Key Findings from each stage of the continuum of care framework are presented in this brief. Figure 1 presents barriers and facilitators to each stage of the continuum at the individual/family, facility, community and structural levels (see page 4).

HIV testing and counseling

Barriers to HIV testing and counseling (HTC) at the individual level included fear of HIV testing, reluctance to test while feeling healthy, and distrust in HIV test results. Individual-level facilitators included the perception that ART is highly efficacious and a perceived increased individual risk of HIV infection. Inadequate provider-initiated testing and counseling (PITC) at routine health services was a facility-level barrier to HTC, while near-universal PITC at VMMC and prevention of mother-to-child transmission (PMTCT) services facilitated this process among study participants. Study participants explained that when individuals visited multiple health facilities without receiving HTC and still did not know the cause of their illness, they often visited traditional healers as a last resort. Facilitators to HTC at the community level included mass media and community mobilization activities, as well as people living with HIV (PLHIV) motivating others to test for HIV. Structural barriers included widespread and chronic stock-outs of HIV test kits and requiring couples testing at antenatal care (ANC) services.

Access to and linkage to care

Feeling healthy at the time of HIV diagnosis and having faith in God’s ability to cure HIV were mentioned as individual-level barriers to successful linkage to care and treatment centers (CTCs). At the facility level, PLHIV struggled to successfully link to care when HTC and CTC services were located in separate facilities and when they did not receive services during the first encounter at the CTC due to restricted opening hours, limited capacity for enrollment and shortages of providers. Some participant also had negative initial interactions with service providers. Same-day linkages from HTC to CTC services and intensive counseling from service providers, both after receiving an HIV positive diagnosis and after linking to a CTC, facilitated this process. Structural barriers included the passive nature of the referral system, which prevented providers from following up to ensure a client had linked to a CTC, and high work-related mobility and migration in the Iringa region.

Clinical staging and CD4 testing

The study included a facility assessment, in which most health facilities reported a lack of functioning CD4 machines. This created significant challenges for PLHIV such as delayed clinical and laboratory staging, resulting in delayed ART initiation for some clients. In contrast, one facility with a functioning CD4 machine, trained laboratory technicians, and the capac-
Study Methods & Design
A mixed-methods approach was used to address the study aims. Method included

- Facility-based ecological assessments and interviews with providers and clients of health care facilities providing HIV testing and treatment services, including HIV testing and counseling (HTC) sites, care and treatment centers (CTC), prevention of mother-to-child transmission (PMTCT) services, and voluntary medical male circumcision (VMMC) outreach sites.

- Interviews, focus group discussions, and observations with community-based providers of HIV care and support services (including support groups, traditional healers, and spiritual/religious healers) and their clients.

- Longitudinal interviews with men and women living with HIV, including female sex workers, to understand their trajectories in care.

Individual level
Promote earlier HIV testing and treatment through behavior change communication
An individual’s health was a strong influencing factor in progression through the continuum of care. A majority of participants in this study received HTC only when they were visibly sick, had ruled out other possible illnesses and perceived themselves at risk for HIV infection. These individuals often accepted positive HIV test results with a sense of relief about finally knowing the cause of suffering. In contrast, healthy participants expressed reluctance to receive HTC and were more likely to delay linking to care or disengage from care and treatment services, resulting from the belief that HIV is associated with severe physical symptoms. Behavior change communication strategies to promote earlier testing and engagement in care are recommended to change the current social norms around HIV by educating the public about personal and public health benefits of early ART initiation.

Facility level
Increase routine PITC
Inadequate PITC was one barrier to entry into the continuum of care. Very few clients were offered PITC by a service provider, and those who were had often been very sick and previously visited multiple health facilities. Increasing education, training and support among health care workers about the importance of PITC could increase their willingness to routinely offer PITC to clients, which could significantly improve detection of HIV-infected individuals who are currently being missed by the health system.

Develop strategies to simplify the linking and CTC enrollment process
Participants discussed a range of experiences while trying to link to a CTC following diagnosis. Co-located HTC and CTC services facilitated same-day linkage to care for newly diagnosed clients. However, same-day linkages were not

Pre-ART care
Witnessing visible health improvements as a result of cotrimoxazole prophylaxis facilitated retention in pre-ART care services, but frequent cotrimoxazole stock-outs was noted as a main reason for disengagement from pre-ART care.

ART initiation, adherence and retention
Directives to change practices and behaviors, such as eliminating alcohol and reducing frequency of sexual intercourse, was discussed by clients as a barrier to retention in ART care. For female sex workers, this was an additional reason not to disclose their occupation to providers. However, many participants acknowledged the importance of ART and said that understanding HIV as a “normal” disease encouraged retention in care. Several factors affected engagement in CTC services at the facility level, including rigid policies surrounding appointments, ART initiation inconsistent with national guidelines and disrespectful treatment by service providers. Standardized referral/transfer systems, respectful treatment by service providers, and home-based care providers were viewed as facilitators to care and retention. In the community, traditional healers who treated PLHIV with traditional medicine and spiritual healing practices may prevent engagement in ART services, while social support was noted as a facilitator. Finally, access to income-generating opportunities was identified as a structural-level facilitator to adherence and retention in care.

Cross-cutting themes
Several important factors impacted engagement at all stages of the continuum of care. Service providers discussed burnout, demotivation and inadequate training which led to lower quality of care and disrespectful treatment of clients. In addition, lack of privacy and confidentiality at health facilities, patients not receiving needed services, poor client-provider communication, and long wait times prevented engagement in HIV services. Stigma and discrimination were significant barriers at all stages of the continuum, as were long distances to HIV services and pervasive poverty. Cooperation between government officials and traditional healers were cited as possible solutions to greater engagement in care throughout the continuum.

Recommendations
Understanding factors which motivate and prevent PLHIV from engaging in and adhering to each step along the continuum of care is critical to successful HIV treatment and prevention efforts. This study provides a multi-level understanding of barriers and facilitators to engagement in HIV services along the entire continuum of HIV testing and linkages to care.
often possible. In many areas, HTC and CTC services were not co-located (especially at VMMC outreach sites and rural HTC and PMTCT facilities), requiring an individual to travel independently to a CTC to link to care and treatment services. Clients often encountered challenges during their initial CTC visit and were told to leave and return on another day due to restricted hours of operation, limited capacity for CTC enrollment and shortages of health care workers. There is a clear need to develop strategies to simplify the linking and CTC enrollment process to reduce facility-level barriers at this stage.

**Increase access to point of care CD4 testing**

A majority of study participants struggled to access to CD4 testing services due to broken machines or lack of reagents to run them properly. Point of care CD4 testing, which provides immediate results for use in patient care, could eliminate many of the logistical and operational barriers faced by study participants and improve linkages to care.

**Implement strategies to improve clinic efficiency**

Participants described long wait time, congestion, lack of privacy and confidentiality as barriers to retention in ART care. Expanding strategies to decrease congestion and improve clinic efficiency, such as offering three-month ART supplies to clinically stable patients and assigning groups of CTC clients to scheduled appointments throughout the day could improve clinic efficiency.

**COMMUNITY LEVEL**

**Address community-wide stigma and discrimination**

Pervasive stigma and discrimination were widely discussed as barriers to engaging in HIV-related services and a main reason that people avoid HTC. An HIV-positive diagnosis was often perceived as shameful and many participants feared HIV-related stigma. In order to avoid being seen by people they knew, several participants traveled to more distant clinics, incurring greater costs and travel time. These findings highlight the need for stigma-reduction strategies to accompany HIV prevention and treatment efforts in Iringa.

**Enhance linkages between the health system and PLHIV support groups**

Participation in PLHIV support groups was discussed as a positive experience by all support group members. Members of these groups had often publicly disclosed their HIV status and were less likely to site community-wide stigma as a barrier to their engagement in HIV services. In addition to social support, each support group in this study participated in some kind of savings or income generating project. Efforts to strengthen the linkage between HIV services and support groups could increase membership in these groups among PLHIV.

**Improve communication between government and alternative healers**

Visiting traditional and spiritual healers were common alternate pathways discussed by participants in this study. We found evidence of some collaboration between government officials and traditional healers in Iringa, but did not find any evidence of communication with spiritual healers. Increased engagement between government officials and alternate healers could further encourage dialogue and, engagement with the health system could initiate linkages between spiritual healers and the health system.

**Structural level**

**Improve supply chain management systems**

Persistent stock-out of supplies, including HIV test kits, CD4 reagents and cotrimoxazole were common throughout the duration of this study. Strengthening the supply chain management system for these products should be prioritized to eliminate common stock-outs in health facilities, as not only are patients not receiving treatment due to these stock-outs, but people are losing faith in the health system in general.

**Improve provider-client communications**

Negative provider attitudes and disrespectful treatment of clients was discussed as the main reason for disengagement from CTC services among ART-initiated individuals. These findings point to a clear need to improve provider-client interactions as a means of reducing disengagement from care. CTC clients reported the most serious conflict with service providers after missing an appointment or arriving late. More flexibility in scheduling patient appointments could decrease some of this conflict and better accommodate client needs. Health-system level changes to increase human resources, provision of adequate support systems, and ongoing training and supervision are needed to increase service provider motivation and improve interactions with clients.

**Provide ANC services to all women, regardless of male involvement**

Though not national policy in Tanzania, the sites participating in this study required pregnant women to bring their partners to ANC services for couples testing. This created a serious barrier to both HIV and ANC services. Multiple women, including several female sex workers, reported being denied ANC services, or knowing women who avoided ANC services if they were too scared to ask their husbands to attend or if they did not have a partner. Male participation at ANC should be encouraged but not required, per national guidelines.

**Explore community-based HIV service delivery models**

Long distance to facilities, limited or no transportation and lack of money for transportation and other associated costs were structural-level barriers to engagement in HIV services. Participants commonly requested HIV services at the community-level as a way to increase access for rural populations and decrease congestion at current facilities. Community-based HIV service delivery, including home-based HIV testing and counseling and home-based ART initiation and delivery could remove some of these structural-level barriers and strengthen linkages to care throughout the HIV care continuum. Covering transpor-
tation costs or providing economic support to defray the costs of accessing clinical care may also be relevant given these structural barriers.

**Conclusion**

This study presents a multi-level framework for understanding barriers and facilitators to engagement in the HIV continuum of care in Iringa, Tanzania. Findings highlight the complex, multi-dimensional dynamics that individuals experience throughout the continuum of care and underscore the importance of taking a longitudinal and multi-level perspective to understand this process. Addressing barriers at each of these levels is important to promoting increased engagement throughout the continuum of care.