



Ethiopia

Country Context

The gap between the available supply of health and allied care professionals and the actual demand for their services is one of the most pressing challenges facing Ethiopia's health system today. This lack of human resources for health (HRH) undermines the country's ability to improve and scale up critical healthcare services, while inadequate and overburdened infrastructure, logistics systems, and supply chains further challenge the health system of this East African nation of 99.5 million people.

HIV/AIDS, coupled with the other communicable and non-communicable diseases, has led to a seven-year decrease in life expectancy among Ethiopians and a substantial decrease in health workers.

The country's HIV epidemic varies widely among populations and geographic locations. The 2011 Ethiopian Demographic and Health Survey estimated the nationwide adult HIV prevalence rate to be 1.5 percent with substantial variation by region ranging from a high of 6.5 percent in Gambella down to 0.9 percent in SNNPR. Urban populations have an estimated HIV prevalence rate between 4.2-5.2 percent while for people living in rural areas it is just 0.6 percent. HIV prevalence rates vary by gender as well, with prevalence among women nearly double that of men. (1.9% female vs. 1.0 male).

With support from the US President's Emergency Plan for AIDS Relief (PEPFAR) and the US Centers for Disease Control and Prevention (CDC) in country, AIHA has been implementing health systems strengthening (HSS) interventions in Ethiopia since 2006 through our HIV/AIDS Twinning Center Program, which is funded by the US Department of Health and Human Services, Health Resources and Services Administration (HRSA). Our partnerships in Ethiopia have largely focused on national HRH and HSS projects in close collaboration with schools of the health professions and teaching hospitals, and in alignment with the Federal Ministry of Health's HR2020 strategy to develop health workforce capacity. AIHA has managed nine partnerships in Ethiopia, along with a dynamic Volunteer Healthcare Corps program.



Improving Adult and Pediatric Emergency Medical Services



People living with HIV (PLHIV) disproportionately utilize emergency medical services due to the chronic nature of the disease. Preliminary findings from an independent, unpublished study revealed that nearly 11 percent of all patients admitted to the emergency room at Addis Ababa University's Tikur Anbessa Specialized Hospital are HIV-positive — nearly seven times the national prevalence rate of 1.5 percent. Many of these emergency room patients present with conditions related to HIV, including respiratory distress related to TB, pneumocystis pneumonia, and other opportunistic infections. Because of this, improved organization of emergency medical services, including expanded training opportunities at Addis Ababa University School of Medicine, represents an important component of the provision of quality care and services for PLHIV.

In response, AIHA initiated a partnership linking the University of Wisconsin School of Medicine, the Kentucky-based NGO People to People, and Addis Ababa University to address adult emergency medicine services in 2009; a second

partnership linking these institutions was launched in 2010 to focus on strengthening pediatric emergency services. The goal of both partnerships is to improve emergency care, with a particular focus on developing and expanding local capacity to provide pre- and in-service education and training opportunities.

Together, partners worked to develop in-service and post-graduate training programs for emergency and acute care physicians and nurses; pre-service training programs in basic emergency and urgent care for graduate-level physicians and nurses; and both pre- and in-service training programs for first responders, including paramedics and ambulance drivers.

Key components have included establishing formal postgraduate programs in emergency medicine and nursing; training faculty through innovative fellowship and residency programs; developing curricula and training materials; implementing quality improvement projects; and establishing knowledge management centers and skills labs.

Professional exchanges and peer-to-peer training and mentoring have played a critical role in capacity building. In addition, the partnerships have been strengthening Ethiopia's new cadres of emergency medical workers through professional association development, accreditation and licensure support, and technical assistance for continuing medical education in emergency medicine.

Over the past eight years, the adult and pediatric emergency medicine partnerships have yielded many successes, including the establishment of Ethiopia's first Emergency Medicine Training Center in 2010 and creation of fellowship programs for both adult and pediatric emergency medicine physicians. Another major accomplishment was the creation of the country's first emergency medicine residency program, which was the second of its kind on the continent after South Africa.

Partners have also been working to improve the capacity of Addis Ababa University's MSc Nursing program and Tikur Anbessa's nursing department by creating a new cadre of master-level emergency medicine nurses through curriculum development and expanded clinical training. In their new leadership roles, these graduate nurses are now supporting the MSc Nursing program by delivering lectures and conducting trainings on their own. To date, 94 MSc emergency medicine nurses have graduated from this new program and been placed at the Ministry of Health, Tikur Anbessa, and various universities and hospitals in Addis Ababa and across Ethiopia. In October 2013, Addis Ababa University graduated its first cohort of four emergency medicine physicians and has since graduated a total of 21 emergency medicine residents.

AIHA and our partners have worked to raise the profile of this new medical cadre by helping establish the Ethiopian Society of Emergency Medicine Professionals (ESEP) in 2012. ESEP is a national professional society and a member of the Ethiopian Medical Association. Its members are drawn from across the emergency medicine spectrum, from physicians and nurses to pre-hospital first responders. ESEP was established to support the development of hospital and pre-hospital emergency care and the efforts of the government and other organizations involved in emergency-related activities, as well as to participate in building the capacity of emergency training and services in the country. In 2014, ESEP hosted the African Federation for Emergency Medicine's second African Conference on Emergency Medicine, which was attended by more than 700 delegates from across the world. This event showcased the successes of the two emergency medicine partnerships that have long been at the vanguard of this much-needed specialty practice in Ethiopia.

In 2016, AIHA graduated the adult emergency medicine partnership and is currently providing direct support to the pediatric partners at Addis Ababa University.



Partners opened the Emergency Medicine Training Center at Addis Ababa University School of Medicine in 2010. To date, they have trained more than 4,000 medical personnel and first responders on a broad range of life-saving skills, including emergency triage and treatment, basic life support and CPR, and advanced life support in obstetrics.

Strengthening Biomedical Technology Training to Optimize Clinical Care Services



PEPFAR estimates that 37-48 percent of CD4, hematology, and microbiology lab equipment in Ethiopia is not working at any given time. This lack of functional biomedical equipment, including autoclaves, centrifuges, microscopes, and other basic diagnostic tools undermines the country's HIV response, resulting in delays in treatment and increased loss of patients in care.

Clinical laboratory and biomedical equipment is essential for HIV diagnosis, treatment, and care. For example, CD4 machines enable healthcare providers to effectively monitor viral load, provide a baseline reading, and track immune status on an ongoing basis to ensure proper care.

Although there is limited data on biomedical equipment functionality on a national level, PEPFAR estimates that 37-48 percent of CD4, hematology, and microbiology lab equipment in Ethiopia is not working at any given time. This lack of functional biomedical equipment, including autoclaves, centrifuges, microscopes, and other basic diagnostic tools undermines the country's HIV response, resulting in delays in treatment and increased loss of patients in care.

To address the critical need for well-trained biomedical technicians, AIHA initiated in January 2012 a twinning partnership linking Tegbare-id Polytechnic College and Jimma University in Ethiopia with Rice University and Texas Children's Hospital. This partnership is the first PEPFAR-supported project to address biomedical technology in sub-

Saharan Africa. Together, partners are working to meet the increasing demands of a technology-driven system of care.

In 2015, Rice University and Texas Children's Hospital graduated from the partnership as AIHA shifted to the second phase of the initiative, which included bringing Addis Ababa University (AAU) into the program. By bringing AAU into the partnership, AIHA is now working with the three main pre-service training institutions in the country.

To date, partners have worked with all relevant stakeholders to revise curricula for a bachelor-level biomedical engineering program and diploma-level technician program. They've supported pre-service training for 257 biomedical engineers from Jimma and 32 from AAU for a total of 289 graduated to date, along with a total of 261 biomedical technicians. Another 125 engineers — 80 at Jimma and 45 at AAU — and 47 technicians are slated to graduate in 2017.

Partners have focused on a broad range of capacity building activities, starting with targeted faculty development through training and striving to overcome a severe shortage of local teachers by providing long-term international instructors to teach courses under the revised curricula and mentor faculty. Providing practical hands-on training opportunities for students, faculty, and biomedical professionals working at healthcare facilities has also been a priority. To this end, they have outfitted skills labs and design workshops with a wide range of equipment, tools, and supplies for improved learning.

Partners have also collaborated to develop a free biomedical engineering massive open online course (MOOC) focused on troubleshooting, repair, and routine maintenance of standard biomedical equipment, along with a course on appropriate design for global health. They worked to promote global health technology through a student design competition, developed systems for equipment management at healthcare facilities, and promoted the use of evidence-based resources by establishing Knowledge Management Centers where students and faculty can access the latest information on best practices.

Leveraging the success of this innovative partnership, AIHA launched a public-private partnership with GE Foundation in 2015 to help scale up and complement current partnership activities. This public-private partnership enabled AIHA to bring AAU into the alliance as we worked closely with GE Foundation's implementing partners to develop and conduct a comprehensive year-long in-service training program for 220 biomedical technicians and engineers across Ethiopia. In addition to the in-service program, partners are in the final stages of establishing a biomedical technology training center of excellence at Addis Ababa Tegnare-id Polytechnic College, along with a similar hospital-based center.

AIHA expects to conclude the first phase of this innovative partnership in early 2017 and is in the process of securing a technical resource partner to support these institutions as they move into the second phase of capacity development.

Improving Women's Health Services with a Focus on PMTCT and HIV Care Services

The 2011 Ethiopian Demographic and Health Survey estimated that the country's maternal mortality is 676 per 100,000 live births, making it 200 times more likely that a woman in Ethiopia will die from pregnancy-related causes than her counterparts in developed countries. Maternal death and disability is also closely linked to newborn deaths, often as a result of poorly managed pregnancies and deliveries. The risk is compounded by Ethiopia's HIV burden and a PMTCT uptake rate of less than 10 percent.

In an effort to expand training that prepares medical professionals to provide high quality obstetric and gynecological care at all levels, in 2013 AIHA began supporting an existing alliance between St. Paul Hospital Millennium Medical College (SPHMMC) and the University of Michigan. This partnership is strengthening SPHMMC's capacity to minimize maternal and newborn mortality and morbidity and more effectively manage HIV among women of reproductive age, including preventing vertical transmission of the virus.

With technical support from the US partners, SPHMMC has been providing postgraduate pre- and in-service training programs that are greatly improving the quality of healthcare services available to women in this East African nation. Experts from the University of Michigan provided bedside teaching and mentorship to residents and SPHMMC faculty during clinical rounds and introduced block teaching to both residents and undergraduate medical students.

The partnership also focused on targeted training and faculty development activities included specialized training in high-risk Ob/Gyn at Jefferson University, where they observed maternal-fetal medicine procedures, high-risk pregnancy care and management, and a number of other clinical practices, all of which they presented to their colleagues upon their return to SPHMMC. The SPHMMC Residency Director completed the American College of Obstetrics and Gynecology Program Director's Course, while other faculty participated in professional development opportunities at the University of Michigan, ranging from clinical teaching observerships, specialized training, and skills building workshops. AIHA also supported faculty and staff participation in leadership workshops conducted by the Center for African Leadership Studies as a way to build knowledge, skills, and human resource capacity at SPHMMC. In 2016, SPHMMC graduated its first cohort of seven ob/gyn residents from its program.



Through the efforts of this AIHA partnership, SPHMMC graduated its first cohort of seven ob/gyn residents from its program in 2016.

In support of the residency program, partners introduced monthly journal club meetings as a way to better prepare residents for the rigors of the ob/gyn specialization. Residents from all three cohorts presented selected topics and discussed these with their peers and faculty. The journal club provides a forum for the clinicians to share experiences, present new research findings, and discuss case studies as a way to acquire critical appraisal and evaluation skills, as well as the knowledge and confidence that will empower them to seek out new evidence-based approaches that can help improve quality and efficacy of care.

Continuing education and training — often in collaboration with other institutions in the United States, Europe, and elsewhere in Africa — has been an ongoing focus of this partnership. Since 2014, the partnership has been sending residents for clinical attachment trips to Halle, Germany. This experience has provided exposure to advanced clinical care and medical procedures they may not be able to experience in Ethiopia. In particular, though, partners have made an effort to find or develop low-cost ways to simulate common surgical emergencies and identify free open educational

resource modules and other learning technologies and training equipment. To this end, SPHMMC faculty have worked with the University of Ghana School of Public Health to jointly conduct clinical research workshops and provide mentoring for the residents. AIHA has also supported the creation of a South-South collaboration between SPHMMC's ob/gyn department and the University of Rwanda. This relationship is beneficial to both institutions, which now conduct educational attachments and exchanges for residents, faculty, and fellows. Building these professional relationships at both the institutional and the individual provider levels is one of the greatest successes of this dynamic partnership.

Engaging Skilled Volunteers to Strengthen Health System Capacity

AIHA launched the Volunteer Healthcare Corps program in Ethiopia in September 2006 to identify, recruit, and place Ethiopians in the Diaspora in long-term volunteer assignments designed to build health system capacity in their home country. This program taps into the highly skilled health and allied professionals in the Ethiopia Diaspora community who have a strong motivation to return to their country of origin and contribute to improving the health system.

The VHC provides a vehicle for Diaspora volunteers to contribute in a structured and sustainable manner. Additionally, Diaspora volunteers confront fewer cultural and language barriers, allowing them to more quickly engage in their professional activities. More recently, AIHA has engaged Diaspora and non-Diaspora volunteers in new ways, including placing them within our twinning partnerships to address specific activities and also to support the country's Medical Education Initiative (MEI).

In 2012, the Ethiopian Ministry of Health and Ministry of Education launched the MEI, opening 13 new medical schools and increasing medical student enrollment 10-fold. They also transformed the conventional medical curriculum to a problem-based learning system that promotes alternative and evidence-based teaching and learning strategies. Unfortunately, the initiative has been constrained by a shortage of qualified medical instructors in the country, so AIHA is supporting the Ministry of Health by recruiting qualified professionals from the United States and other countries through the VHC program.

AIHA had already placed a total of 14 qualified individuals at medical schools throughout the country, where they are training a new generation of Ethiopian doctors and providing critical technical assistance and capacity-building support. We have also placed experts at the Federal Ministry of Health in support of the MEI.

Since program inception, AIHA has recruited and placed 64 highly skilled health and allied professionals in 74 volunteer placements at various institutions. Some 57 of these volunteers are Ethiopians in the Diaspora and more than 10 have repatriated, which is helping to reverse the country's brain drain. These volunteers have included doctors, nurses, social workers, pharmacists, lab technicians, IT experts, and communications specialists, who have been placed at hospitals, clinics, universities, NGOs, and government agencies, including the Ministry of Health.

Supporting the Bill and Melinda Gates Foundation in Building Capacity at the Federal Ministry of Health

In November 2016, AIHA launched a new partnership with the Bill and Melinda Gates Foundation designed to support efforts to strengthen the capacity of Ethiopia's Federal Ministry of Health through their Ethiopia Integrated Health Plan (EIHP). Through this initiative, AIHA is providing grants management for the Gates Foundation's \$1 million investment to assist the Ministry of Health to effectively and efficiently implement its priorities under the 2020 transformation agendas of the country's Health Sector Transformation Plan (HSTP).

AIHA will work in close collaboration with representatives of the Ministry of Health, the Gates Foundation, and a third party to form an advisory committee that will review requests for funding made by the Ministry. This committee will then either approve requests and provide logistical support for implementation of the proposed projects, or it will recommend revisions to the Ministry and provide technical assistance for further development and refinement of requests.

In addition, the Gates Foundation has requested that AIHA provide consultation and feedback on their EIHP based on our status as a current implementing partner and our decade-long experience working in close collaboration with the Ethiopian Ministry of Health to implement successful national and regional HSS/HRH interventions in country. This

experience, coupled with our close relationship with the Ministry and keen understanding of their priorities, positions AIHA well to provide insightful feedback on the status of health and development in Ethiopia and to provide suggestions for future programming.

Strengthening Clinical Pharmacy Education and Practice

Findings from a needs assessments conducted by Howard University in 2007 at the onset of AIHA's twinning partnership with Addis Ababa University School of Pharmacy underscored the urgent need for the increased and active involvement of the pharmacy profession in the treatment and care of PLHIV in Ethiopia, especially in an environment where there was a shortage of other healthcare professionals, notably doctors and nurses.



AIHA's clinical pharmacy partnership between Addis Ababa University School of Pharmacy and Howard University transformed pharmacy education and practice in Ethiopia over the course of their seven-year collaboration.

At that time, pharmacists in Ethiopia were being trained with a focus on products and traditional drug supply functions, but the demand to play an increasing role in patient-oriented pharmacy services — particularly the provision of ART — required a shift toward clinical pharmacy education, training, and practice. Additionally, the majority of pharmacists in Ethiopia did not have access to accurate and reliable drug information or accredited continuing education opportunities. There was little involvement in clinical practice, but a high demand for clinical training.

AIHA supported this dynamic partnership from 2007 to 2014, during which time Addis Ababa University and their Howard counterparts ushered in many positive changes that spread from the nation's capital throughout the country.

Working together, partners developed a new five-year bachelor's degree program in clinical pharmacy, along with clinical rotation guidelines for five hospital and nine community pharmacy rotation sites where students could gain much-needed practical experience.

They also trained 40 pharmacists and physicians from 10 institutions

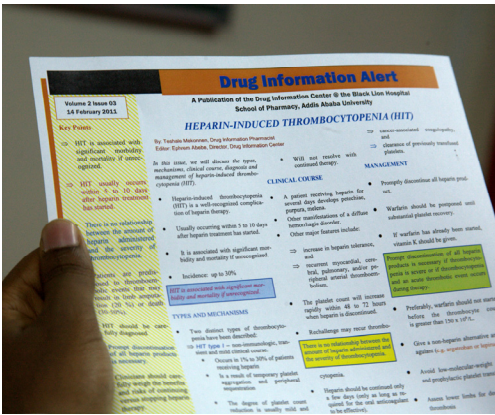
to serve as preceptors to support the clinical pharmacy students during their rotations. In addition, six Ethiopian physicians completed a two-week training at US teaching hospitals to gain a better understanding of the role clinical pharmacy plays in the healthcare system.

Addis Ababa University graduated its first cohort of 52 students using the clinical pharmacy curriculum they developed jointly with their Howard partners in 2013. They placed 31 of these graduates at Tikur Anbessa Hospital. The Ministry of Health deployed the other 21 to clinical sites throughout Ethiopia. The new curriculum has been adopted by six other public universities in the country, which graduated 374 students in 2013 with the first cohort, bringing the total number of new clinical pharmacists in the country at that time to 426.

To date, not only have the 11 public schools offering pharmacy training adopted the curriculum, so have the five private schools that train pharmacists in Ethiopia. Together, these schools have graduated a total of 7,080 students from the five-year bachelor's program in clinical pharmacy, 555 Master's level (MSc.) students, and three Ph.D students. Looking to provide a career path for the clinical pharmacy graduates, partners launched a Master's program in pharmacy practice (MPharm) in 2010, which has to date matriculated 28 students.

Establishing a Drug Information Center (DIC) at Tikur Anbessa Hospital so staff could access evidence-based information resources to respond to queries from healthcare workers was another key accomplishment of this partnership. Partners have trained more than 300 500 pharmacists and other healthcare workers on drug information services and also collaborated with other universities to establish eight satellite DICs throughout Ethiopia.

In support of the transformations they spearheaded in pharmacy education and practice, partners led several advocacy efforts to help change both the image and the role of pharmacists in the country. They met with senior pharmacists from various sectors and held national consensus building and sensitization workshops with the Ethiopian Pharmaceutical



AIHA's pharmacy partners ushered in many positive changes, launching a new five-year clinical pharmacy degree program and establishing a network of Drug Information Centers to provide accurate and reliable information on medicines, including antiretrovirals needed by PLHIV.

Association (EPA) to discuss the roles, responsibilities, and future of new clinical pharmacy graduates. They also prepared a scope of practice and submitted it to Ethiopian Food, Medicines and Health Care Administration and Control Authority. These activities were critical for ensuring that the Ministry of Health deployed the new graduates throughout the country. Partners also provided a wide range of continuous professional development (CPD) courses and Addis Ababa University is working with the EPA on national accreditation guidelines and training modules.

Overall, this partnership has transformed the role of pharmacists in Ethiopia from being drug specialists to drug therapy specialists, which is especially relevant for patients on ART. Pharmacists have been able to provide education and support to manage the medication needs of PLHIV, improve ART adherence, address drug therapy problems, and reduce costs. Pharmacists in Ethiopia are now considered an integral part of the healthcare team.

Strengthening Social Work Education to Better Support Vulnerable Children

In response to an acute need for qualified social workers at national and local levels to provide care, support, and protection for orphans and vulnerable children (OVC) in Ethiopia, AIHA launched a triangular partnership in 2007, linking Addis Ababa University School of Social Work with the Institute of Social Work in Dar es Salaam and Jane Addams College of Social Work and the Midwest AIDS Training and Education Center at the University of Illinois in Chicago.

At that time, many of the psychosocial care providers working to address the needs of PLHIV or those affected by AIDS epidemic had little or no training on how to handle the complex needs of this and other vulnerable populations. This partnership worked to change this by strengthening the social welfare workforce on multiple levels and building local capacity for ongoing training that would better support the delivery of care to OVC and their families or caregivers.

Drawing on the Tanzania experience, partners worked to develop a training program and supervision structure for community-based psychosocial care workers providing HIV/AIDS information and linkages to care and support to OVC. In addition to providing skills-based training in key social work and case management, the curriculum also contained lessons on psychosocial support, advocacy, and how to link clients to needed legal, education, medical, mental health, food and nutrition, housing, child rearing, and life skills services, as well as vocational training. Together, they trained more than 742 psychosocial care providers HIV/AIDS issues and OVC support, along with 147 supervisors.

Prior to graduation in 2012, this partnership also focused on improving the quality of pre-service curricula at the bachelor and master levels, conducted a professional symposium on social work education and practice in Ethiopia, and established an alumni association to advocate for the social work profession.



AIHA's social work partners trained more than 742 psychosocial care workers to provide much-needed care and support to orphans and vulnerable children, as well as other vulnerable populations in seven regions of Ethiopia.

Improving HIV/AIDS Care by Providing Access to Expert Clinical Advice

Increased access to ARVs in Ethiopia has generated a need for members of the health sector workforce to rapidly increase their knowledge on HIV/AIDS care. In support of the CDC's implementation of national IT systems, partners at the National AIDS Resource Center (NARC) and the National Clinician's Consultation Center at the University of



California-San Francisco established FITUN Warmline, a call-in service that allows physicians all over the country to record questions on clinical care, which will then be researched and promptly answered by NARC specialists.

The goal of this partnership, which was active from 2006 to 2012, was to improve access to quality HIV care in Ethiopia by providing expert consultation for health workers caring for PLHIV. US partners trained FITUN staff on Warmline methodologies and HIV-related topics.

Partners jointly developed training manuals on a broad range of topics, including ART, perinatal care, PMTCT, post-exposure prophylaxis, clinical pharmacy, pediatric HIV, techniques of effective clinical consultation, opportunistic infections, and TB/HIV, which are used to train FITUN staff. They also developed and implemented a continuous quality improvement program to ensure the Warmline is providing relevant

Throughout the life of the partnership, FITUN Warmline staff responded to more than 1,800 clinical consultation requests from all over Ethiopia.

and up to date information to healthcare providers. By 2012, FITUN Warmline had provided more than 1,800 clinical consultations both via telephone and email.

FITUN Warmline continues to provide critically important consultation to a wide variety of health personnel, including physicians, nurses, health officers, health extension workers, pharmacists, and other HIV care providers, making it a critical tool supporting community health, primary care, and access to HIV/AIDS prevention, care, and treatment.

Strengthening Hospital Capacity to Improve Quality of Care and Patient Outcomes

Because Ethiopia has been so heavily affected by the HIV/AIDS epidemic, the Federal Government and international donors alike have increased resources to strengthen human and organizational capacity to support the implementation of prevention, care, and treatment programs. Partners at Debre Berhan Referral Hospital and Elmhurst Hospital Center collaborated from 2007 to 2014 to strengthen Debre Berhan's capacity to provide medical and psychosocial care for PLHIV.

On-site mentoring and training for Debre Berhan healthcare workers played a crucial role in this highly successful partnership. Key focus areas were strengthening hospital services related to HIV care through improved infection prevention training and policies, increasing patient involvement to improve quality of care, and improving professional knowledge and training opportunities through professional exchanges. Through these, Debre Berhan staff received targeted training on topics ranging from case management and adherence to integrated care and the role of nurses in patient assessment and care.

Through their partnership with Elmhurst, Debre Berhan increased ART uptake from 1,789 patients in 2007 to 5,282 patients in 2014, expanding HIV treatment and care to four rural hospitals and 86 health centers in their catchment area. US partners also helped expand overall medical and psychosocial care for PLHIV, including improving counseling and testing and pain management procedures, and establishing consumer support groups and a Hospital Governance Board, which includes hospital staff, local government representatives, and members of the community at large.

US partners trained their Debre Berhan counterparts on other topics as well, including palliative care, mental health screening, ophthalmological care for PLHIV, post-partum hemorrhage, and hypertension in pregnancy. Experts from Elmhurst also worked with their partners to create the local institution's first infection control manual. Elmhurst infection control specialists provided comprehensive training and mentorship for Debre Berhan staff, helped them establish a system of infection control rounds throughout the hospital, and instituted employee interviews to determine knowledge of hospital-associated infections.



Elmhurst partners with staff and patients at Debre Berhan.



The hospital partnership linking Elmhurst and Debre Berhan has had a lasting impact on both sides.

Partners also established a pen pal project between patients at both hospitals, who share information about their experiences living with HIV, as well as strategies for coping and staying adherent to treatment; this project has strengthened the patient advisory panels at both hospitals.

As a result of the partnership, Debre Berhan created the position of nursing supervisors to oversee nursing education and act as a liaison between the nurses and the administration and introduced 8-hour shift schedules to improve efficiency and quality of care. Partners also opened a Knowledge Management Center to facilitate the practice of evidence-based medicine.

Prior to graduation in 2014, Debre Berhan Referral Hospital was recognized by Ethiopia's Ministry of Health as the best performing lead hospital and the best cluster hospital nationwide. Having graduated from the Twinning Center's technical assistance program, Debre Berhan has maintained their excellence and earned similar awards from the Ministry in 2015 and 2016.

Debre Berhan is now considered a national benchmark rural hospital — an accomplishment administration and staff attribute directly to their twinning partnership with Elmhurst Hospital Center. AIHA also managed a similar partnership linking Ambo Hospital with Jersey Shore Medical Center that graduated in 2011.

Improving National VCT Services

Voluntary counseling and testing services play a critical role in any country's national HIV/AIDS strategy and in the programming supported by PEPFAR. The rapid development of counseling and testing in Ethiopia has necessitated a review of guidelines for HIV counseling and testing, especially in the area of policy and implementation, while the increased availability of both antiretroviral medications and drugs to treat common opportunistic infections has created greater opportunities for provider-initiated counseling and testing at healthcare facilities. From 2008 to 2012, AIHA supported the Ethiopian Ministry of Health's efforts to expand HIV counseling and testing services, first tapping into the expansive knowledge and technical expertise of Liverpool VCT, an NGO based in Nairobi, Kenya, and later providing direct technical assistance.

Key areas of collaboration between the Ministry of Health and Liverpool VCT were focused on policy development, quality assurance, and the creation of resource materials for staff and patient education. Under AIHA's leadership, a core team of in-country partners was established in December 2010 with the objective of further enhancing the quality of HIV counseling and testing services throughout Ethiopia and to help expedite the development and implementation of a new HIV Counseling and Testing National Quality Assurance Manual. Members were selected by the Ministry of Health and included representatives of Ethiopia's HIV Counseling and Testing National Technical Working Group, CDC/Ethiopia, the Ethiopian HIV/AIDS Counselors Association, and the Ethiopian Health and Nutrition Research Institute (EHNRI), and other key stakeholders in HIV/AIDS education, prevention, and treatment. In addition, AIHA has provided significant technical contributions toward the development of a broad range of HIV counseling and testing manuals and policy papers, including the Stress and Burnout Management Manual (August 2011); the National VCT Curriculum (August 2011); the VCT Trainers Manual (September 2011); and the HCT Participant Manual (September 2011). AIHA's technical experts also helped develop other resources, such as guidelines for couple's counseling; working with MARPs; home-based HTC; mobile VCT; PICT; PMTCT; and comprehensive HIV counseling and testing trainer and participant manual.

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