

Developing an inter-professional transition course to improve team-based HIV care for Sub-Saharan Africa

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Abstract

Background With funding from the Health Resources Service Administration (HRSA), a consortium of health professional training institutions from Africa developed HIV-specific, inter-professional, team-based resources to better support trainees during the transition period between pre-service training and professional practice.

Methods Ten faculty members representing nine medical and nursing schools in sub-Saharan Africa (SSA) developed a training package of modules focused on core clinical, public health, interprofessional education (IPE), and quality improvement (QI) domains related to HIV service delivery. All modules were targeted at newly qualified health care professionals and intended to be taught in workshops meant to complement existing institution specific HIV-curricula.

Results Between April and July 2019, a comprehensive case-based HIV training package was developed to support trainees in transition from pre-service training to independent professional practice. Each module was intended to be delivered in an inter-professional format and addressed different elements of inter-professional practice.

Conclusions To our knowledge this is the first IPE HIV-specific curriculum explicitly focused on enhancing the quality of training provided to graduating health care professionals working in SSA. The collaborative, cross-institutional, inter-professional approach to curriculum development provides a benchmark for how best-practice approaches to education can be rapidly disseminated in SSA.

Background

Tremendous progress has been made to end the HIV epidemic in sub-Saharan Africa (SSA); unfortunately, HIV remains responsible for 660,000 deaths each year.[1] To maintain gains made to date, countries with a high HIV burden require a skilled health professional workforce to deliver sustainable, high quality care. The Medical Education Partnership Initiative (MEPI) and the Nursing Education Partnership Initiative (NEPI), both funded by the United States President's Emergency Fund for AIDS Relief (PEPFAR) and the National Institutes of Health (NIH) between 2010 and 2015, exemplify how targeted investment of resources has led to improvements in pre-service training, retention of health care workers, and the provision and enhancement of research capabilities.[2]

Despite advances made with programs such as MEPI and NEPI, gaps persist in the development of the health professional (HP) workforce in many SSA countries.[3] To bridge these gaps, SSA countries need to optimize the quality of health services delivered, recognize the synergy that effective team-based care affords, and support trainees in the vulnerable transition from school to practice. Investment in high-quality pre-service training is also motivated by the goals of achieving epidemiologic control and consolidating existing investments. To this ends, PEPFAR has repeatedly emphasized the importance of training the next generation of health professionals as crucial to ensuring the sustainability of HIV programs that have been implemented over the last fifteen years.[3]

Inter-professional training modalities that can enhance team-based HIV care, while also enabling efficient use of training resources, are likely to be of high impact in resource-constrained high HIV burden settings. Furthermore, targeting training resources at early career professionals, especially those about to transition from pre-service training into independent professional practice is also likely to be of high-impact, given the importance of this crucial transition period in the professional development of early career health professionals.[4]

To strengthen inter-professional HIV training for health care professionals, the network of African nursing and medical schools, (AFREhealth), in partnership with the University of California, San Francisco and with funding from the U.S. Health and Resources Services Administration (HRSA) implemented a novel approach to HIV training across 20 HP training institutions and their affiliated partner institutions in 14 SSA countries in 2019 (Fig. 1). Here we describe how this inter-professional approach to HIV training and health care, targeted at SSA health professionals in the transition between pre-service training and professional practice, was developed through a cross-country collaboration of health educators. In addition, we outline key lessons learned in developing this training resource, the anticipated impact of these innovations, and next steps in ensuring that high quality, inter-professional collaboration is hard-wired into clinical practice in high HIV burden settings across Africa. We highlight the different components of the curriculum development process, so that our approach can serve as useful model of evidence-informed inter-professional instructional design.[5]

Methods

Needs Assessment

Given the paucity of Africa-based literature on inter-professional curricula to improve HIV training for pre-service learners, we first surveyed health professionals from a subset of African HP training institutions affiliated with the AFREhealth network (n=30). Twenty-seven institutions responded (10 medical schools, 7 nursing schools, 5 allied health professionals training institutions). Of the 27 institutions, 81% (n=22) taught their students about HIV prevention, 89% (n=24) clinical management including antiretroviral therapy (ART) initiation and management, and 85% (n=25) pediatric HIV. Less than 65% (n=17) institutions trained graduates to integrate knowledge of inter-professional practice and/or the roles and responsibilities of different health professional cadres in clinical decision making, and only 26% (n=7) introduced any kind of quality improvement training into clinical training. Furthermore, only 22% (n=6) provided any kind of clinical support or resources to recent trainees after they graduated from pre-service training.

In addition to the survey, key informant interviews, conducted with fifteen individuals identified as experts in health education from across SSA, highlighted key themes including lack of support for HPs after graduation and recognition of large gaps between the HIV content learners were being taught prior to graduation and the breadth and quality of HIV care they were expected to deliver post-graduation.

Expert Panel and Curriculum Development

Informed by the survey data and key informant interviews, leading HP educators from across the AFREhealth network were invited to participate in a multi-disciplinary, multi-institution collaborative planning panel of HP educators from across the AFREhealth network. Twenty-one HP educators applied; applications were reviewed by an independent panel of health educators from the US-partner institution (UCSF), and nine were chosen to work alongside three educators from UCSF. In reviewing applicants, the independent panel prioritized selection based on ensuring an equitable mix of professional cadres and gender, as well as ranking applicants based on experience or expertise in teaching IPE or HIV content. Of the twelve who made up the expert panel, seven were physicians and five were nurses; eight were women and four were men. Five were experts in HIV. Nine medical and nursing schools from six SSA countries were represented.

The panel met in-person three times over a three-month period to develop an inter-professional curriculum, targeted at learners in the transition between pre-clinical and clinical training, to be deployed across pre-service HP training institutions in SSA. At the first convening, the team determined 17 HIV-specific topics that reflected commonly faced clinical or programmatic challenges (Table 1) and were determined to be issues of high programmatic priority for PEPFAR, based on PEPFAR's annual reports and funding priorities. Seventeen training modules were then developed informed by an evidence-based, step-wise process.[6] For each module, goals and objectives were determined; then, educational strategies and evaluation tools were applied to match the goals and objectives. All content was developed to optimize interprofessional engagement [6].

Each panelist elaborated on two modules, and weekly Zoom[®] (San Jose, California) meetings were held over a two-month period to provide feedback on each module. At a second meeting, each module was reviewed again; feedback regarding clarity, flow, and applicability was incorporated and both inter-professional and quality improvement focuses ensured (Table 2). Thereafter, all modules were peer-reviewed by independent topic experts from elsewhere in Africa and the USA. Peer reviewers provided rigorous assessment of both pedagogical and technical elements. The expert panel met one final time, to share the training tools with educators from twenty academic institutions from across SSA, at the annual AFREhealth symposium. (These twenty institutions were chosen by HRSA based on their participation in earlier MEPI and NEPI programs.[2]) This meeting provided the opportunity to acquaint others with the curriculum and to provide explanation as to how training of facilitators and training of learners could be implemented.

Results

Between April and July 2019, this comprehensive case-based HIV training package was developed to support trainees in transition from pre-service training to independent professional practice. Each module was intended to be delivered in an inter-professional format and to address different elements of inter-professional practice (namely, roles and responsibilities, values and ethics, teams and teamwork, and inter-professional communication). In addition, all modules focused on introducing learners to quality improvement tools relevant to HIV service delivery in SSA. Modules were intended to be delivered as 80-

120-minute case-based, interactive, small group workshops, composed of learners from different cadres learning together in small groups with oversight and instruction from facilitators from different cadres, with a suggested facilitator to learner ratio of 1 to 4–8. The materials (facilitator and learner guides, evaluations, and supplementary materials) are housed on a website and available for download (<http://stripe.afrehealth.org>). All partner schools are encouraged to adapt content to their different clinical settings and country guidelines and practice.

The impact of the training, in terms of implementation by pre-service training institutions and effect on learner knowledge and confidence, will be evaluated in the coming months. Learners will be assessed using pre- and post- multiple-choice knowledge assessments as well as pre- and post- Likert scales to better assess changes in learner confidence and comfort with HIV and inter-professional collaboration. Further analyses will be based on narratives, reflections, and focus group discussions both immediately after the workshop, but also at specific time points after the workshop. In addition, learners will evaluate the modules themselves and their facilitators, and facilitators will evaluate the modules.

To date, 20 pre-service institutions and 44 affiliated partner institutions (Fig. 1) have used the resource and over 300 educators and 3100 learners from across 14 countries have already received training in how to use these inter-professional training modules and will continue to implement these projects over the next six months. These trainings have been delivered in diverse settings, and preliminary feedback from both educators and learners has been overwhelmingly positive. The predominant, albeit preliminary, theme emerging from learners is increased motivation to participate in more inclusive, multidisciplinary approaches to clinical care in the future. While formal assessment of the participants is ongoing, many learners have also asserted that the training has increased their motivation to include interprofessional collaboration into their HIV practice through greater participation in relationship-building, multi-disciplinary team meetings, and fostering an environment of empowering collaborative clinical practice.

Discussion

To our knowledge, this is the first time an inter-professional HIV training curriculum has been adopted at scale across African pre-service institutions. Furthermore, it is unique in its focus on learners that are in transition between pre-service and independent professional practice. This inter-professional approach to curriculum development and pre-service learning offers a model that can be used to enhance training in other areas, topics, or disciplines of pre-service training in Sub-Saharan Africa.

Focus on transitional training

While transitional training has been increasingly adopted in diverse health disciplines, the vast majority of transition courses have focused narrowly on surgical or other procedural skills.[7] Furthermore, while curricula have been implemented to address the transition from student to resident physician in the US and Europe, this is the first time that a training resource like this has been developed for trainees from different cadres and in an African setting. In many settings in SSA, there are limited systems in place to support health professionals once they leave full time education. Moreover, the licensure requirements of

different cadres in different countries are variable, such that newly graduated health care professionals in various settings practice HIV care with sub-optimal oversight, support, or continuing professional development opportunities.[8] In such contexts, transition-specific education interventions can be an effective means of enhancing clinical practice by targeting learners at a critical time in their professional development.

Emphasizing inter-professional education

Recent reports[9] have called for renewed emphasis on inter-professional education as an effective means of enhancing health professions education. However, to our knowledge, there has been limited research exploring how to implement inter-professional training in African settings. We assert that inter-professional training is the kind of transformative educational resource that can break down professional silos while also enhancing collaborative and non-hierarchical relationships that have undermined HIV care in many high burden settings. We recognize that implementing effective inter-professional education can only occur with the buy-in of institutional leadership and with sufficient funding, and we were fortunate to have financial support from HRSA and enthusiastic endorsement of deans of nursing and medical schools across all participating countries. Nonetheless, with institutional support and strong local leadership, this approach to learning can be adapted and implemented at minimal cost and is well suited to resource-constrained settings.

Implementing effective IPE also demands availability of faculty competent to lead inter-professional trainings, appropriate ratios of teachers to students, and coordination across professional training programs and academic calendars. Nonetheless, the necessity of this kind of instructional approach cannot be overstated. Not only is IPE important to ensuring high quality team-based HIV care, it is essential to the clinical practice of most major diseases in increasingly complex health settings in SSA. Given the scarcity of pedagogical resources for HP in Africa, IPE training modalities offer an efficient way to teach key domains of clinical practice to learners from across different cadres. Moreover, this kind of approach to education for health professions, matching competencies that correspond to local needs, offers a template for how elements of clinical training can be delivered sustainably.

Tools for Quality Improvement

Over the last two decades, there has been increasing recognition of the importance of quality improvement modalities to enhance HIV service delivery in SSA.[9] Simultaneously, quality management systems are being hardwired into health systems across the continent in order to optimize services, especially where services are constrained. Unfortunately, as one recent report highlighted, low quality care in Africa has a profound, deleterious impact and responsible for millions of deaths each year.[10] In addition, our own needs assessment illustrated how few pre-service institutions taught QI modalities to health professions students. Our curricular intervention provides learners with an introduction to a variety of QI tools, but there is a pressing need to weave this kind of QI training into a more comprehensive approach to quality in health professions training in SSA. Furthermore, greater health professions education research in SSA is warranted to demonstrate how equipping learners with QI skills can be an

effective catalyst to address inequities in access and quality of care. A key limitation of the intervention relates to the fact that it will be challenging to link its impact on clinical outcomes; feedback on the training, and knowledge gained and retained are at best surrogate markers for clinical outcome measures. In the next phase of the project, an explicit goal is to determine the extent to which QI training leads to use of QI modalities in clinical practice, that can lead to improvements in clinical outcomes. Last, in the next phase of the project, we intend to rigorously assess the impact of training on both learners and educators, as well collect qualitative and quantitative feedback from partner institutions to identify gaps in the original curriculum, and used evidence-based educational strategies to address them.

Conclusion

Redesigning health professional education in SSA is necessary and timely, especially to ensure that previous investments made towards ending the HIV epidemic are not compromised. It also offers an expansive vision for the kind of collaborative, evidence-informed instructional design that can lead to substantive change in clinical outcome. It also highlights how collaboration across African health professional schools can and should occur rapidly and effectively to enhance the quality of health professional school outputs and to increase the relevance of their work. Innovations such as the one described in this report, bringing an inter-professional training transition course to SSA around a medical problem relevant to the region, offers a template for how curriculum development can be reimaged in way that is specific to Africa's needs and resources.

Abbreviations

HRSA
Health and Resources Services Administration
HIV
Human Immunodeficiency Virus
IPE
Interprofessional Education
IPC
Interprofessional Collaboration
MEPI
Medical Education Partnership Initiative
NEPI
Nursing Education Partnership Initiative
PEPFAR
President's Emergency Fund for AIDS Relief
QI
Quality Improvement
SSA

Declarations

- Ethics approval and consent to participate: This work was reviewed by UCSF Institutional Review Board and deemed exempt (protocol #: 19-28447). No consent from learners was required to describe this work
- Consent for publication: Not applicable
- Availability of data and materials: All of the pedagogical content and training materials described in the manuscript are available at www.stripe.afrehealth.org
- Competing interests: None of the authors declare any financial or non-financial competing interests.
- Funding: The project was funded by HRSA.
- Authors' contributions: The first draft of manuscript was written by MJAR and then revised by EKM and JZM. All authors reviewed and contributed to all subsequent drafts. All authors read and approved the final manuscript
- Acknowledgements: we recognize the extensive programmatic work provided by Jessica Celentano without whose help this project would not have succeeded

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Tables

Table 1. Summary of modules included in the interprofessional curriculum

Module	Topic	
1	New HIV diagnosis and ART initiation in a woman of child-bearing age	The goal of this session is to prepare learners to assess and manage a woman newly diagnosed with HIV using a team-based approach.
2	Co-morbidities in a patient with well-controlled HIV	The goal of this session is to prepare learners to evaluate for, prevent, and manage cardio-metabolic complications of people with HIV. The session exemplifies team-based approaches to chronic disease management.
3	Management of HIV-TB co-infection	The goal of this module is to prepare learners to provide team-based care and follow up for a patient with HIV and pulmonary TB. This module exemplifies role clarification and use of evidence-based medicine/country-specific guidelines.
4	Prevention of mother-to-child transmission & care of the pregnant woman with HIV	The goal of this module is to prepare learners to manage the care of pregnant women, new mothers, and newborns living with HIV using an integrated approach to service delivery.
5	Care of the adolescent girl at risk for HIV	The goal of this module is to prepare learners to recognize the unique aspects of caring for adolescent girls at risk for HIV and to provide team-based care for this patient population.
6	Post-exposure prophylaxis	The goal of this module is to prepare learners to assess and manage any colleague who presents with a potential work-related exposure to HIV. This session exemplifies health care professionals caring for each other's physical and mental health and highlights interprofessional competencies.
7	Care of the patient with cryptococcal meningitis	The goal of this session is to prepare learners to provide team-based care for a patient with cryptococcal meningitis (CCM). In addition, this module will model team members of all levels speaking up and being heard, treating patients and coworkers with compassion and respect, and using evidence-based medicine and guidelines to provide high quality care.
8	Management of sepsis and ART initiation	The goal of this session is to introduce learners to the provision of team-based care for a patient newly diagnosed with HIV who is admitted to the hospital with bacterial sepsis.
9	ART adherence and evaluation of virologic failure	The goal of this session is to prepare learners to use evidenced-based strategies to provide team-based care for a patient with ART non-adherence. The session will highlight respectful communication and collaborative leadership and employ reflective practice.
10	End-of-life care in a patient with HIV	The goal of this session is to introduce learners to practice breaking bad news and to provide compassionate, person-centered, team-based care for patients with HIV with severe life-threatening diseases. This session will focus on use of reflective practice and will explore the ethical dimensions in providing care to someone at the end of life, with hopes to convey the importance of compassion.
11	Pre-exposure prophylaxis and	The goal of this session is to prepare learners to provide and promote equitable HIV services to key populations using a multidisciplinary approach, doing so with empathy and without prejudice, and in the

	care of men who have sex with men	process, acquiring skills in and increasing comfort with taking a sexual history.
12	Care of the adolescent male with perinatal HIV	The goal of this session is to introduce learners to concepts around care of an adolescent male with perinatally-acquired HIV, so as to recognize contextual factors to best support these patients and promote their quality of life.
13	Health systems in HIV care	The goal of this module is to enable learners to better understand the building blocks of the health system and how they affect the care of the patient with HIV.
14	Community-based HIV care service delivery	The goal of this session is to empower learners to collaborate with community partners, understanding the resources, structures, and processes available to patients with HIV, while also underscoring the important role of community-based, decentralized care to ensure patient-centered services.
15	Traditional & complementary medicine & Pneumocystis pneumonia	The goal of this session is to prepare learners to provide person-centered care for a patient with an opportunistic pneumonia who is interested in traditional & complementary medicine (T&CM). The module will model respectful communication and reflective practice.
16	HIV funding mechanisms & donor financing	The goal of this module is for learners to recognize human resource challenges faced in delivering high quality care, at both clinical and systems levels, and to gain an awareness of ensuring the necessary skills to deliver high quality HIV care. This is exemplified through the vignette of a health care professional with absenteeism due to nosocomial TB, which highlights certain aspects of infection control.
17	Care of the pediatric patient with HIV	The goal of this session is to introduce learners to care for a paediatric patient with HIV, including concepts of medication dosing, interaction with the parent/family, and ethical issues surrounding this key population.

Table 2. Interprofessional education principles and quality improvement techniques incorporated into curriculum

Interprofessional Education Principles	Quality Improvement Techniques
<ul style="list-style-type: none"> • Values and ethics for interprofessional practice • Rules and responsibilities • Interprofessional communication • Teams & teamwork 	<ul style="list-style-type: none"> • Plan-Do-Study-Act (PDSA) Cycles • Fishbone (Ishikawa) Diagram • A3 Approach • 5 Whys • Situation-Background-Assessment-Recommendation (SBAR)

Figures

Map

Partner institutions are in **green** text.
Affiliate institutions are in black text.

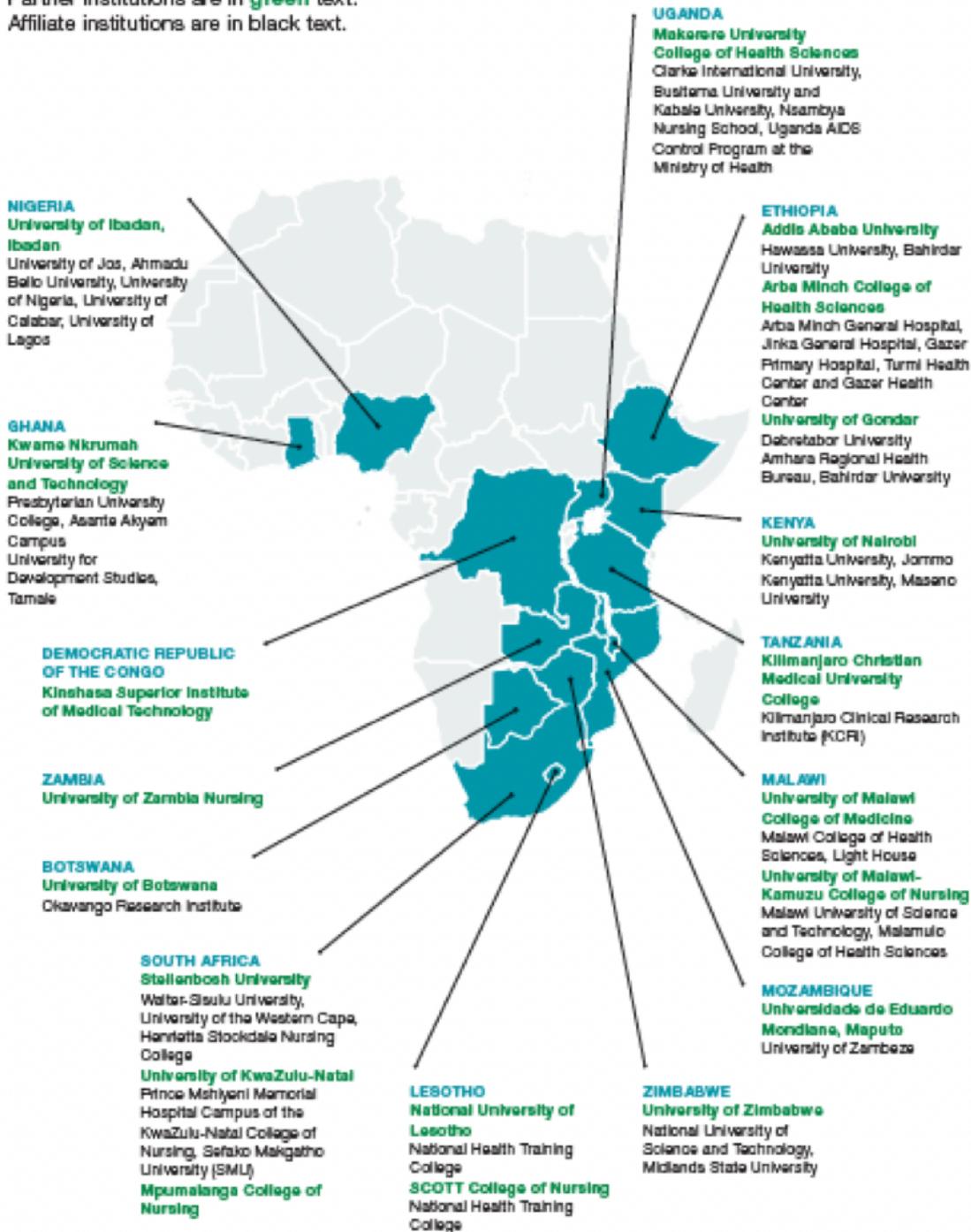


Figure 1

Map of partner institutions and affiliated academic training sites. Partner institutions are in green text. Affiliate institutions are in black text.