

GLOBAL NURSE CAPACITY BUILDING PROGRAM (GNCBP)



SUPPORTING NURSING AND MIDWIFERY
IN SUB-SAHARAN AFRICA
TO IMPROVE POPULATION HEALTH



EXECUTIVE SUMMARY

The Global Nurse Capacity Building Project (GNCBP) is a global health initiative that was administered by the Health Resources and Services Administration (HRSA), under the U.S. Department of Health and Human Services, with funding from the U.S. President's Emergency Plan for AIDS Relief (PEPFAR). It was implemented by ICAP at Columbia University's Mailman School of Public Health (ICAP) from 2009 to 2018. GNCBP's goal was to advance the HIV response toward epidemic control and to improve population health in sub-Saharan Africa by fostering individuals, institutions, and networks to expand, enhance, and sustain the nursing and midwifery workforce.

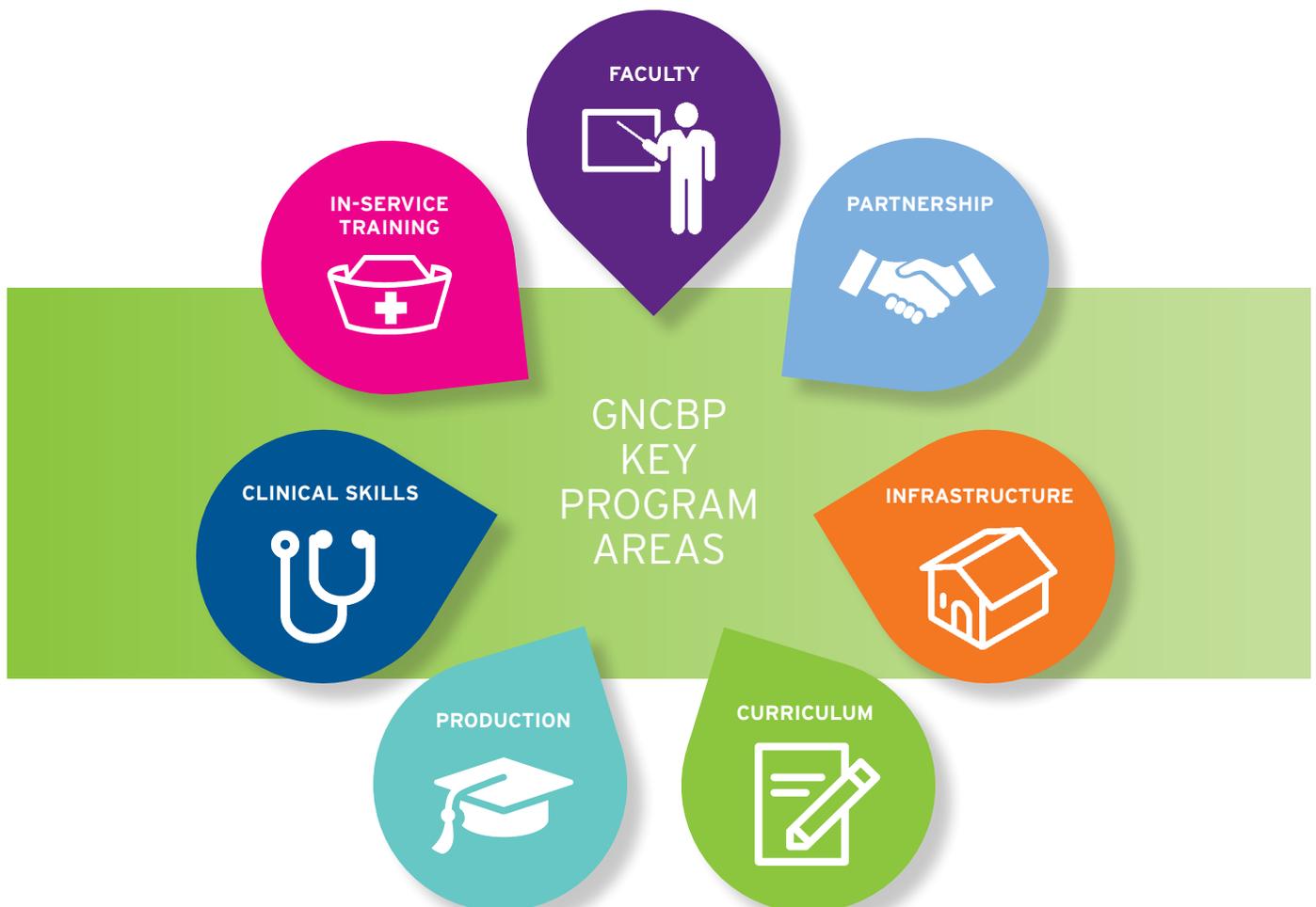
The program used a holistic approach to strengthen nursing and midwifery education and practice through two complementary sub-projects: the Nursing Education Partnership Initiative (NEPI), which expanded the health workforce by producing new nurses and midwives; and the General Nursing (GN) project, which supported the maintenance of a skilled health workforce through continuing professional development (CPD), in support

of HIV care and treatment scale up and sustainability.

Together, NEPI and GN interventions increased the quantity and quality of the nursing and midwifery workforce by addressing seven domains of health workforce development: infrastructure; curriculum; faculty; clinical skills; production; in-service training; and partnership for policy and regulation.

Key Program Areas

From 2009 to 2017, in partnership with HRSA, in-country nursing leaders, ministries of health (MOH), professional associations, regulatory bodies and education institutions, as well as U.S. Centers for Disease Control and Prevention (CDC) country offices, ICAP implemented GNCBP in 11 countries across sub-Saharan Africa: Cameroon, Côte d'Ivoire, Democratic Republic of Congo (DRC), Ethiopia, Kenya, Lesotho, Malawi, Mozambique, South Africa, Swaziland, and Zambia.



BACKGROUND

Despite bearing 27 percent of the global disease burden, sub-Saharan Africa accounts for just 3.5 percent of the global health workforce.¹ Critical shortages of nurses, midwives, and physicians are the norm in the region. In 2006, there were just 2.3 skilled health professionals for every 1,000 people,² a ratio well below the WHO minimum standard of 4.45 for achieving universal health coverage and Sustainable Development Goal health targets.³ As of 2017, health care worker density falls short of the WHO threshold in more than 80 countries, and the global health workforce shortage, already estimated at 7.2 million, is projected to grow to 12.9 million by 2035.⁴

In the face of these challenges, the WHO released guidelines in 2008 recommending task-shifting as one method of strengthening and expanding the health workforce to rapidly increase access to HIV and other health services. Task-shifting and task-sharing initiatives between professions and lay health workers has successfully extended high-quality HIV care and treatment services to a greater proportion of the people who need them in both research-rich and resource-constrained settings. Task-shifting is critical to achieving universal health coverage, and highlights the need for CPD and strong pre-service education in nursing.

Production of more nurses and midwives, and improved quality of education and training for nurses and midwives, are two widely endorsed strategies for confronting the health workforce crisis. In 2009, the U.S. government committed to training 140,000 new health care workers to bolster the capacity of the health workforce to support universal ART coverage.⁵

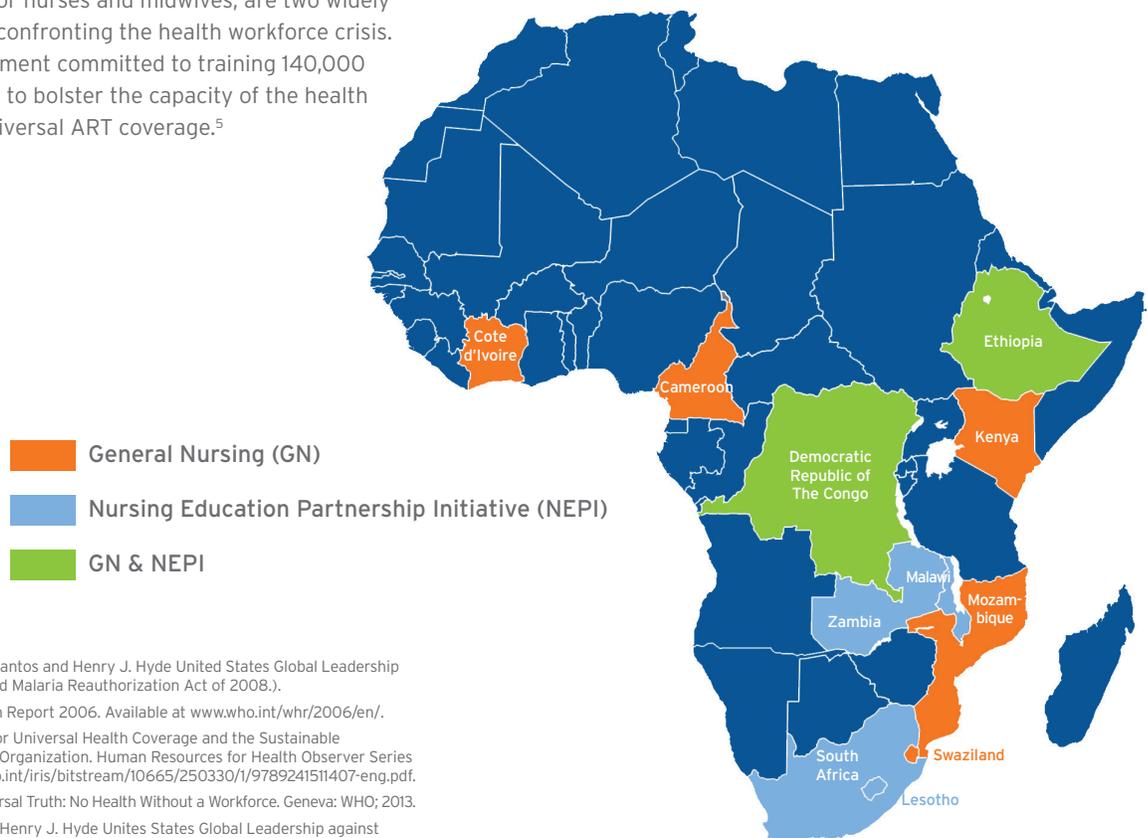
GNCBP OVERVIEW

In 2009, with PEPFAR funding, and in close partnership with HRSA, ICAP began implementing the Global Nurse Capacity Building Program (GNCBP). Three objectives supported GNCBP's goal of improving population health in sub-Saharan Africa:

- To improve the quantity, quality and relevance of the nursing and midwifery workforce to address essential population-based health care needs, including HIV and other life-threatening conditions
- To identify, evaluate and disseminate innovative health workforce models and practices that are generalizable for national scale-up of nursing and midwifery education
- Provide technical and capacity-building support for nursing and midwifery policy; regulation; faculty development; curricula reform; absorption and retention; CPD; and high-impact nursing leadership

GNCBP consists of two projects: the Nursing Education Partnership Initiative (NEPI) and General Nursing (GN) project. Figure 1 displays the countries and nursing schools that participated in each GNCBP project.

Figure 1: Countries and schools participating in GNCBP



¹ Source: p. 6 of NEPI report (Tom Lantos and Henry J. Hyde United States Global Leadership against HIV/AIDS, Tuberculosis, and Malaria Reauthorization Act of 2008.).

² Source: World Health Organization Report 2006. Available at www.who.int/whr/2006/en/.

³ Health Workforce Requirements for Universal Health Coverage and the Sustainable Development Goals. World Health Organization. Human Resources for Health Observer Series No. 17. Available at <http://apps.who.int/iris/bitstream/10665/250330/1/9789241511407-eng.pdf>.

⁴ World Health Organization. A Universal Truth: No Health Without a Workforce. Geneva: WHO; 2013.

⁵ H.R. 5501 (110th): Tom Lantos and Henry J. Hyde Unites States Global Leadership against HIV/AIDS, Tuberculosis, and Malaria Reauthorization Act of 2008. <https://www.govtrack.us/congress/bills/110/hr5501/summary>.



NEPI: HRSA launched NEPI in 2009 to support the Congressional target of training at least 140,000 new health care workers by 2014 to promote sustainable control of the HIV epidemic. NEPI's goal was to produce sufficient numbers of nurses and midwives with the knowledge and skills needed to meet the long-term health needs of communities in sub-Saharan Africa, where these cadres provide up to 90 percent of all health services. NEPI was implemented at 22 schools in DRC, Ethiopia, Lesotho, Malawi, South Africa, and Zambia. The NEPI project had five strategic objectives:

- Strengthen teaching and learning infrastructure
- Improve the quality and relevance of teaching and learning
- Increase the capacity of nursing and midwifery faculty
- Build governance, leadership, and administrative capacity within nursing education institutions
- Enhance partnerships with national and regional nursing education networks

NEPI increased the capacity of 22 nursing schools through a combination of training, technical assistance, mentorship, innovative clinical learning strategies, and monitoring and evaluation (M&E).

GNCBP selected each nursing school for NEPI support based on an assessment of nursing and midwifery education needs using rigorous selection criteria. The Clinton Health Access Initiative (CHAI) conducted needs assessments in Zambia, Malawi, and Lesotho. Capacity Plus conducted assessments in DRC and Lesotho. GNCBP supported a technical working group in each country to select nursing schools and interventions for support based on the assessment findings, and tailor support for each school. GNCBP initiated project activities in Lesotho, Malawi, and Zambia in 2010 before expanding to Ethiopia and DRC in 2011, and to South Africa in 2013.

GN: The GN project aimed to increase the capacity of current and future nurses and midwives to provide HIV and primary care services through in-service training and strengthening of the existing nursing workforce. GN was implemented in Cameroon, Côte d'Ivoire, DRC, Ethiopia, Kenya, Mozambique, and Swaziland. Custom interventions were developed and tailored to the demonstrated health workforce needs and priorities in each country, in consultation with ministries of health, HRSA PEPFAR agencies, and stakeholders.

The GN project had five strategic objectives:

- Develop and enhance national nursing strategies
- Increase nurse capacity through in-service training
- Improve retention of nurses in the health workforce
- Create and strengthen nursing regulatory councils
- Expand the role of nurses in health leadership and policymaking

Institutional partnerships were essential to maximizing the reach and effectiveness of GNCBP investments in human and physical infrastructure. ICAP worked in collaboration with the International Council of Nurses (ICN); the International Confederation for Midwives (ICM); the Medical Education Partnership Initiative (MEPI); Columbia University School of Nursing; the Association of Nurses in AIDS Care (ANAC); the Global Health Service Partnership (GHSP); the African Regulatory Collaborative (ARC); and the Consortium of Universities of Global Health (CUGH).

Regional partners included the Forum of University Nursing Deans/Departments in South Africa (FUNDISA); the East, Central, and Southern African College of Nursing (ECSACON); WHO-AFRO; AFREHealth; and simulation equipment suppliers and trainers. In country, ICAP operated GNCBP in partnership with ministries of health and technical working groups consisting of nursing and midwifery education institutions, professional associations and councils, and key nursing stakeholders.

KEY ACTIVITIES AND ACHIEVEMENTS BY DOMAIN

Nursing Education Infrastructure

Many of the nursing schools GNCBP supported lacked critical teaching and learning resources, such as updated textbooks, and information and communication technology (ICT). GNCBP's technical assistance helped nursing schools upgrade their facilities and infrastructure to comply with—and even exceed—national standards (or norms) for education. This allowed the schools to increase enrollment and staffing, improve student access to resources, and reform teaching methods and clinical preceptorship programs.

GNCBP supported 43 infrastructure upgrades ranging from newly constructed learning spaces, to installation of innovative ICT for teaching and learning. Figure 2 shows a breakdown of infrastructure improvements supported by GNCBP. Specific examples are described below.

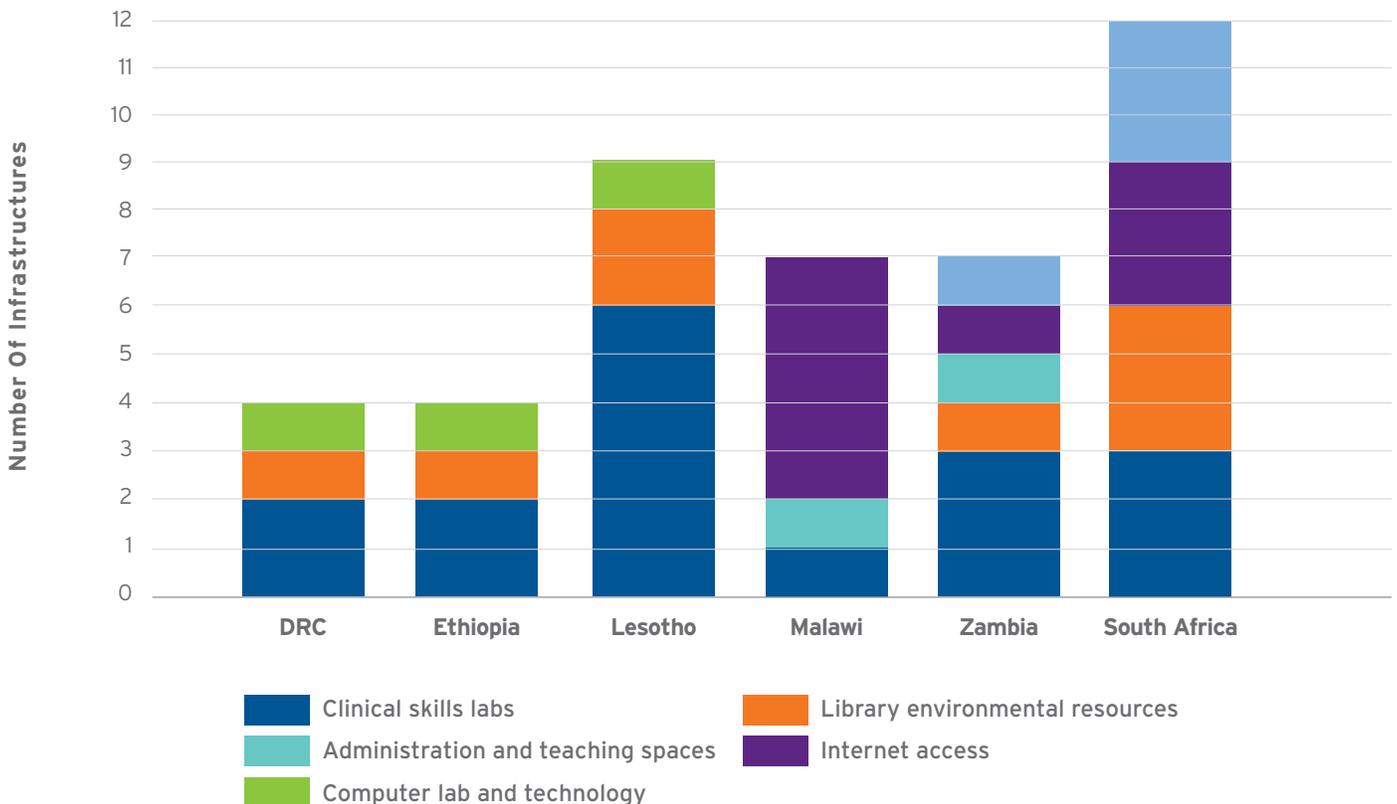
Clinical skills labs: Clinical simulation allows students to build clinical competence, confidence, and judgment in a structured and supportive learning environment before practicing in real health care settings. Few nursing schools were equipped with clinical

skills simulation labs prior to GNCBP, and many existing labs were outdated, self-made, or poorly equipped.

Seventeen clinical skills labs equipped with conference rooms, video capability, adult and child computerized mannequins, and other simulation materials, were installed or upgraded with GNCBP support. Each lab fostered group collaboration, student reflection, and practice of complex clinical skills and scenarios in a safe and supportive environment. The simulation lab staff and faculty were taught how to use and maintain equipment. A clinical simulation community of practice was launched via WhatsApp to foster the exchange of lessons learned and resources across the NEPI network.

Supported nursing schools in six countries now have appropriately outfitted skills labs that permit students at all levels of training to apply their theoretical knowledge and refine their competency. Students at GNCBP-supported schools have successfully completed 43,965 skills labs in obstetrics, resuscitation procedures, ward hygiene and management, and general adult and pediatric care and treatment.

Figure 2: GNCBP infrastructural improvements by country and type



BOX 1 **Building Student Competencies through Clinical Simulation in Swaziland**

In October 2010, GNCBP supported the establishment of a clinical skills simulation lab at Good Shepherd College of Nursing (GSCN). The lab gave students the opportunity to transform theoretical learning into practical psychomotor, affective, and cognitive skills by practicing clinical decision-making techniques and communication in a supportive environment.

Students from GSCN and other local nursing schools use the lab to complete requisite hours of simulated nursing practice, including demonstrations and skills lab assessments (return demonstrations), prior to practicing with real patients at health facilities. GSCN uses the principle of realism, where students assume the role of nurse and act as if the mannequins are real patients. The students are recorded and observed, in real time, by students and clinical instructors. Students are continuously assessed, and benefit from routine peer feedback and observation of their practice. They receive a cumulative final examination to determine whether they have achieved the minimum competence required for issuance of a student practicing license by the Swaziland Nursing Council.

GNCBP worked with GSCN to develop and implement a custom database to track students' grades on skills lab assessments. The database tracks which students have successfully completed simulations and achieved required competencies, and tracks evaluations of demonstrations by nurse educators for quality assurance and quality improvement purposes.

In Malawi, GNCBP supplemented skills lab infrastructure with support for development of simulation guidelines that set harmonized standards for teaching and measurement of skills lab-related competencies. The guidelines have been adopted and used by all 16 NEIs in Malawi to teach clinical competencies, including HIV care and treatment competencies, in simulated settings (see Box 2). GNCBP has prioritized sustainability of the skills labs by training staff in proper equipment use and maintenance, repeated engagement with regional suppliers and development of school-specific sustainability plans.

BOX 2 **Harmonizing standards for skills lab competencies in Malawi**

GNCBP provided the Nurses and Midwives Council of Malawi (NMCM) with technical assistance to develop Objective Structured Clinical Examination (OSCE) guidelines for standardized assessment of clinical competencies in simulated and clinical settings. The OSCE guidelines, which assisted in standardizing the way students are taught and assessed in simulations across all 16 NEIs in Malawi, have been shared with Ethiopia through a South-to-South exchange to learn from Malawi's experience.

Computer labs with internet connectivity (NEPI):

GNCBP measurably strengthened physical learning infrastructure, including libraries, computer labs, and resource centers in each NEPI-supported school.

In DRC, Lesotho, Malawi, and Zambia, where no suitable structure existed, GNCBP supported installation of pre-fabricated buildings to serve as dedicated libraries or computer labs. In other settings, GNCBP converted or upgraded existing spaces for the same functions. Each space was outfitted with appropriate equipment and supplies such as partitioning cubicles, bookshelves, tables and desks, textbooks, desktop computers, and high-bandwidth Internet connectivity. Each school established sustainability plans to ensure ongoing maintenance, internet connectivity, and computer support.

The upgraded learning centers enable nursing faculty and students to continuously build their competency as educators and health professionals through access to online teaching simulations, clinical guidelines, electronic journal articles, and ICAP webinars and courses (including the ICAP e-learning course on Option B+ for PMTCT). Students used GNCBP-supplied computers to access new online learning programs developed under NEPI, such as the Option B+ e-learning course.

In select countries, GNCBP also supported off-campus distance learning centers for nursing education students to access electronic learning resources during the practicum phases of their programs (see Box 3). Thirty-six advanced-degree students utilized distance-learning centers.

BOX 3 **Distance Learning Centers in Malawi**

In Malawi, GNCBP provided support for Kamuzu College of Nursing (KCN) distance learning centers based in Zomba, Mzuzu, Lilongwe, and Blantyre for Master's students in Nursing and Midwifery Education. The centers provided students who were off campus or in clinical areas with reliable access to internet and the ability to engage in group discussions and face-to-face interaction with teachers. In addition, the distance learning centers have proven effective at reducing the amount of time that Master's students spend away from their work places, limiting the health workforce gap often created by continuing education programs.



Resource centers (GN): GNCBP opened two resource centers in Swaziland's Lubombo region to promote career advancement and retention of practicing nurses. Resource centers increase CPD opportunities for practicing nurses by giving them access to a variety of health information resources (including web-based, electronic, paper, and audio-visual resources), along with a suitable training space. GNCBP assisted the Ministry of Health's Training Unit and the Lubombo Regional Health Management Team to develop a concept paper for the resource centers. GNCBP worked with the Ministry and GSCN to assess and fulfill equipment and supply needs associated with resource center operation, following guidance and approval from HRSA.

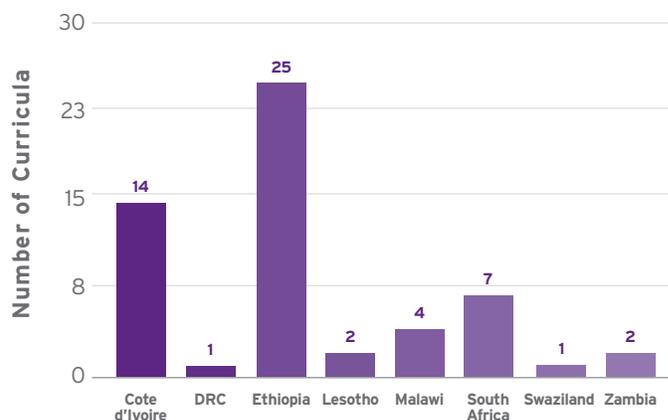
Curricula Enhancement

Prior to GNCBP, many nursing education institutions' curricula were outdated and did not adequately prepare students for the conditions and population health needs they would encounter after graduation. GNCBP helped nursing schools prepare their students for clinical practice by reforming curricula to focus on development of knowledge, skills, and competencies required to provide high-quality health services, including HIV prevention, care, and treatment. GNCBP also supported the development of new diploma and degree programs to address specific gaps in health workforce education, reduce overlap between programs and courses, and increase efficiency.

GNCBP facilitated a backward design approach (Box 4) to curriculum revision and development to ensure that students develop the knowledge and skills to attain full competency in time for matriculation.

GNCBP supported implementation of 56 nationally accredited curricula at 22 nursing schools across six countries. These curricula included the first combined Nurse-Midwife Bachelor of

Figure 3: Curricula implementation by country



BOX 4 ICAP Backward Design Approach to Competency-Based Curricula

(Excerpted from ICAP's Curriculum Design Webinar Series)

- Step 1:** Identifying desired results: What should students know, understand, and be able to do?
- Step 2:** Determining acceptable evidence: How will we know if students have achieved the desired result and met standards?
- Step 3:** Planning learning experiences and instruction: What activities will equip students with the needed knowledge and skills?

Science in Zambia, an online Diploma in Midwifery in Lesotho, a Master's of Science in Nursing Education in Malawi, and a PhD in Inter-Professional Healthcare and Leadership in Malawi. Figure 3 and Table 1 (below) summarize GNCBP-implemented curricula.

Table 1: Curricula developed or revised under GNCBP by country, program, and school

COUNTRY	PROGRAM	SCHOOL(S)
DRC	Advanced Diploma in Nursing	Kinshasa ISTM Lubumbashi ISTM Kintambo ISTM Kamalondo ISTM
Ethiopia	Bachelor of Science in Nursing Bachelor of Science in Midwifery Master of Science in Medical Nursing Master of Science in Surgical Nursing Master of Science in Pediatric Nursing	University of Gondar University of Addis Ababa Arba Minch College of Health Sciences
Lesotho	Diploma in Midwifery Diploma in General Nursing Bachelor of Science in Nursing	National University of Lesotho Christian Health Association of Lesotho (CHAL): Maluti, Roma, Scott, Paray
Malawi	Bachelor of Science in Nursing and Midwifery Master of Science in Nursing and Midwifery Education PhD in Inter-professional Healthcare Leadership	Mzuzu University University of Malawi, Kamuzu Malawi College of Health Sciences
South Africa	Bachelor of Science in Nursing Diploma in Midwifery Diploma in Nursing	Free State School of Nursing Mpumalanga School of Nursing Prince Mshiyeni School of Nursing
Zambia	Diploma in Nursing and Midwifery Clinical Instruction curriculum	Lusaka School of Nursing Monze School of Nursing

Combined registered nurse-midwife curriculum:

In Zambia, GNCBP provided technical support to the Ministry of Health to develop a new combined Diploma in Nursing and Midwifery at the Lusaka and Monze Schools of Nursing. The aim of the combined program was to increase the number of nurses graduating with midwifery skills so that midwifery services are more accessible, especially to populations in rural and remote areas of the country that face shortages of qualified midwives.

The combined curriculum has reduced training time for nurse-midwives substantially, from six to just three-and-a-half years. Enrollment at both schools has reached full capacity. To date, 110 nurse-midwives have matriculated and entered the health workforce, resulting in more health facilities staffed by nurses with essential midwifery skills.

Campus to Clinic HIV curriculum: First developed for use in South Africa, the ICAP Campus to Clinic curriculum bridges pre-service and in-service nurse training by preparing nurse mentors with expanded knowledge, clinical skills, and teaching methodologies. The curriculum is a useful resource for ministries of health and nursing schools seeking to improve the relevance of pre-service nursing education to population health needs, and to expand and enhance HIV mentorship training for nurses. Since its introduction in 2010, the program has produced 62 graduates in South Africa and has been adapted for use in other countries, including Kenya.

Option B+ e-learning course: ICAP created an online training course in PMTCT Option B+ to improve education and training of nurses and midwives who provide care and treatment

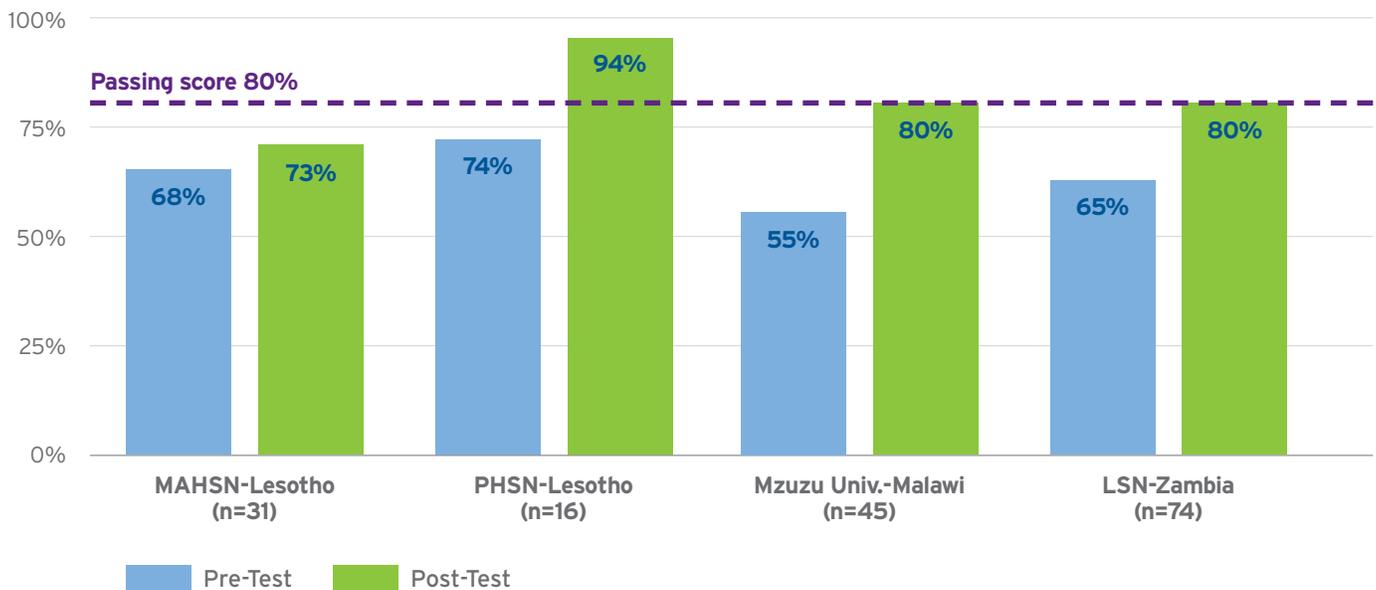
to HIV pregnant women and exposed infants. The online course includes competency-based modules on such topics as HIV counseling and testing, ART for pregnant women, and care for HIV-exposed infants. It features narrative exercises, case studies, interactive activities, and evaluation tools to monitor progress and review test scores.

During the 2014-15 academic year, GNCBP worked with faculty at eight NEPI-supported nursing schools in Malawi, Zambia, and Lesotho to pilot the Option B+ online course in GNCBP-supported computer labs. Of the 220 nursing and midwifery students who completed the module, 91 percent stated that they were satisfied with their learning experience. On average, their knowledge of the Option B+ approach to PMTCT improved from a failing score of 68 percent at pre-test, to a passing score of 81 percent at post-test. Pre- and post-test scores from ICAP's evaluation of Option B+ e-learning at four schools are summarized in Figure 4.

GNCBP supported the expansion of online Option B+ training to a broader audience of pre-service nursing education institutions and in-service training providers, and promoted the course for use by practicing nurses and midwives. More than 2,400 nurses, midwives, faculty, and students in 32 countries have registered for the course, accredited for six hours of CPD credit through the East, Central, and Southern Africa Colleges of Nursing (ECSACON) CPD Library.

To date, 580 nurses and midwives have been certified in Option B+ through the online course, and this number is expected to continue to grow. The course continues to be available online at no cost to the learner.

Figure 4: Average pre- and post-test scores at four schools piloting Option B+ e-learning

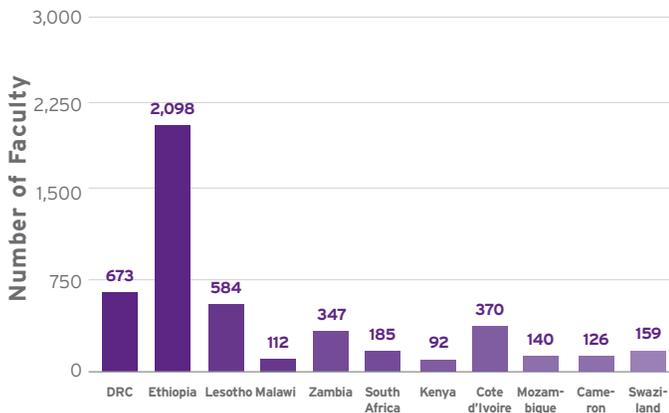


Faculty development

GNCBP provided extensive support for faculty development with clinical preceptor training and advanced degrees in nursing education, health policy, leadership, and interprofessional practice.

GNCBP supported 4,886 faculty, mentors, or administrators across 11 countries with continuing education in clinical skills, education, and research at the specialty certificate, Master's, and PhD levels. Figure 5, below, provides a country-by-country breakdown of faculty development under GNCBP.

Figure 5: Faculty, mentors and administrators trained under GNCBP, by country

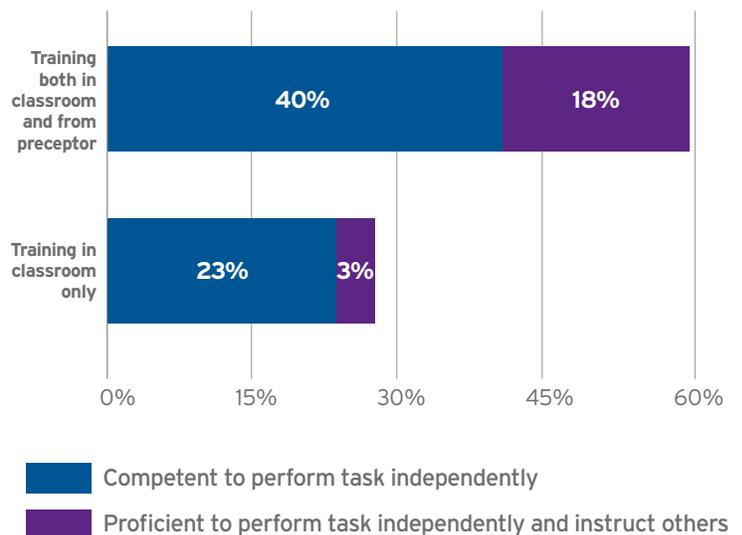


Clinical preceptor training: In partnership with Mzuzu University and the Malawi Ministry of Health, GNCBP supported the development and implementation of the Preceptor Education Training Program (PETP), to improve the quality of preceptor clinical teaching skills and student acquisition of clinical skills. This six-week post-graduate certificate program promotes health workforce development by training registered nurse-midwives for preceptor postings at central and district hospitals throughout Malawi. A total of 156 preceptors were trained to provide essential clinical instruction and supervision to nursing and midwifery students, often in hard-to-reach sites with high HIV burdens. Preceptors are provided with ongoing supportive supervision at their preceptor sites on a quarterly basis.

An evaluation of the PETP found that, compared with students who completed classroom training alone, students who also received training from a preceptor felt they were nearly twice as competent to perform key tasks independently and seven times as proficient at performing key tasks and instructing others (see Figure 6).



Figure 6: Clinical preceptor training outcomes on student-perceived competence in Malawi



BOX 5 Designing New, Competency-Based Degree Programs in South Africa

Under NEPI, GNCBP supported the development of model, competency-based curricula for South Africa's two foundational nursing degrees: the Bachelor of Nursing and National Diploma in Nursing, and its post-basic midwifery qualification: the Advanced Diploma in Midwifery. Each of these three model curricula was developed in partnership with a strategically selected public college of nursing.

At each college, GNCBP supported the establishment of a small curriculum development team led by the college principal. Each team received intensive training in competency-based methodologies and then applied that training by developing a curriculum that fosters critical reflection over memorization and repetition and responds to real health challenges. To ensure curricula were adapted to South Africa's pressing health challenges, teams carried out initial situational assessments and adhered to a curriculum development process that incorporated HIV competencies contained in the World Health Organization and South African national HIV care and treatment guidelines.

Throughout the curriculum development process, teams received technical support from a central Curriculum Technical Working Group consisting of experts from three local universities and an HIV specialist from the Department of Health.

Advanced degree programs: NEPI helped elevate the discipline of nursing education and enhancing career advancement pathways for nursing educators through a combination of Bachelor, Masters and PhD-level programs for nursing and midwifery faculty. NEPI-supported programs emphasized blended learning where faculty members could continue to teach at their institutions and clinical settings while intermittently returning to school for advanced study.

Working with a team of experienced educators and health experts from across Malawi, GNCBP supported the development and implementation of two advanced degree programs as part of a broader strategy to provide opportunity for professional development and career advancement in nursing and midwifery education. Both programs are offered by the Kamuzu College of Nursing (KCN) at the University of Malawi.

A Master's of Nursing and Midwifery Education provides nurse educators with advanced knowledge in educational methods and research, as well as clinical competence in their area(s) of specialization. This program is increasing the national supply of qualified and skilled tutors and helping to bridge the classroom-clinic divide by conveying relevant clinical and academic education to nursing faculty. A PhD in Inter-Professional Health Care and Leadership, the first program of its kind in Malawi, aims to accelerate the preparation of nurse researchers, create nursing leaders in interdisciplinary health care teams, and educate the



next generation of nurse and midwife scholars. ICAP's regional office in South Africa provided technical assistance to support the PhD program, taught by faculty from around the world. Seven nurse leaders from Kamuzu College, Mzuzu University, and the Ministry of Health, have enrolled in the PhD program.

In Zambia, NEPI sponsored Staff Development Fellowships for six faculty from the University Of Zambia Department of Nursing Sciences to obtain Master's degrees in anatomy, physiology, pathology, and biochemistry—areas in which the national health system faced shortages of qualified tutors. Fellowships allowed nursing faculty to pursue advanced study on a part-time basis while they continue to teach and mentor students.

NIMART training for faculty: To equip faculty with information needed to train the future nursing and midwifery workforce in management of ART, GNCBP provided nursing and midwifery faculty in South Africa with the opportunity to complete the in-service NIMART training offered through the Provincial Department of Health Training. NIMART has been instrumental to the scale up of ART access in South Africa. GNCBP also supported extensive NIMART training for clinic staff in Kenya and faculty in Cameroon as described in Box 6.

BOX 6 Preparing Faculty Master Trainers of Test and Start Guidelines in Cameroon

To help preservice training institutions keep pace with rapidly evolving guidelines for HIV care and treatment, GNCBP supported the MOH of Cameroon to train nursing and midwifery faculty in the latest Test and Start guidelines using the latest training tools.

Under the GN program, GNCBP trained 32 faculty from 11 nursing schools in Test and Start via two training-of-trainers workshops (one in Yaoundé and one in Douala). Pre- and post-test results demonstrated that average competency rates increased from 45% to 90% among the Yaoundé cohort and from 50% to 89% among the Douala cohort. All 32 faculty who completed the training were certified by MOH as Master Trainers, applying their newly acquired competencies by training nursing and midwifery students in their final year of preservice education in the Test and Start approach.

Clinical Skills

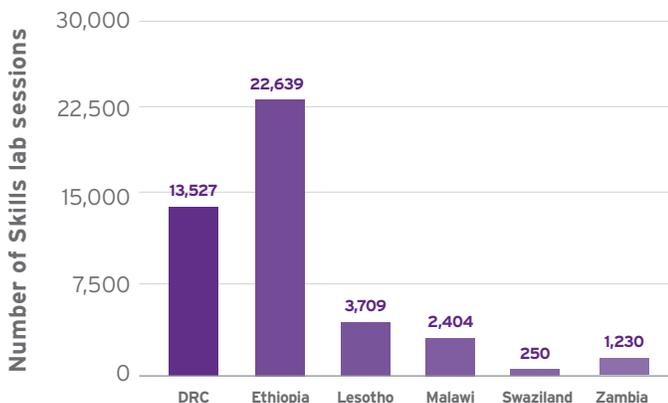
Many pre-service education programs do not adequately equip nursing graduates to provide HIV services with confidence and quality. GNCBP provided special attention to the integration of HIV-related competencies into nursing and midwifery curricula as well as clinical practice to ensure that matriculating students are well prepared to deliver HIV care and treatment, prevention of mother-to-child transmission (PMTCT), and other critical HIV related health services.

GNCBP enhanced clinical skills training in NEPI-supported schools through a combination of interventions including clinical simulation lab training to enhance students' confidence before entering the clinical setting; model wards with trained preceptors to provide students with quality training and supervision in the clinical setting; practicum training at rural and peri urban clinics with high HIV burden; and specialized training in HIV competency for students.

Clinical skills lab training: In Lesotho, GNCBP installed clinical skills labs at all six NEPI-supported schools and trained faculty in proper use of lab equipment, development and implementation of simulation scenarios, and assessment of changes in student competence. Each skills lab is overseen by a coordinator who manages infrastructure, assists faculty in running simulations, supports students, and carries out necessary monitoring and evaluation activities.

To date, more than 3,700 skills labs courses have been completed by nursing and midwifery students at the six skills labs in Lesotho, and the country has gained recognition as a regional leader in clinical simulation. The model deployed in Lesotho has since been adapted and scaled up to nursing schools in DRC, Ethiopia, Malawi, Swaziland, and Zambia. Together, nearly 44,000 clinical skills lab sessions have been successfully completed by nursing and midwifery students from these countries (see Figure 7 for country-specific data).

Figure 7: Successful completion of clinical skills lab sessions in NEPI-supported countries



Model teaching wards: GNCBP partnered with Mzuzu University and the Ministry of Health in Malawi to reintroduce model wards at five hospitals with high patient volumes, including those with TB and HIV: Kamuzu Central Hospital, Kasungu District Hospital, Mzuzu Central Hospital, Ntcheu District Hospital, and Zomba Central Hospital.

Model teaching wards provide nursing and midwifery students with valuable clinical practicum opportunities. However, many of Malawi's model wards had been inactive since the 1970s, and the infrastructure and human capacity required to run them had diminished over time. GNCBP trained 156 preceptors, oriented 90 nurse-midwife technicians in clinical training, and provided informational materials and equipment to build hospitals' capacity to operate model-teaching wards.

GNCBP also developed a six-week training curriculum in HIV service provision that allows students to observe ART initiation, work directly with HIV-positive pregnant women, and apply nursing practices to the day-to-day care of HIV patients. GNCBP and Mzuzu University staff conducted regular supportive supervision visits for instructors, and created forums across the country for tutors and hospital staff to monitor and discuss students' progress.

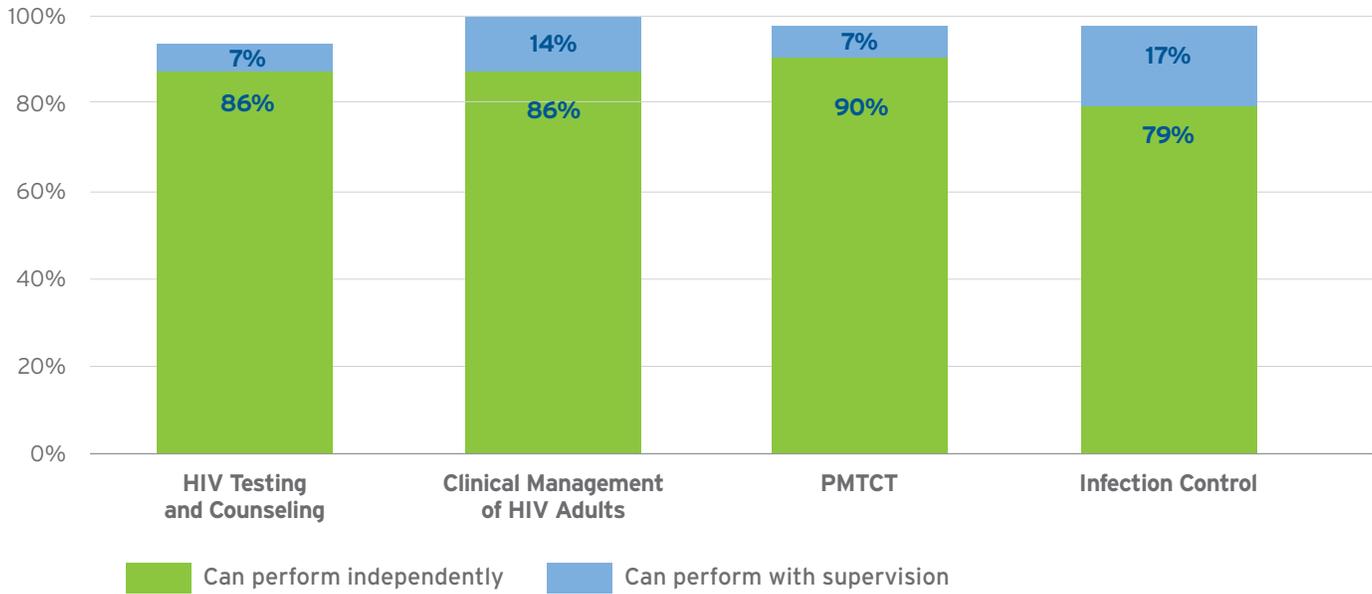
More than 3,000 nursing and midwifery students have started practicum placements in the five model wards since their reintroduction in 2011.

Rural clinical practicum training: In Ethiopia, GNCBP collaborated with the Federal Ministry of Health and three NEPI-supported schools—Addis Ababa University, University of Gondar, and Arba Minch College of Health Sciences—to strengthen community health practice by establishing clinical practicum training sites for nursing and midwifery students in rural areas.

Health care is often sparse in rural communities and retention of health workers in rural areas is particularly challenging. An estimated 85 percent of Ethiopia's rural population has limited access to preventive and curative health care. To increase exposure to rural practice NEPI supported the establishment of rural clinical practicum sites. Students were therefore able to have hands-on experience with rural care including prevention, care, and treatment of HIV, TB, and malaria, while increasing access to health care for the rural population.

At each practicum site, students rotated between different units, participated in outreach programs, and conducted home visits in the community. The rural attachment program now includes 33 sites (more than twice the number that existed before NEPI), and more than 1,140 students have completed rural attachments since 2013.

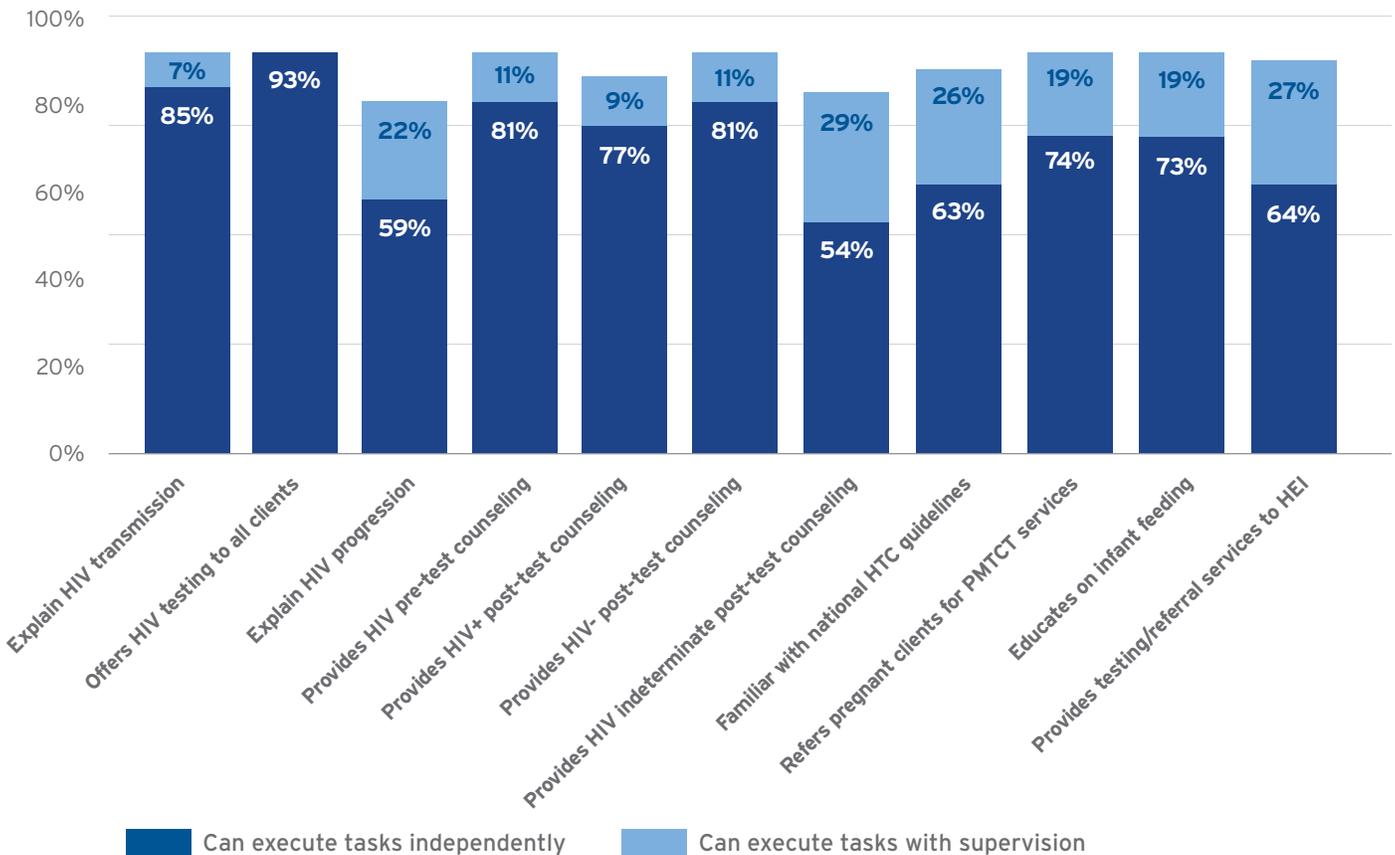
Figure 8: Supervisor ratings of NEPI graduate performance of HIV clinical skills



HIV competency among nursing graduates: In DRC, GNCBP supported the training of 4614 nursing and midwifery graduates in essential competencies needed to effectively perform HIV clinical skills. An evaluation consisting of both direct observation and reports from supervisors measured NEPI graduates' clinical performance across five categories of clinical

HIV care: HIV testing and counseling, clinical management in children, clinical management in adults, ART, and PMTCT. Both evaluation data sources indicated that most graduates were effectively performing clinical HIV care services independently. Figures 8 and 9 summarize the evaluation findings.

Figure 9: Direct observation ratings of NEPI graduate performance of HIV clinical skills



Production of Nurses and Midwives

NEPI contributed to the production of 13,387 new nurses and midwives across eight countries, surpassing targets for health workforce strengthening, helping to mitigate the growing shortage of health care workers across sub-Saharan Africa. Figure 10 displays actual production of nurses and midwives against PEPFAR targets.

Data from Ethiopia and Lesotho demonstrate NEPI's impact on health workforce production. In Ethiopia, where NEPI support began

in 2011, the number of students enrolling at supported nursing schools increased by 41 percent, while the number graduating increased by 53 percent (Figure 11). In Lesotho, where NEPI supported all nursing schools, there was a 48 percent increase in student enrollment and a 118 percent increase in student graduation (Figure 12). There is a strong correlation between Lesotho's trends in nursing enrollment and graduation and national ART enrollment, which increased by 159 percent. (Figure 13).

Figure 10: Production of nursing and midwifery graduates against targets

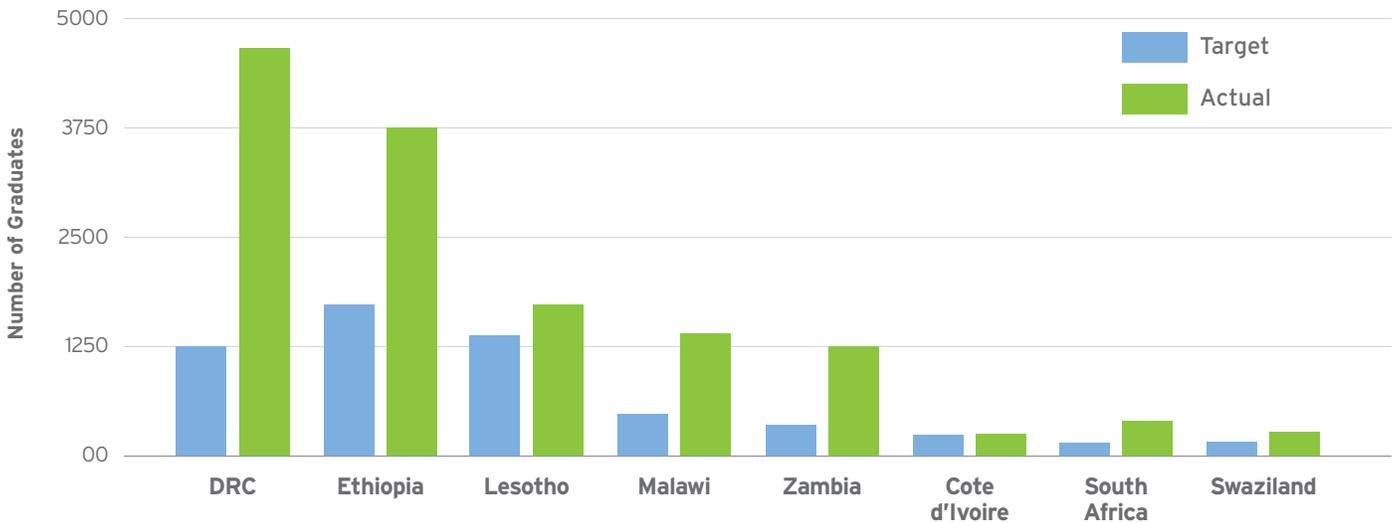


Figure 11: Enrollment and graduation before and after NEPI: Ethiopia

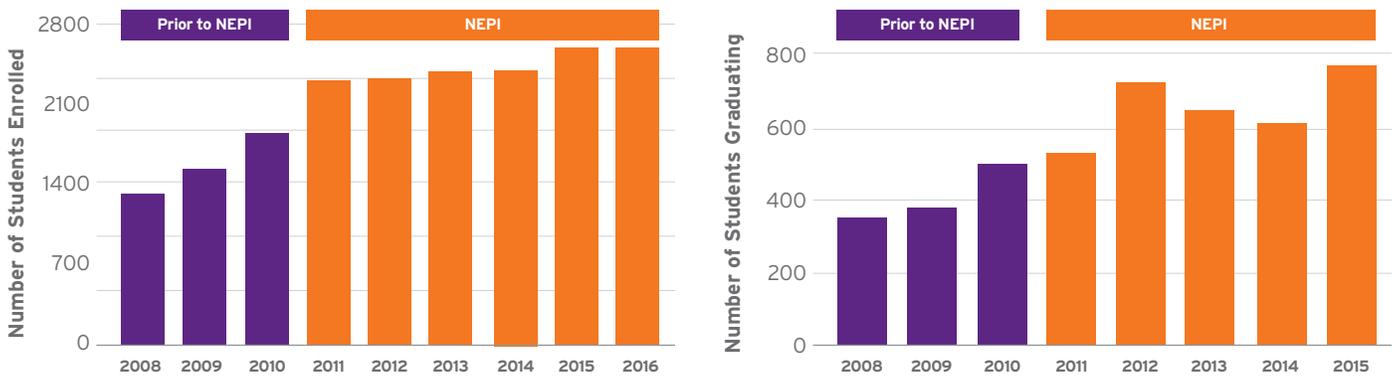


Figure 12: Enrollment and graduation before and after NEPI: Lesotho

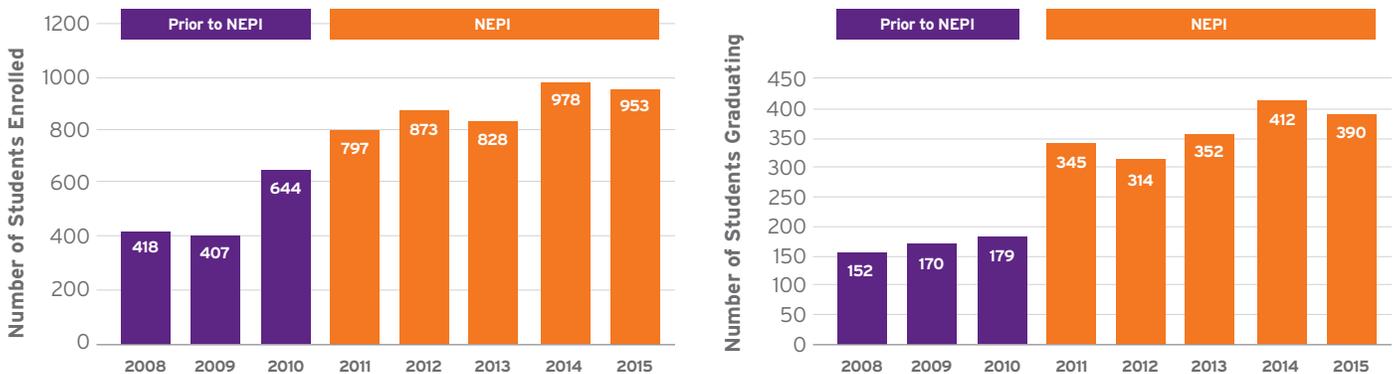
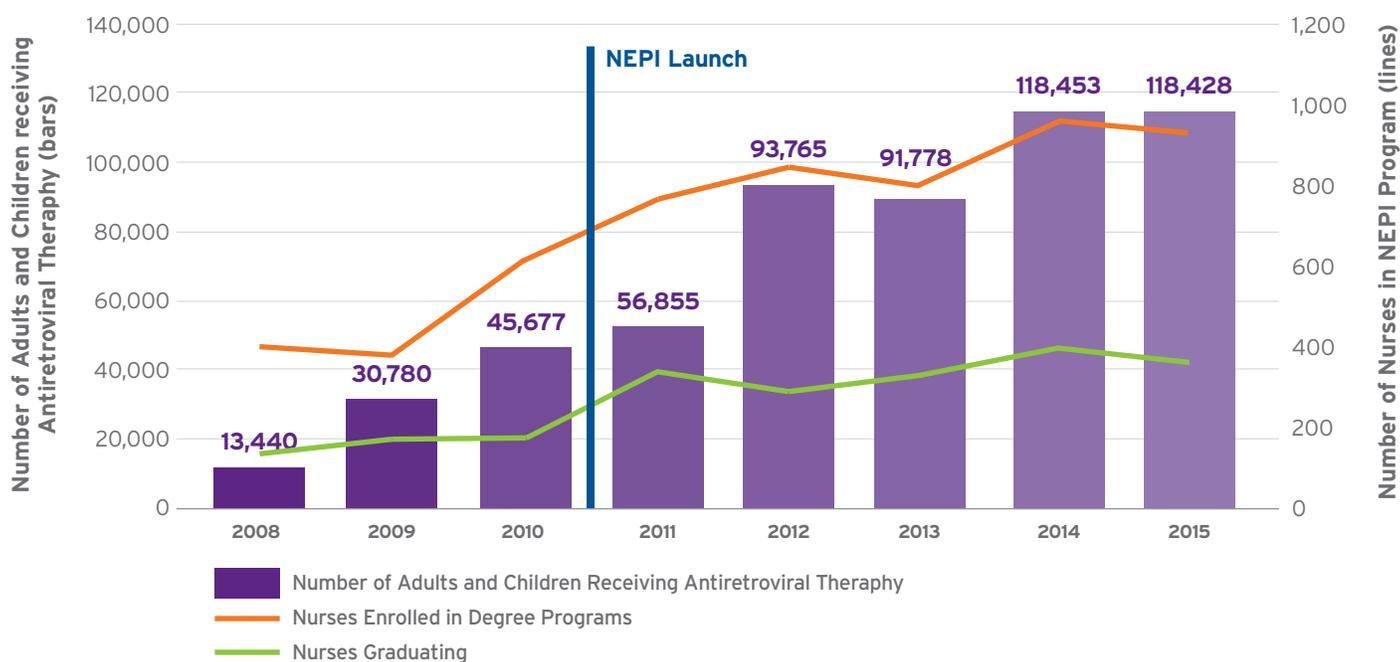


Figure 13: Production of nurses and midwives and national ART enrollment: Lesotho



In-service Training

Under the GN project, GNCBP supported development of 36 CPD courses, including three e-learning courses in Option B+ for PMTCT, Test and Start, and pediatric HIV care and treatment, to update the clinical knowledge and competency of practicing nurses and midwives in key areas of HIV care and treatment and primary health care.

A total of 5,554 nurses and midwives across six countries completed in-service training in HIV and related domains, including nurse-initiated management of ART (NIMART), emergency obstetric and neonatal care (EmONC), maternal and child health (MCH), and nursing process. In-service training enabled practicing nurses and midwives to enhance their clinical knowledge, implement task-shifting, and scale-up HIV services in accordance with national policy and targets and PEPFAR goals.

NIMART: In Kenya, GNCBP supported NIMART in-service training and mentorship for more than 530 nurses in 57 facilities, directly contributing to improved access to HIV services. Kenya incorporated NIMART into its 2011 ART guidelines; however, an assessment conducted by GNCBP found that many nurses did not feel entirely competent to perform those tasks in 2011.

GNCBP and NASCOP developed an innovative HIV mentoring curriculum consisting of computer-based training, hands-on practice in HIV care settings with national trainers, and group discussion, to equip NIMART nurse mentors with enhanced HIV clinical skills to provide on the job training to other nurses. National trainers then became supermentors, supporting the newly trained NIMART nurse mentors. The project also facilitated HIV mentorship training for mentor nurses and clinical officers to further support training of practicing nurses in HIV care and treatment.

Through on the job training by NIMART mentors, GNCBP helped bridge the health workforce gap in Kenya and decentralize services to peripheral health facilities to ensure patient access to timely ART initiation. From 2014 to 2016, the proportion of clients at ICAP-supported facilities who were initiated on ART by NIMART-trained nurses increased from 0% in 2014 to 30% in 2016, while the proportion of PMTCT clients initiated by NIMART-trained nurses rose steadily from 20 percent in 2014 to 70% by 2016.

A national nursing CPD database: GNCBP supported the Swaziland Nursing Council (SNC) to develop a CPD recording system and a broader M&E framework that defines CPD variables, ensures consistent registration and renewal of licenses, and tracks nurses' CPD courses and CPD credits. In addition, this system is able to collect and maintain accurate nursing workforce information, promote career advancement and improved training plans.

Close collaboration between the SNC and the Chief Nursing Officer of the Ministry of Health supported development of the M&E framework and database, thus ensuring compatibility of variables and data files across data systems. Since its March 2014 launch, the web-based database has been used by SNC and MOH to inform decisions on the deployment and promotion of nurses and in-service training.

Community health worker training: HRSA and ICAP worked closely with the Ministry of Health in Côte d'Ivoire to implement a community health worker (CHW) approach to health promotion with over 100 community health workers deployed at 12 health facilities across four districts: Fresco, Divo, Lakota, and Abidjan.

GNCBP trained and oriented three distinct cadres of community health workers: basic CHWs, each trained to support 30 families in the community; peer educators, who are HIV-positive and adhering to treatment; and CHWs with coaches who lead small

teams of CHWs. Each cadre of community health worker organized education sessions and visited homes to engage families in discussion on HIV, tuberculosis, and maternal and infant nutrition.

CHWs increased awareness of HIV prevention, conducted follow-up with HIV patients to reengage them in care, and ensure that pregnant women make routine antenatal care visits. HIV-positive peer CHWs conducted more than 6,700 home visits, connecting with more than 1,400 families, and referring more than 160 pregnant women for antenatal care in just four months. The Ministry of Health is now using lessons learned from the three types of CHWs to roll out wider CHW programs.

Partnerships for Policy and Regulation

GNCBP supported improvements to nursing policy and regulation through partnerships at the international, regional, and country levels. At the international level, ICAP collaborated with the Association of Nurses in AIDS Care (ANAC) and the International Council of Nurses (ICN) to launch a Call to Action demanding greater international investment in nursing. ICAP, ANAC and ICN also co-sponsored a special nursing pre-meeting at the 2016 International AIDS Society (IAS) conference.

Regionally, GNCBP worked with partners AFREHealth, the Forum of University Nursing Deans/Departments in South Africa (FUNDISA) and the East, Central and Southern African College of Nursing (ECSACON) to advance inter professional networks, nursing policy and regulation and education across sub-Saharan Africa. At the country level, HRSA and ICAP partnered with ministries of health, nursing and midwifery schools and councils, other U.S. government agencies, and PEPFAR implementing partners.

These partnerships inspired important changes at the institutional level, including the establishment or strengthening of 102 networks for nurse workforce development, the creation of Mozambique's first nursing council (Box 6) and the promotion of nearly 100 nurses and midwives into leadership positions in Ethiopia. They also helped to establish a more supportive and empowering environment for nurses and midwives, demonstrated by increasing advocacy at international conferences, development of regulatory bodies and policies to advance professional regulation, and promotion of nurses into leadership positions within ministries of health and other organizations.

BOX 6 • Establishing a National Nursing Council in Mozambique

During a 2011 General Assembly, the Mozambican Nurses Association (ANEMO) resolved to create a national nursing council—an independent regulatory body to oversee the standardization of nursing education, exams, licensure, practice, and CPD. Technical and financial limitations stalled ANEMO's initial efforts, even after forming a working group to draft the nursing statutes and partnering with regional allies to advocate for an authorizing act of parliament.

GNCBP initiated support for the creation of a nursing council in Mozambique in early 2015. GNCBP helped accelerate the drafting and revision of statutes for the Nursing Council (known locally as OEMo). They collaborated with ANEMO to design a process and timeline, conduct advocacy-awareness workshops, and renew the original working group. The Government Cabinet and Parliament approved the statutes in October 2015.

LESSON LEARNED

National leadership was a key driver for the success of the of the GNCBP project.

The integration of GNCBP interventions into national priorities and plans was critical to their impact and sustainability. In Malawi, for example, the Government's commitment to scale-up and improve the quality of nursing education, as well as its active management of developmental partners, contributed to strong outcomes, scale up and sustainability.

Gaps persist despite surpassing targets for production of nurses and midwives.

There will be a need for larger cadres of well-trained nurses in settings with high HIV burdens as governments implement Test and Start and more patients require care for co-morbidities and concurrent chronic diseases. By producing 13,387 nurses and midwives, GNCBP has contributed to addressing the critical health workforce shortage in sub-Saharan Africa. Further investment is required to reach the WHO minimum standard of 4.45 health workers per 1,000 population.

As of 2017, population-adjusted health worker density falls short of the WHO standard in more than 80 countries, and the global workforce shortage, already estimated at 7.2 million in 2017, is projected to grow to 12.9 million by 2035. More work must be done to ensure optimal distribution, absorption, and retention of a high-quality nursing workforce able to support HIV epidemic control, and achievement of the United Nations sustainable development goals and universal health coverage.

GNCBP's combination of expertise and innovation has enhanced approaches to nursing and midwifery in sub-Saharan Africa.

Combining nursing and midwifery training and redesigning curricula to emphasize competencies are fundamental changes to the way that nurses are educated in sub-Saharan Africa. An increasing proportion of pre-service curricula address HIV core competencies and the expanded role of nurses in HIV care and treatment, and innovations such as simulation-based training and e-learning are becoming more accepted—and feasible—in limited-resource settings.

ICAP worked with ANEMO and other partners to develop criteria and identify individuals to serve on the OEMo Installation Committee. In May 2016, ICAP submitted a short list of candidates to MOH. Appointed members were then trained on regulations and the council installation process. Preparations for OEMo elections ran from October 2016 to May 2017, and included a registration of more than 6,400 national OEMo members, selection of a five-member election committee, and creation and dissemination of electoral regulations and methods.

OEMo elections took place in July 2017, followed by a General Assembly Induction Ceremony to inaugurate newly elected members of the Cabinet Council. OEMo council members received formal training in leadership, governance, and regulatory responsibilities. As OEMo establishes itself and seeks to build local support for implementation of regulatory activities in Mozambique, it is keeping a firm focus on sustainability with land acquisition efforts to enable construction of a permanent headquarters building, and resource-mobilization strategies.

THE WAY FORWARD

Under HRSA's leadership and ICAP's implementation, GNCBP surpassed targets for enhancing the quantity and quality of the nursing and midwifery workforce, and made significant and lasting contributions to the advancement of the nursing and midwifery professions in 11 countries.

The NEPI project supported nursing and midwifery educational institutions to markedly increase production of nurses and midwives and to provide students with improved quality of education through infrastructure enhancement, curricula revision, faculty development, and clinical skills training. The GN project complemented these investments by supporting ministries of health to strengthen the skills and competencies of practicing nurses and midwives, establish professional standards of practice, and promote nursing and midwifery regulation and leadership.

The progress achieved under GNCBP is monumental, but closing the health workforce gap and maintaining a skilled and confident nursing workforce will require additional effort. Key gaps remaining to be addressed include nursing leadership development, reliable and consistent access to CPD for practicing nurses and midwives (especially those in remote areas), and expansion of NEPI and GN best practices to other countries and institutions. Additional evaluations may be helpful in enabling measurement of the direct contributions of increased production of qualified nurses and midwives on HIV-related and other population health outcomes.

Looking to the future, an expansion of investments in nursing is critical to ensure the effective production, absorption and retention of high-quality nurses and midwives able to contribute to PEPFAR and international global health goals.

Online at icap.columbia.edu/global-initiatives/nursing/

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Photo credits: Sven Torfinn