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Interprofessional Fellowship Training for Emerging Global Health Leaders in Africa to Improve HIV Prevention and Care: The Afya Bora Consortium

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Afya Bora Consortium Working Group**Abstract**

HIV continues to challenge health systems, especially in low- and middle-income countries in Sub-Saharan Africa. A qualified workforce of transformational leaders is required to strengthen health systems and introduce policy reforms to address the barriers to HIV testing, treatment, and other HIV services. The 1-year Afya Bora Consortium Fellowship in Global Health capitalizes on academic partnerships between African and U.S. universities to provide interprofessional leadership training through classroom, online, and service-oriented learning in 5 countries in Africa. This fellowship program prepares health professionals to design, implement, scale-up, evaluate, and lead health programs that are population-based and focused on prevention and

control of HIV and other public health issues of greatest importance to African communities and health service settings. Afya Bora nurse fellows acquire leadership attributes and competencies that are continuously and systematically tested during the entire program. This multinational training platform promotes interprofessional networks and career opportunities for nurses.

Keywords

African nurse leaders; Afya Bora Consortium; global health leaders; global partnerships; HIV care; interprofessional training

The burden of HIV continues to challenge health systems in high-income as well as low- and middle-income (LMIC) countries, especially those in Sub-Saharan Africa. While the United Nations Millennium Declaration of 2000 (United Nations, 2000) drew global attention to HIV and other communicable diseases by establishing the millennium development goal 6 (MDG-6 - Combating HIV/AIDS, malaria, and other diseases), several countries still face high disease burdens directly related to HIV, and even more so in maternal and newborn populations (Lomazzi, Borisch, & Laaser, 2014). The success of many screening and scale-up treatment initiatives has improved HIV management and treatment globally, but has not achieved the reach of MDG 6 in Africa. As of 2014, the World Health Organization (WHO, 2014) reported that Africa was home to more than 60% of people living with HIV in the world and where 72% of HIV-related deaths occurred. For nations falling short of meeting MDGs, Subramanian, Naimoli, Matsubayashi, and Peters (2011) have questioned whether the right models were in place to scale-up interventions. They proposed a practical approach suggesting more promising inroads to coming up with solutions by “learning by doing” in ways that engage key stakeholders, use data to address constraints, and consider pilot or small scale projects to bring about needed changes in health care.

While advances in HIV testing continue to evolve, several areas are in need of improvements. For example, in certain parts of the African continent, lack of access to HIV testing is a direct result of deficiencies in procurement, supply, and management (PSM) distribution of testing supplies. Proper communication channels between key players in various regions and their central administrations, unclear definition of roles and responsibilities, and ambiguous costing of PSM and distribution are all contributing factors to poor access to testing supplies as well as to antiretroviral therapy (ART). Nurses, as frontline care providers, assume a major role in provider-initiated HIV testing and counselling (PITC), but lack of time, staff, space, and resources, and work demands often operate to deter PITC (Evans & Ndirangu, 2009). In Sub-Saharan Africa, nurses have expressed the need for training and managerial support and health systems reform to promote PITC (Evans & Ndirangu, 2009). African health care leaders, therefore, require training to better understand the complexities of health care delivery, to strategically plan, implement, and test more efficient and sustainable PSM and distribution mechanisms, and to affect policy reforms to positively influence changes at the point of care (Evans & Ndirangu, 2009; Wheeler, Wolf, Kapesa, Surdo, & Dallabetta, 2015). WHO has emphasized that transforming and scaling up health professions education is dependent on relational

activities; interactions between education, health, and other sectors; and embedding training for leaders in health care settings (WHO, 2013).

The Afya Bora Consortium

The Afya Bora Consortium was formed as a response to the urgent need for qualified African health care leaders. In 2008, leaders from eight academic health professions institutions, four in Africa paired with four in the United States, convened to envision a new partnership to advance training in global health leadership (Daniels et al., 2014; Farquhar & Nathanson, 2011). Each of the four Africa-U.S. partnerships in Botswana, Kenya, Uganda, and Tanzania (Figure 1) have had a long-standing record of productive collaborations in research, education, and training of health professions students and faculty. A fifth partnership was created recently when the University of Buea in Cameroon joined the consortium.

During the early conception of a formal infrastructure to unite U.S. and African academic partners, the name Afya Bora (Swahili for “Better Health”) was adopted to reflect an Africo-centric initiative that would leverage existing partnerships in a global consortium to build a sustainable training program for health care leadership. The program was envisioned to develop a powerful collaboration by merging and consolidating education, training, and research experiences and resources. A focused mission was set to prepare future global leaders for careers in health care settings and governmental and non-governmental organizations (NGOs) to transform health care delivery systems and serve health care communities.

Afya Bora used academic partnerships to engage nursing, medical, and public health schools from multiple African and U.S. universities (Figure 1) to provide the breadth and depth of leadership training beyond the reach of any individual institution or discipline. The Fellowship in Global Health Leadership program employs innovative and experiential approaches to training that promote the integration of core leadership topics into academic and service-oriented leader mentorship training at five African institutions. Leadership programs in Africa that augment academic degree granting programs can have a profound effect on expanding a workforce of emerging transformational leaders capable of health systems reform. The ability to bridge learning from academic institutions with service-oriented training in leadership development, program management and evaluation, and quality improvement and outcomes measurement is critical to prevent and control HIV in African countries. Alliances between African and U.S. academic institutions are ideally suited to provide such training because they create effective interprofessional and nursing collaborations between U.S. and African universities, government organizations, NGOs, and health care settings (Daniels et al., 2014; Farquhar & Nathanson, 2011; Stringer et al., 2014). These partnerships capitalize on shared human, financial, and institutional resources to scale-up health professions leadership training and its impact on transformational changes in health care delivery. In addition, professional networks can form to expose trainees to a cadre of researcher and clinician mentors to support leadership training.

Afya Bora Fellowship in Global Health

In 2010, the Afya Bora Consortium piloted the first cohort for leadership training. Following a successful trial, in 2012, the consortium was fully funded for a 5-year period (July 2012 to June 2017) by the Health Resources and Services Administration (HRSA), President's Emergency Program for AIDS Relief (PEPFAR), and the Office of AIDS Research (OAR), a unit of the U.S. National Institutes of Health. Working group members from each African and U.S. academic institution have served as the leaders for the consortium in collaboration with health care leaders across the African country sites, who assume roles as mentors for fellows. More in-depth information about the Afya Bora Consortium can be found at <http://afyaboraconsortium.org/new/aboutUs.html>

Afya Bora offers an innovative, comprehensive, and interprofessional curriculum and service training experiences to prepare future African and U.S. health care leaders to affect systems-based changes in the delivery of HIV care. The 5-year specific aims of the fellowship program, along with measures of success, are outlined in Table 1. Each year nurses, physicians, and public health professionals are selected for a 1-year fellowship from regional Centers for Disease Control and Prevention (CDC) offices, Ministries of Health, and participating universities in Africa and the United States. Eligible applicants must be citizens of Kenya, Botswana, Uganda, Tanzania, Cameroon, or the United States, and must meet one of the following education requirements:

- Medical applicants need to have a MD or MBChB with a MMed, MPH, or Master's degree in a related field.
- Nursing applicants need to have a Master's degree in Nursing, Public Health, or a related field (PhD preferred), or substantial work experience.
- Other Public Health professionals (those without a clinical degree) must have an advanced degree in Public Health or a related field.

The Afya Bora Fellowship in Global Health offers post-graduate formal leadership and engagement training through a series of innovative skills-building modules and placements in Ministry of Health or health-oriented NGO Attachment Sites that allow intensive mentorship from U.S. and African expert researchers, clinicians, and influential leaders. Equally important, the multinational training platform promotes interprofessional networks that position fellows for career opportunities that might otherwise not be realized or possible. Of 31 fellows who have completed the Afya Bora program and who responded to a survey in 2013 (response rate 74%), 21 (68%) reported career advancement, and of those, 76% attributed their promotions to experience gained from completing the Afya Bora fellowship. U.S. fellows immersed in African health care settings fully appreciated the realities facing African health systems when responding to HIV, and they, too, have developed productive relationships with African colleagues working side-by-side "in situ." Because of the Afya Bora fellowship, U.S. fellows contemplate careers in African countries.

The Afya Bora fellowship is predicated on Knowles' classic theory of andragogy, which posits that adult education is most efficient and effective when learners are self-directed, draw on their personal experiences, are motivated, and can immediately apply learning to

relevant problems faced by the learner (Knowles, 1970). The 3 months of didactic content combined with 9 months of practicum experiences in Africa (referred to as Attachment Sites or health service sites) bridge classroom and service-based learning. Mentorship from Afya Bora Working Group members, faculty from African institutions, and influential leaders at health service sites ensure the success of fellowship experiences. Learning is augmented by ongoing, independent-guided, Web-based modules with opportunities for online discussions with faculty experts (Daniels et al., 2014). Learning modules are used to organize instruction content in topical areas such as Leadership, Communication, Project Management, Health Information Systems, Monitoring and Evaluation, and Implementation Science. Each module maximizes opportunities for case-based, participatory and interactive learning, and the application of content to real-life situations. All modules and training resources are accessible at <http://afyaboraconsortium.org/new/materials.html#modules>.

Service learning occurs during 9-month practicum experiences. Immediately after entering the fellowship, information is provided about Attachment Sites to help fellows select sites where they have the flexibility to focus on areas of interest for their fellowship projects. Fellows are assigned to Attachment Sites with suitable and accessible mentors who work with the fellows to facilitate their project work. Fellows are encouraged to target HIV testing, care, and/or populations of greatest importance to improve health outcomes and the quality and efficiency of care delivery at the Attachment Sites. Table 2 illustrates the number of projects and specific topics that fellows have addressed in the past. Examples of the scope, depth, and breadth of projects conducted in specific African countries by the 2013–2014 fellow cohort are shown in Table 3.

Afya Bora Narrows Gaps in Leadership Training

Effective leadership has been identified as key to promoting health care reform in low income countries (Senkubuge, Modisenyane, & Bishaw, 2014). A recent systematic review of transformational leadership training for physicians revealed few interprofessional and transprofessional training programs in the United States and no such programs in Africa (Straus, Soobiah, & Levinson, 2013). The Afya Bora fellowship fills a major gap in leadership training for African and U.S. health professionals working in global health. These gaps include training in interprofessional leadership, health system strengthening, transformational leadership, and innovative leadership.

Interprofessional leadership training

Health care professions pre- and post-licensure academic programs, both in the United States and Africa, focus on discipline-specific education, which often leads to education that occurs in silos. In general, African academic curricula are, by design, often inclusive of classroom-based didactic content in the traditional pedagogy for academic degrees within established disciplines. Practical and service experiences dedicated to leadership development may be limited and, as such, curricula are often devoid of formal training in leadership science, management, implementation science, program evaluation, health policy, and other critical areas that are requisites for effective leadership. Promising graduates of academic programs may not have sufficient exposure to governmental organizations or

NGOs to launch careers in Ministries of Health or other prominent organizations involved in delivery of prevention, curative, or disease management health services.

A unique feature of the Afya Bora Fellowship in Global Health is its interprofessional model for classroom and service learning. The Afya Bora Working Group and affiliate members represent nursing, medicine, and public health disciplines, and have expertise in epidemiology, biostatistics, implementation science, quality science, outcomes research, and executive and program leadership. The consortium is structured to provide interprofessional fellowship training beginning with the first module on leadership led by the Dean of the Faculty of Health Sciences at the University of Botswana, who, through his vast professional networks throughout Africa, runs interactive sessions with accomplished influential leaders from multiple disciplines. Other faculty bring discipline-specific perspectives into dialogues and debates about strategies and solutions for health systems thinking about change. Mentors at Attachment Sites have diverse academic credentials and are expert clinicians, researchers, and/or health care administrators of health systems and programs for HIV. They serve as advisors and facilitate access to data, populations, clinicians, and resources to support fellow projects. The fellow cohorts are equally diverse, and Afya Bora nurse fellows, who comprise a substantial number of health professionals, enter the program with varied education backgrounds and employment experiences.

Interprofessional education (IPE) and training in global health is paramount to the preparation of future health leaders. WHO (2006; 2010) has endorsed IPE globally, especially in resource constrained countries, to improve the efficiency of learning and to address the Human Resources for Health (HRH) crisis. However, a recent systematic review of 40 publications on IPE as lessons for developing countries yielded only 2 from universities in LMIC countries, including the University of Namibia, which has a partnership between the Schools of Medicine and Pharmacy (Sunguya, Hinthong, Jimba, & Yasuoka, 2014). In the United States, for example, the Johns Hopkins University School of Medicine in Baltimore, Maryland, offers an elective in interprofessional global health for students in the Schools of Nursing, Medicine, and Public Health (Moran et al., 2015). Similarly, Yale University in New Haven, Connecticut, has expanded opportunities for interprofessional global health education across health schools by also creating an elective course option (Peluso, Hafler, Sipsma, & Cherlin, 2014). Yale University faculty have examined students' perceptions of such education and models for curricula noting that student-faculty collaboration and professional development are key themes for establishing meaningful interprofessional partnerships in global health education. The Afya Bora fellowship program has established IPE and interprofessional training beyond degree granting programs and the classroom, and has embedded learning in interdisciplinary African health care settings and organizations such as NGOs and CDC sites.

According to a recent report, leaders from across the world envision IPE and training as transformative learning and a requisite for transforming health systems (Frenk et al., 2010). Instructional reforms rely on interdependence in education, which will require a new professional era to break down professional silos, enhance collaborative and non-hierarchical relationships, engender high performing teams, exploit the power of information technology for learning, and emphasize faculty development (Frenk et al., 2010). The

Institute of Medicine's Global Forum on Innovation in Health Professional Education (2013) calls for actions to design, implement, and test innovative interprofessional models for global health education with partners outside of the United States. The report also underscored the need for these models to reflect the diseases and societies that trainees will eventually serve, which is exactly what the Afya Bora fellowship program service learning model accomplishes.

Health systems strengthening

A recent report from the U.S. Agency for International Development (USAID, 2015) has called for action to examine infrastructures of health systems to improve health and to generate evidence to support leaders of LMICs in implementing strategic initiatives to build stronger health systems to promote the health and wellbeing of their citizens. The report analyzed systematic reviews of health systems ($n = 66$), and concluded that health systems strengthening played a pivotal role in achieving priority health goals. The report consolidates health systems strengthening functions believed to be of greatest importance and impact in transforming health systems. These include, but are not limited to, finance, governance, information, and service delivery (USAID, 2015). Each of these functions was further defined by types of interventions substantiated by research that resulted in desired outcomes such as improved service quality, increased in-service utilization, and reduced morbidity and mortality. Success in systems strengthening for education in under-resourced areas of Sub-Saharan African countries has been a priority of partnerships between U.S. and African academic institutions through faculty collaborations to improve the training of nurses and physicians (Kolars et al., 2012). International health school partnerships are striving to teach students to work in interdisciplinary teams and learn management skills. However, more work must be done to determine how this type of training will strengthen health care systems.

The development, implementation, and evaluation of service-oriented projects conducted by Afya Bora fellows generated evidence for small tests of change. Afya Bora fellows learned to do rapid situational analyses that allowed them to identify rate-limiting steps to their implementations and to develop measures of success for their projects. The results of these projects have been used to improve efficiencies in HIV care and testing, overcome barriers to access to care, and inform new health policies. In these ways, the Afya Bora Fellowship in Global Health used the kind of model suggested by Subramanian et al. (2011), who contended that "learning by doing" was an effective method for health system change. The type of projects that Afya Bora fellows developed and implemented (Table 3) have been aligned to health system strengthening interventions that result in health impacts and outcomes in areas of improved service provision/quality, increased financial protection, increased service utilization, and uptake of healthy behaviors (USAID, 2015).

Transformational leadership training

Transformational leaders are required to transform, reform, and strengthen health systems. Nurses, as the largest global workforce and backbone of health systems worldwide, are key components in transformation (Ferguson, 2014). To prepare transformational leaders, health profession education must be revamped to include new curricular frameworks for leadership

training and experiences, and organizations and initiatives must provide formal programs to expand the scope and influence of global nurse leaders. The International Council of Nurses is an international pioneer ensuring that global nurse executives possess the knowledge, skills, and abilities to lead effectively, and are qualified to meet global health challenges (Ferguson, 2015). The Nursing Education Partnership Initiative (NEPI) and Medical Education Partnership Initiative (MEPI) strive to strengthen and transform education in nursing, medicine, and health sciences in Sub-Saharan African countries burdened by HIV to prepare a more qualified health professions workforce to confront the challenges of HIV care (Glass, Razak, & Said, 2014; Goosby & von Zinkernagel, 2014; Middleton et al., 2014). NEPI and MEPI were built on the assumption that African academic institutions must excel in education and service. NEPI has strengthened nursing education programs in Malawi, Lesotho, Zambia, Democratic Republic of Congo, and Ethiopia, and conducted work to build an evidence base to inform global policy guidance to scale-up nursing and midwifery education to prepare a more qualified nursing workforce (Middleton et al., 2014). NEPI supports the development of new Master's programs in nursing and midwifery, provides scholarships, addresses faculty development training, and facilitates regional faculty networks across schools of nursing.

The Afya Bora fellowship compliments these initiatives by helping health professionals design, implement, scale-up, evaluate, and lead health programs, particularly those that are population-based and focus on prevention and control of HIV and other public health issues of greatest importance to communities and health service settings.

Innovative leadership training

Innovative leadership is another requisite for introducing positive and sustainable changes in HIV care in African countries. A review by Kanki, Kakkattil, and Simao, (2012) highlighted examples from Botswana, Nigeria, and Uganda of leaders at all levels of government, organizations, academia, and health service successfully transforming health care systems to meet the demands for HIV care. In Botswana, leaders forged an academic partnership with Harvard University in the United States, which led to an HIV clinic for education and research. Nigerian leaders engaged the international community to scale-up HIV prevention and treatment programs and mounted countrywide outreach responses. Leaders from Uganda catalyzed community-level engagement in and ownership of a program to reduce HIV stigma and discrimination by breaking down barriers to HIV care. Innovation is a major part of the Afya Bora fellowship training. Fellows are encouraged to design innovative service-oriented projects with solutions that will have the greatest and most lasting impact for improved systems redesigns, workflow and processes, and population outcomes.

Afya Bora Fellows

To date, the consortium has reached its specific target to recruit 100 fellows. Table 4 illustrates the numbers of male and female fellows by discipline. The composition of Afya Bora fellows shows an encouraging trend toward narrowing the gender gap for rising African health care leaders with 64 female Afya Bora fellows. The gender gap in HRH in Africa continues to pose a serious challenge to health systems across the continent. The

gender gap is caused by factors such as the heavy burden of HIV on women on the continent and socio-cultural and economic factors that relate to the African context. Experts in HRH have indicated that health workforce gender imbalances are a major challenge for health policy-makers (Zurn, Dal Poz, Stilwell, & Adams, 2004). Additionally, improving gender equity can strengthen workforce numbers, distribution, and skill mixes, but human resource policy and planning failures have been traced to HRH leaders' failures to account for gender (Reichenbach, 2007). Downs, Reif, Hokororo, and Fitzgerald (2014) summarized the root causes for the underrepresentation of African women as global health leaders. The obstacles they found included challenges with career advancement due to discrimination, salary inequities between men and women, difficulties balancing family responsibilities, and lack of women role models. The Afya Bora fellowship program empowers women with solutions to overcome these barriers, and insures that women benefit from exposure to and mentoring from successful African women role models who are Afya Bora Working Group members, collaborators, and Attachment Site mentors.

Of the 100 Afya Bora fellows, 43 have been nurses, and 10 of these held doctoral degrees (PhD or DNP) when entering the fellowship; the others all had Master's degrees. The fellowship includes training that is directly aligned to what African nurse leaders believe to be most important to successful leadership careers in health policy. Shariff (2015) conducted a Delphi survey with 78 national nurse leaders from Kenya, Tanzania, and Uganda who served as informants to define the attributes of nurse leaders needed to influence health policy. Consensus revealed essential leadership qualities including the abilities to influence, communicate effectively, build relationships, feel empowered, and demonstrate professional credibility. Afya Bora nurse fellows acquired these leadership attributes throughout training; competencies in these areas were continuously tested through module, case-based, and interactive learning and during service-oriented experiences in HIV population health.

Program Evaluation

Formal monitoring and evaluation have been critical components of the Afya Bora fellowship program since its inception. Each module is evaluated through participant feedback as well as by the direct observation of a program evaluator. Each cohort of fellows evaluates their Attachment Site experiences, including the mentoring they received, at the mid-point and end of the year. These data were analyzed and reported back to Afya Bora leaders in real-time for the purpose of program improvement.

Additional evaluation methods were used to assess program effectiveness as well as support the fellows' learning experiences. Fellows completed bi-weekly journal entries, which prompted reflection on the leadership the fellows observed and practiced at their attachment sites. The journaling activity thus encouraged the development of metacognition (Donovan, Bransford, & Pellegrino, 2000; Moon, 1999) and, because the entries were submitted to the evaluation team, the journals also provided evidence of leadership development (Daniels et al., 2014; Isaac, Kaatz, Lee, & Carnes, 2012). Fellows also completed skills logbooks, which included performance domains linked to learning module competencies. The logbook helped guide fellows to practice essential leadership skills during the attachment experience, and

the completed logbooks, signed by Attachment Site mentors, provided evidence of the fellows' progress and how well they were able to implement didactic and service learning.

Finally, to evaluate the impact of the Afya Bora program, a bi-annual survey was sent to alumni to collect information on what, if any, improvements the fellows had made to health systems in their home countries. While self-report is a common method of leadership training evaluation (Daniels et al., 2014; Fernandez, Noble, Jensen, & Steffen, 2015), Afya Bora attempted to reduce inherent limitations of the method by asking fellows to provide concrete details of changes they had catalyzed as well as metrics of their successes. Competency-based assessments were also conducted with fellows specific to modules and service learning experiences in specified content and performance domains reflected in the overall fellowship program: leadership and management, health systems management, health service delivery, program evaluation, communications, bioinformatics, and research. Fellows regularly completed evaluations of modules, faculty presenters, and Attachment Site mentors.

As part of the ongoing monitoring and evaluation process, the achievement of indicators aligned to specific aims were regularly assessed (Table 1). For example, Aim 2 specifies building capacity with African partnerships to provide leadership training. The expansion of new partnerships is now being forged in Cameroon at the University of Buea and the Cameroon Baptist Mission. For Aim 3, a comprehensive survey of alumni has been conducted to assess the success of past fellows in securing leadership positions and the fellows' overall impact on health systems.

Based on ongoing evaluation data from fellows, faculty, and mentors, teaching and learning strategies have been introduced, modified, and enhanced to strengthen the training experience. For example, fellows have indicated the need for more interactive learning. Faculty have transitioned from reliance on PowerPoint slide presentations for didactic classroom instruction to seminar formats, case-based learning, and reflective learning achieved by fellows sharing their experiences at Attachment Sites. Fellow collaborative learning groups are used to develop, dissect, and analyze solutions to complex systems issues, challenges, and barriers to health care. More interactive discussions with African health care leaders have been used to expose fellows to role models influencing change in health care systems. More faculty have been assigned to modules to bring diverse perspectives on content and to provide more faculty-fellow interactions. Faculty evaluations of modules for data management, analytical techniques, and software programs reflected the need to tailor learning to varying levels of expertise among the fellows. Teaching is now directed to basic and more advanced learners. Service-based learning has been strengthened by recruiting more Working Group members from Africa and Attachment Site faculty mentors. Attachment Site mentors have conducted more debriefing sessions with fellows to critically analyze effective and ineffective leadership strategies. Afya Bora mentors encourage stronger engagement with health care professionals and administrative personnel at Attachment Sites to ensure feasible solutions for fellow projects to ensure success in improving health systems and HIV care delivery.

Conclusion

The Afya Bora fellowship program trains leaders from public, private, and academic organizations by empowering partnering universities to offer leadership training directly relevant to the needs of non-academic organizations, including Ministries of Health. Work conducted by Afya Bora fellows has made meaningful contributions and impacted HIV prevention and services at Attachment Sites. In this way, the fellowship's goals have been synergistic with recent initiatives to build training capacity at African nursing and medical schools, including those of the International Council of Nurses, NEPI, and MEPI. While the International Council of Nurses, NEPI, and MEPI have concentrated on implementing health programs within academic institutions, the Afya Bora Fellowship in Global Health takes this approach one step further by creating leadership training opportunities and resources that can be adapted to both university-based education and post-graduate professional development. As other health training programs evolve in Africa, it is anticipated that the fellowship will be a model program for new initiatives and will maximize the success of all health training programs through collaboration and shared resources.

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Key Considerations

- Key areas to improve HIV care include but are not limited to: access to care, ART adherence, testing, health, health systems improvement through workforce development, and capacity building.
- Afya Bora’s interprofessional training is specifically geared toward addressing HIV in Africa.
- The Afya Bora training model has empowered nurses and women who are critical to the health workforce in Africa to be transformational leaders capable of being effective change agents in HIV prevention and care.
- The Afya Bora interprofessional and innovative leadership training through didactic module, case-based, and practical onsite training in select Attachment Sites addresses various components of HIV care that can lead to health system strengthening.

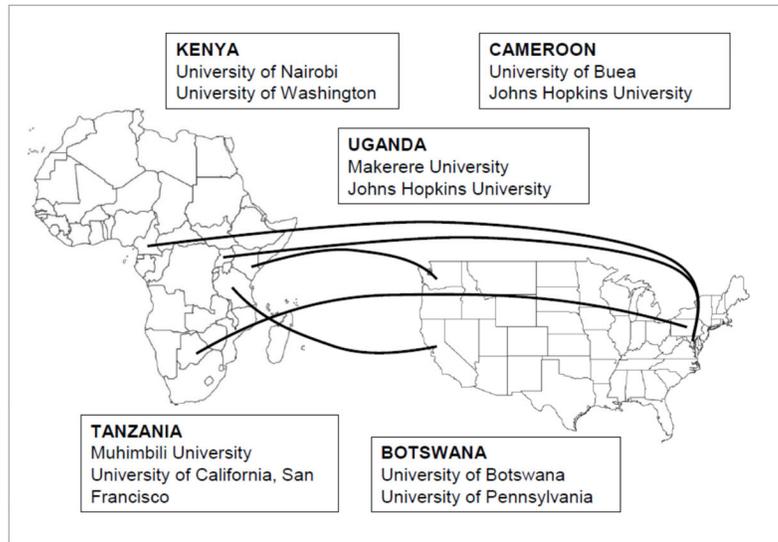


Figure 1.
Afyra Bora Consortium Academic Partnerships.

Table 1

Specific Aims for the Afya Bora Fellowship in Global Health

Specific Aims	Indicators
AIM 1: Recruit and train 100 highly qualified African and U.S. fellows	<ul style="list-style-type: none"> • Number and qualifications of applicants from medicine, nursing, other health fields • Qualifications and gender of fellows selected to participate • Learning objectives achieved • Practical skills gained by fellows • Performance objectives achieved by fellows at attachment sites • Frequency, duration, and quality of mentorship
AIM 2: Build capacity with African partnering institutions to provide leadership training	<ul style="list-style-type: none"> • Content and innovative teaching methods included in modules • Background and experience of African and U.S. instructors • Relevant attachment sites and meaningful attachment site support • Quality and relevance of fellow attachment site experiences to public health priorities • Number of African instructors trained and courses transferred
AIM 3: Demonstrate short- and long-term impact of the program	<ul style="list-style-type: none"> • Feedback provided to the program leads in real time and incorporated to improve project implementation • Interdisciplinary collaboration and involvement in the Afya Bora • Consortium post fellowship • Institutionalization of Afya Bora fellowship program in host institutions • System in place to facilitate networking of Afya Bora alumni, faculty, and mentors • Afya Bora fellowship influence on leadership positions of alumni • Alumni impact on institutional and health systems

Table 2

Attachment Site Projects Related to Key Issues in HIV Testing, Care, or Populations

Number of Projects	Subset of Topics
3	Implementation of Option B+
12	Early infant diagnosis and PMTCT
3	Access to testing
4	Care and treatment for pediatric HIV infections
7	Adult access to care and treatment
6	Care and treatment services in key populations (fishers, adolescents, GBV survivors)
3	ART adherence and treatment outcomes

Note: Option B+ = Life-long ART to all pregnant and breastfeeding women living with HIV regardless of CD4+ T cell count or World Health Organization clinical stage; PMTCT = Prevention of Mother-to-Child Transmission; GBV = Gender-based Violence; ART = Antiretroviral Therapy.

Table 3

2013–2014 Afya Bora Fellow Projects

Country	Attachment Sites	Projects
Uganda	Medical Research Council/ Virus Research Institute	Access to HIV prevention methods for fishing communities in Uganda
Botswana	BUP	Cryptococcal meningitis characterization and prevention in Botswana
Botswana	I-TECH	Evaluating external quality assurance for rapid HIV testing in Botswana 2008–2014
Botswana	Ministry of Health	Perceptions of school-going adolescents about substance abuse in Ramotswa
Botswana	Ministry of Health	Integrated management of HIV and Non- Communicable Diseases: Knowledge, attitudes, practices, & experiences of health care workers in Gaborone, Botswana
Kenya	AMREF	Quality improvement of care and treatment services at Comprehensive Care Centre in Samburu County Referral Hospital in Kenya
Kenya	AMREF	Immunological and virology all outcome among HIV patients in Kibera AMREF ART Project
Kenya	CDC-Kisumu	HIV service delivery, uptake and gaps among Fisher-folk in the Nyanza region
Kenya	CDC-Nairobi	Kenya's journey towards the 2015 eMTCT target
Kenya	I-TECH	Improving the quality of data available in Kenya EMR for CDSS
Kenya	Kenyatta National Hospital Comprehensive Care Clinic	The impact of HIV in-service training programs on health care worker knowledge, attitudes, and practices at the Kenyatta National Hospital
Tanzania	East, Central, and Southern African College of Nursing	Experiences from supporting CPD for nurses and midwives in Tanzania through electronic Website
Tanzania	Management & Development for Health	"Who should disclose?" Inconsistencies in child HIV positive status disclosure by health care providers in Dar es Salaam, Tanzania
Tanzania	Ministry of Health and Social Welfare	Assessment of the magnitude of second line ART failure in HIV-infected patients in Dar es Salaam
Tanzania	Ministry of Health and Social Welfare	Prevalence of HIV infection and factors determining early infant diagnosis in Lake Zone, Tanzania
Tanzania	Ministry of Health and Social Welfare	Assessment of quality of PMTCT program data in Tanzania
Uganda	Infectious Diseases Institute	Motivators and barriers to VMMC in partners of women attending ANC in Kampala
Uganda	Ministry of Health	Assessment of factors associated with HIV transmission in HIV-exposed infants at Jinja Regional Referral Hospital, Uganda
United States	AMREF	Safe Birth Matters: Evaluating the acceptability, usability, and feasibility of WHO safe childbirth checklist tool in Shinyanga Regional Hospital

Note: BUP = University of Botswana and University of Pennsylvania; AMREF = African Medical and Research Foundation; CDC = Centers for Disease Control and Prevention; I-TECH = International Training & Education Center for Health; eMTCT = elimination of Mother-to-Child Transmission; EMR = Electronic Medical Record; CDSS = Clinical Decision Support System; CPD = Continuing Professional Development; PMTCT = Prevention of Mother-to-Child Transmission; ART = Antiretroviral Therapy; VMMC = Voluntary Medical Male Circumcision; ANC = Ante-Natal Care; WHO = World Health Organization.

Table 4
Distribution of Male and Female Fellows by Country Citizenship and Discipline

	Males (<i>n</i> = 36)			Females (<i>n</i> = 64)			Total
	Nurses	Physicians	PH	Nurses	Physicians	PH	
United States	1	2		10	1		15
Botswana		2		12	3	1	18
Kenya	3	7		8	9		27
Uganda	4	6		3	6		19
Tanzania	1	8	1	1	9		20
Cameroon		1					1
Total	9	26	1	34	28	1	100

Note: PH = Public Health