

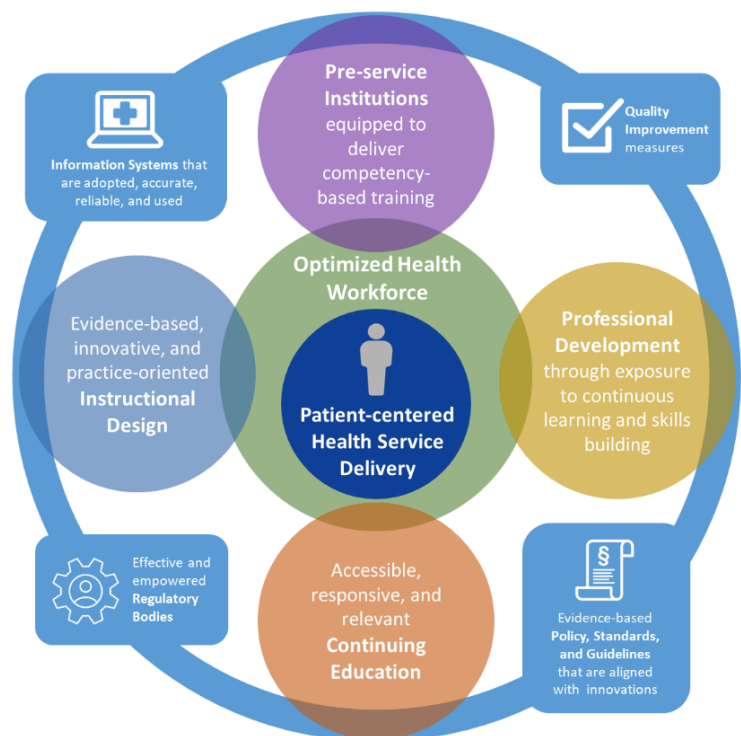
Workforce Development

The World Health Organization (WHO) projects a global shortfall of 18 million health workers by 2030, mostly in low- and lower-middle-income countries. Contributing to the global deficit are chronic under-investment in education and training of health workers; workforce migration; an aging health workforce; rapid increases in chronic diseases; and inability to track existing human resources using health information systems.¹ Health care worker shortages are compounded by the increased portability and virulence of infections. Rapid population growth, climate change, deforestation, international travel, migration, poverty, and social inequality have dramatically increased the risk of pandemics and highlighted the need for skilled health workforce to effectively respond to emerging health threats. This is evident now more than ever as COVID-19 exacerbates health inequity and barriers to access, and further strains the already fragile health systems in many countries.

I-TECH CAPACITY

The International Training and Education Center for Health (I-TECH) is a leader in global health workforce development. Our approach to education and training of an optimized health workforce is based on 18 years of experience, expertise, and lessons learned developing, implementing, and evaluating innovative, multilingual, face-to-face, distance, and blended learning training programs. Our approach is holistic: we aim to improve the performance of health workers *and* strengthen the systems in which they learn and work.

The figure at right illustrates the interrelated education systems — from pre-service education to continuing education — that increase the functioning of an optimized health workforce that is able to deliver effective patient-centered care. These educational components exist within an enabling health system environment that assures health worker success: institutionalized quality improvement practices, reliable information systems to make informed decisions, an effective regulatory environment, and evidence-based policies, standards, and guidelines that supports up-to-date and innovative practice (see [Policy & Planning](#)). I-TECH partners with governments, universities, and national training institutes to increase health worker competencies and skills for improved health, to foster attitude changes among health care workers and those who educate them, and to strengthen the environment in which they work.



Training Design and Development

I-TECH's work is rooted in transformative education and learning — centering and appreciating the diversity and complexity of individuals' and institutions' learning experience. Through both pre-service and in-service initiatives, I-TECH delivers innovative trainings grounded in adult learning theory, tailored to the specific needs of the learner and context. We integrate interactive teaching methods and multimedia resources, including drama and documentary storytelling, to training design to enhance the impact of teaching content throughout

¹ The World Health Organization, <https://www.who.int/health-topics/health-workforce>

our training models, whether it is classroom-based, distance, or blended learning models. These approaches support learning processes that lead to changes in knowledge, attitudes, practice and skills that contribute to improved patient outcomes.

I-TECH has created **more than 300 training programs** and products that have been adopted by Ministries of Health in Africa, Asia, and the Caribbean Region.

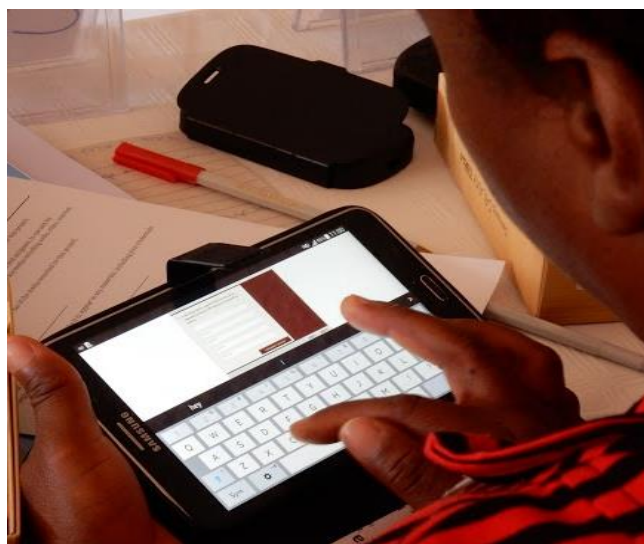
I-TECH's network partner in **India**, [I-TECH India PLC](#), has developed national HIV care and treatment services training curricula for health care staff that target multiple levels of clinical care, including a local accreditation process for continuing medical education, and challenges norms and practices historically rooted in stigma and discrimination. I-TECH India has trained a total of 777 health care workers on *Leadership and Management in Health, Principles of STD and HIV Research, Introduction to Epidemiology for Global Health, Clinical Management of HIV*, and *Fundamentals of Implementation Science*.

Blended learning has been an approach taken in **Zimbabwe**, where beginning in 2015, I-TECH worked to support the Ministry of Health and Child Care (MOHCC) through the development of various clinical trainings to offset the high cost of in-service instruction. There are in-person sessions at the beginning and end of the training and discussion groups facilitated on the WhatsApp platform.² To support practical use of skills in the work setting, I-TECH created an Android application for health workers to easily access the Zimbabwe National antiretroviral therapy (ART) guidelines, which was transferred to the MOHCC in 2017.

In order to meet a WHO-specified target of one or more epidemiologists per 200,000 population,³ **Tanzania** requires an additional 250 epidemiologists geographically distributed in all regions of the country.

I-TECH's Intermediate Field Epidemiology Training Program (FETP) for mid-level health professionals has trained 52 field epidemiologists from 13 regions, including Zanzibar, to address emerging public health threats, with a focus on improving HIV treatment and care programs. The Frontline FETP program in **Malawi** supports the Ministry of Health and Ministry of Agriculture and Livestock Development to train health professionals in basic field epidemiology and increase country-wide capacity.

I-TECH converted the current Differentiated HIV Service Delivery Models orientation package to a distance education to train **Tanzanian** mid-level health providers and support the scale-up of delivery models and task sharing. A total of 736 participants were trained in 2020 during Project ECHO® sessions.



More than 90,000 health care workers have been trained with I-TECH support.

² Bertman V, Petracca F, Makunike-Chikwinya B, et al. Health worker text messaging for blended learning, peer support, and mentoring in pediatric and adolescent HIV/AIDS care: a case study in Zimbabwe. *Hum Resour Health*. 2019 Jun 7;17(1):41. doi: 10.1186/s12960-019-0364-6.

³ Ijaz K, Kasowski E, Arthur RR, Angulo FJ, Dowell SF. International Health Regulations—What gets measured gets done. *Emerg Infect Dis*. 2012;18(7):1054-1057.

I-TECH builds **long-term capacity of national training institutes and systems**, including development of national and regional trainer cadres, to deliver and scale high-impact programs for improved health outcomes.

In **Malawi**, I-TECH trained a total of 105 individuals as trainers to support rapid roll-out of Test and Treat in all facilities in 2016. Of these, a total of 98 were certified as trainers and conducted the subsequent ART services training on updated guidelines to facility-level staff at more than 750 sites.

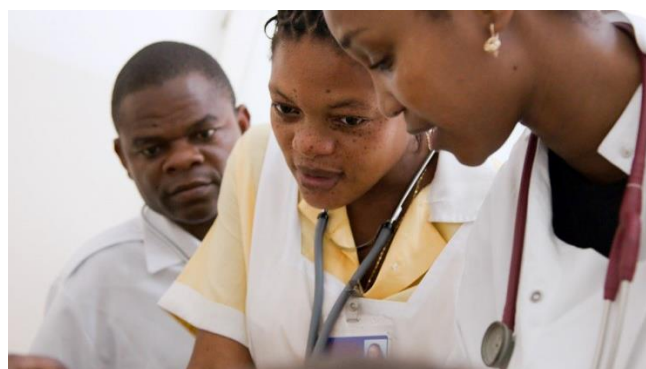
In **Ukraine**, I-TECH has strengthened national capacity to implement trainings. I-TECH has trained 245 trainers in effective models of teaching and learning approaches and has developed 17 training packages to date, with special attention to clinical mentoring, faculty development, teaching methodology, and instructional design.

I-TECH provided ongoing support to the government of **South Africa** to strengthen systems needed to ensure the success of the community health worker (CHW) cadre. I-TECH has strengthened the Regional Training Centers to train CHWs to implement adherence guidelines; HIV care and treatment tools for the CHW program; HIV aspects of monitoring and reporting tools; capacity building of community-based organizations to implement the CHW program through primary care outreach teams; and support to the National Department of Health (NDOH) with implementing adherence guidelines related to community health care, a ward-based primary health care outreach team policy and strategy, and a CHW Integration Framework.

I-TECH has led **national pre-service curriculum reform in five countries** and led faculty development efforts to strengthen delivery of competency-based courses and practica.

I-TECH revised the pre-service curricula in **Mozambique** for health workers, including mid-level clinicians (*Técnicos de Medicina Geral*, TMGs) and monitoring and evaluation officers, and created a “bridging” course for basic-level clinicians to become mid-level TMGs. These efforts have resulted in training 9,000 health care workers and 750 trainers.

In **Malawi**, I-TECH led a national pre-service revision process to update and strengthen clinical course content for nursing and mid-level cadres. The revision process included the harmonization of clinical practicum materials with revised curricula ensuring that development of revised materials was effective for the learner, reflected the needs of the country, and designed in a way that accommodated available resources.



I-TECH created a “bridging” course for basic-level clinicians to advance to mid-level TMGs in Mozambique.

Implementation: Linking Training to Practice

I-TECH facilitates learning and application of new skills and behaviors within professional, practicum, and educational settings, followed by on-site mentoring and distance consultation, and continuing education. Our approach to training and education touches on these levels of learning and the systems in which health care professionals work to streamline organizational systems, processes, and routines and to facilitate transfer of skills to the workplace.

Since 2016, I-TECH has implemented a novel preceptorship program, Improving HIV Care for Key Populations in the **Caribbean**. This initiative builds health worker capacity to provide nonjudgmental, high-quality comprehensive HIV care to key, at-risk populations. As a means of increasing awareness and sensitivity among HIV health care workers, and in order to improve how they interact with and treat all patients, I-TECH designed a

training using targeted scenarios, skilled patient trainers recruited from local men who have sex with men, transgender, and sex worker communities who interact with clinicians and nurses through role-play. As of November 2020, 109 clinicians and nurses in the region have participated in this training. I-TECH is currently working to adapt this training model for other cadres, including HIV case managers and social workers.

In **Zimbabwe**, I-TECH worked with the MOHCC to revise the national Integrated Training for HIV/AIDS Treatment (HIT) curriculum. I-TECH also supported the finalization of a national clinical attachment and mentorship program through provision of technical assistance to the MOHCC, revision and streamlining of a national mentoring curriculum, and development of reporting tools to be used as the follow-up activities after completion of the HIT. I-TECH has supported the training of over 3,000 health care workers on the HIT and mentorship trainings. I-TECH is the training partner for the HIV and TB unit of MOHCC and plays a critical role in development of many national curricula.

In **Namibia**, I-TECH supported the Ministry of Health and Social Services (MOHSS) to scale up comprehensive primary care HIV services by training nurses on ART initiation and providing mentoring skills to district doctors who oversee nurses in their task-shared role. In 2011, I-TECH led a Task-Shifting Demonstration project at nine sites across the country. A mixed methods evaluation, conducted six months post implementation, found that task shifting improved access and quality of HIV services and reported an increase in nurses' skills.

In **South Africa**, I-TECH implemented a Community Oriented Primary Care (COPC) intervention to enhance Ward-based Outreach Teams (WBOTs). These outreach teams, comprising community health workers, provided HIV prevention education, linkage to care through health education and referrals, adherence support, and identification of individuals who are failing treatment.⁴ COPC, a locally born and internationally established approach to primary health care, utilized a work-integrated learning approach to develop WBOT capacity. I-TECH provided technical assistance for WBOT policy implementation by engaging partners on WBOT competency development, training, mentoring, and monitoring and evaluation systems to ensure achievement of NDOH priorities.

Evaluation of Workforce Development Training and Capacity Building

I-TECH continually evaluates training efforts to improve training interventions and maximize investments in evidence-based practices. I-TECH moves toward process indicators that have historically been used to monitor training efforts to actual down-stream clinical indicators through targeted health care training interventions. Our approach to training evaluation uses data to plan, implement, improve, and assess immediate effectiveness of learning programs and long-term outcomes in terms of transfer of learning, strengthened systems, and ultimately improved health outcomes.

Leadership and Management

I-TECH's leadership and management activities are built on the premise that good leadership and management skills must be taught alongside other technical competencies as essential components of health systems strengthening. Drawing on experienced global health faculty, I-TECH supports training and training-of-trainer programs in essential leadership skills – including advocacy and policy development, governance, values-based leadership, management, supervision, coalition building, and systems design and monitoring. These programs harness a range of methodologies to reach a diverse global audience, including distance and e-learning, skills assessments, workshops, curriculum enhancements, case studies, and supervised action plans. Created with the UW Department of Global Health E-Learning Program (eDGH), I-TECH's Leadership and Management in Health blended learning course has had more than 31,000 enrollees to date.

⁴ Naidoo N, et al. Making ward-based outreach teams an effective component of human immunodeficiency virus programmes in South Africa. *South Afr J HIV Med.* 2018 Apr 12;19(1):778. doi: 10.4102/sajhivmed.v19i1.778.

I-TECH developed a framework for evaluating training outcomes⁵ using a combination of desk review, key informant interviews, and an inductive qualitative evaluation method. The resulting framework includes nine distinct types of training outcomes that can be evaluated, which are organized within three nested levels: individual, organizational, and health system/population. The framework also addresses contextual factors that may influence the outcomes of training, as well as the ability of evaluators to determine training outcomes. In addition, a group of user-friendly resources, the **Training Evaluation Framework and Tools (TEFT)** were created to help evaluators and stakeholders understand and apply the framework.

I-TECH has implemented **more than 250 training and program evaluations**, leading to improved course design and understanding of contextual factors that inhibit or facilitate transfer of learning from classroom (virtual or online) to workplace for long-term change.

Our evaluations incorporate a continuous quality improvement (CQI) approach to pilot courses or teaching encounters and all evaluations, to improve course design and content during and after implementation for achievement of desired competencies and impact.

In **South Africa**, I-TECH conducted a pre/post evaluation of a pilot prevention with positives training program for healthcare providers,⁶ evaluated whether an advanced TB/HIV course for health care workers improved overall TB and HIV treatment monitoring,⁷ and tested three methods of delivering clinic-based training on syndromic management of sexually transmitted infections.⁸ In Mozambique, I-TECH rigorously evaluated a national mid-level healthcare personnel pre-service training for clinical officers⁹ and looked at post-graduation skill and knowledge retention of those trained clinicians.¹⁰ In **Malawi, Tanzania, and South Africa**, I-TECH explored key challenges and effective solutions to strengthen HIV/TB-related continuing professional development.¹¹

In 2012, I-TECH led a national mixed-methods evaluation in **Botswana** to explore the effectiveness and contribution of the lay counselor cadre to the HIV health workforce. Findings revealed that lay counselors provided major contributions to HIV-related programs in the country and conducted a bulk of HIV counseling and testing services.



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⁵ O'Malley G, Perdue T, Petracca F. A framework for outcome-level evaluation of in-service training of health care workers. *Hum Resour Health*. 2013 Oct 1;11:50. doi: 10.1186/1478-4491-11-50.

⁶ Kemp CG, et al. Pre/post evaluation of a pilot prevention with positives training program for healthcare providers in North West Province, Republic of South Africa. *BMC Health Serv Res*. 2017 May 2;17(1):316. doi: 10.1186/s12913-017-2263-7.

⁷ Galagan S, et al. Improving Tuberculosis (TB) and Human Immunodeficiency Virus (HIV) Treatment Monitoring in South Africa: Evaluation of an Advanced TB/HIV Course for Healthcare Workers. *Open Forum Infect Dis*. 2016 Dec 7;4(1):ofw248. doi: 10.1093/ofid/ofw248.

⁸ Weaver MR, et al. Three methods of delivering clinic-based training on syndromic management of sexually transmitted diseases in South Africa: a pilot study. *Sex Transm Infect*. 2016 Mar;92(2):135-41. doi: 10.1136/sextrans-2015-052107.

⁹ Feldacker C, et al. Mid-level healthcare personnel training: an evaluation of the revised, nationally-standardized, pre-service curriculum for clinical officers in Mozambique. *PLoS One*. 2014 Jul 28;9(7):e102588. doi: 10.1371/journal.pone.0102588.

¹⁰ Feldacker C, et al. The effect of pre-service training on post-graduation skill and knowledge retention among mid-level healthcare providers in Mozambique. *Hum Resour Health*. 2015 Apr 16;13:20. doi: 10.1186/s12960-015-0011-9.

¹¹ Feldacker C, et al. Continuing professional development for medical, nursing, and midwifery cadres in Malawi, Tanzania and South Africa: A qualitative evaluation. *PLoS One*. 2017 Oct 17;12(10):e0186074. doi: 10.1371/journal.pone.0186074.