by higher uptake among women, regardless of residence; (C) countries characterized by divergence in testing uptake between urban women and all other groups; (D) countries characterized by narrow differentials in testing uptake by sex and residence.

While testing uptake has increased in every country the gains have been uneven. Regardless of any male-female testing differential in the earliest survey, the most recent survey in every country indicates that women are more likely to have ever been tested for HIV than men. Countries in groups B and C have achieved particular success at with large overall gains such as Lesotho, Malawi, Uganda, and Zimbabwe (in Groups B and C) have primarily used opt-out testing during ANC to increase uptake. Outreach to men, particularly those in rural areas, remains a challenge in most countries. Only one country, Rwanda, has achieved near-universal uptake among men and women in rural and urban areas.
Figure 1: Trends in the uptake of HIV testing\(^1\) by country, residence, and sex

**Group A: Countries characterized by higher uptake among urban residents, regardless of sex (3)**

- Ethiopia
- Madagascar
- Nigeria

**Group B: Countries characterized by higher uptake among women, regardless of residence (3)**

- Lesotho
- Malawi
- Zimbabwe

**Group C: Countries characterized by divergence in testing uptake between urban women and all other groups (6)**

- Cameroon
- Kenya
- Mozambique
- Senegal
- Tanzania
- Uganda

**Group D: Countries characterized by narrow differentials in testing uptake by sex and residence (3)**

- Congo-Brazzaville
- Ghana
- Rwanda

\(^1\) Percent who have been tested and received the results of the most recent test.

Data: Demographic and Health Surveys and AIDS Indicator Surveys, 2003-2011
Universal access to HIV testing among the population is an important policy goal, but in the post-treatment era it is particularly important for testing to reach HIV-positive persons so that they may access care and support. Across countries, our analysis shows that HIV testing uptake is not strongly correlated with overall HIV prevalence [6]. Even so, as Figure 2 illustrates, HIV-positive adults are more likely to have ever been tested for HIV, as was true in the pre-treatment era [7]. Importantly, the majority of HIV-positive adults in six countries have no way of knowing their HIV serostatus.

Using the Oaxaca logistic decomposition [8, 9] on pooled cross-national data, both for all adults and for HIV-positive adults only, we will differentiate factors associated with being tested that relate to time period of survey and to country-level endowments—those presumably related to access, outreach, and funding—from individual characteristics, such as wealth, education, age, sexual activity, and receipt of ANC that are associated with having ever been tested for HIV.

One important result from the logistic decomposition analysis is the role of cross-national disparities in access to HIV testing as mediated by the year of the most recent survey. A second important test will be whether HIV serostatus, independent of factors associated with being HIV positive, is an important factor in HIV testing uptake across countries.
Regular testing for all adults at risk of HIV is an important means of both care and prevention. Lack of knowledge of HIV status remains a critical barrier to providing treatment and support. As such, expansion of HIV testing and an integration of opportunities to be tested during regular medical care remain important policy priorities in sub-Saharan Africa. Results show that the expansion of opt-out testing during ANC appears to have increased testing dramatically among women, particularly urban women. Even so, scaling up access and outreach to testing among men and rural residents remains an important frontier for achieving universal access in many countries.

While underlying differences in medical infrastructure, level of funding for HIV programs, and accessibility of rural populations contribute to differences in coverage and disparities in the uptake of HIV testing, the experience of countries such as Rwanda, which have been particularly successful at scaling up testing cross the population, may provide useful insights for other countries in the region. Continued expansion of testing efforts, particularly among HIV positive persons, is a crucial determinant of overall demand for medical treatment and support over the next decade.

References
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