

**Background:** Sub-Saharan Africa faces a health workforce crisis with only 3% of the world's health care workers for 24% of the global burden of disease and only 1% of the world health expenditure. Recent data indicate that nurses in select African countries were not able to perform critical health care delivery tasks, highlighting the need for relevant nursing and midwifery curricula. The PEPFAR-funded Nurse Education Partnership Initiative (NEPI) aims to scale up nursing and midwifery preservice education programs to address essential health challenges through the introduction of competency-based curricula where students are taught, learn, and are evaluated based on how well they can put clinical skills into practice, and through clinical simulation where students gain patient care experience using lifelike models.

**Structure/Method/Design:** NEPI is partnering with governments in five African countries and collecting best practices in nursing curriculum development and clinical teaching and learning methodologies. Baseline assessment of teaching programs and outputs, as well as a desk and data survey of best practices in curriculum development, clinical simulation and training evaluation, were conducted to inform innovation in nursing education across the continent. New topics that require training were also identified, particularly Option B+ for PMTCT.

**Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract):** Intersectoral collaboration has produced four competency-based preservice curricula, expanding the availability of comprehensively trained nurses to address general health and maternal and child health challenges in Zambia, Lesotho, and Malawi. Simulation laboratories were installed at six nursing education institutions in Lesotho and one refurbished in Malawi; over 1500 nursing students have utilized these laboratories to enhance their skills. A curriculum for Option B+ is being developed to respond to the urgent need for its scale up.

**Summary/Conclusion:** Nurse and midwives with the right knowledge, skills, and abilities are key to a country's mandate to deliver effective primary health care services and tackle priority health challenges. Competency-based curricula, including the Option B+ curriculum under development, and the expanded use of clinical simulation will facilitate increased learning and skill transfer when students care for patients in today's complex, health care environment. Various evaluation methods will assess the effectiveness of these interventions and inform scale up.

### Building capacity of training institutions and Ministries of Health in sub-Saharan Africa: The PEPFAR approach

A. Mitchell<sup>1</sup>, A. Zuber<sup>2</sup>, E. Quain<sup>3</sup>, C.M. Hall<sup>4</sup>, L. Foradori<sup>5</sup>, C.K. Lim<sup>4</sup>; <sup>1</sup>Office of the U.S. Global AIDS Coordinator, Washington, DC/US, <sup>2</sup>Centers for Disease Control and Prevention, Atlanta, GA/US, <sup>3</sup>U.S. Agency for International Development, Washington, DC/US, <sup>4</sup>HHS/HRSA, Rockville, MD/US, <sup>5</sup>U.S. Peace Corps, Washington, DC/US

**Background:** Shortages of human resources for health (HRH) remain a major bottleneck to increasing access to health services in sub-Saharan Africa. As the global health agenda evolves from a focus on the Millennium Development Goals to Universal Health Coverage, and as countries' disease priorities increasingly include both communicable and noncommunicable diseases, strengthening production of HRH remains a priority. While the President's Emergency Plan for AIDS Relief (PEPFAR) supports national HIV responses, its substantial investments in HRH have been leveraged to address priority health concerns more broadly.

The goal of this session is to describe the PEPFAR program's approach to strengthening health training institutions and HRH education, drawing on the experiences of several projects managed centrally and at the field level. At the preservice level, the Medical Education Partnership Initiative (MEPI), the Nursing Education Partnership Initiative (NEPI), and the Global Health Services Partnership (GHSP) offer three unique models of institutional capacity building focused on clinical providers. The Field Epidemiology Training Program (FETP) focuses on training of the public health workforce. Additional country-driven investments capacitate training and education of a range of cadres—from community health workers to those obtaining doctoral degrees in the health sciences to social workers. At the in-service level, PEPFAR increasingly supports linkages with both preservice training and service delivery, such as through development of national in-service training frameworks and institutionalization of continuing professional development structures. Finally, PEPFAR has facilitated interlinkages between institutions supported by these different programs, such as through linking FETP and MEPI curricula. PEPFAR's approach indicates that HRH investments in a vertical disease program can serve as a platform for strengthening training institutions and education systems more broadly.

**Structure/Method/Design:** Presentation(s) followed by Q&A/discussion

**Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract):** CDC, USAID, HRSA, NIH, Peace Corps

**Summary/Conclusion:** \* Leveraging a vertical disease platform to strengthen education and training systems comprehensively and broadly

\* Capitalizing on the comparative advantages of multiple US government agencies to comprehensively build national capacity in education and training institutions

### eLearning at a Medical School in sub-Saharan Africa: Use of the Technology Acceptance Model to evaluate implementation effectiveness

C. Muiruri<sup>1</sup>, G. Kapanda<sup>2</sup>, D. Tibyampansha<sup>2</sup>, G. Ibrahim<sup>2</sup>, A. Kulanga<sup>2</sup>, E. Lisasi<sup>2</sup>, J. Bartlett<sup>3</sup>; <sup>1</sup>Duke Global Health Institute, Global Health Institute, Durham, NC/US, <sup>2</sup>Kilimanjaro Christian Medical University College, Moshi/TZ, <sup>3</sup>Duke Global Health Institute, Medicine, Durham, NC/US

**Background:** To achieve international health development targets such as the Millennium Development Goals (MDGs), the health workforce in sub-Saharan Africa (SSA) needs to be expanded by as much as 140%. In response to this challenge, schools of medicine have increased student enrollment substantially. This expansion has led to low faculty-to-student ratios, which may undermine the quality of education at these institutions. In an effort to support medical education in SSA, the US government has provided assistance through the Medical Education Partnership initiative (MEPI). Selected institutions within the MEPI network have deployed eLearning to support curriculum delivery. However, this deployment may not guarantee optimal utilization and adoption by students and faculty members. Careful evaluation of acceptability and technology fit is critical to ensure effective implementation and sustainability. This study focused on the eLearning platform deployed at the Kilimanjaro Christian Medical University College (KCMUCo), Tanzania. We utilized a theoretical framework to evaluate the level of acceptance of technology at KCMUCo. The Technology Acceptance Model (TAM) posits that perceived ease of

use and usefulness predict attitudes, behavioral intentions, and subsequently actual use of the technology.

**Structure/Method/Design:** Learning Management System (LMS) logon data and online surveys administered to first-year medical (MD1) students were analyzed. Mann-Whitney U tests and separate linear regression analyses were conducted to test the effect of TAM main elements.

**Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract):** 72% (n = 116) of the MD1 students responded to the online survey (73.3% males). Mann-Whitney U and linear regression analyses indicated that perceived usefulness and attitude had a significant effect on intention to use ( $P < 0.05$ ). Female gender and older age (>25 years) were factors that significantly lowered intention to use and perceived usefulness of LMS. To ascertain actual use of the system, trend data on LMS logons for 6 consecutive months were assessed. The average registered number of logons was 5,268, with minimum and maximum of 1,058 and 11,127 respectively over this period. Similar trends were witnessed in the previous two periods.

**Summary/Conclusion:** Deployment of eLearning in institutions of higher learning does not guarantee the acceptability and sustainability. As institutions in sub-Saharan Africa embrace eLearning, careful evaluation of technology fit and actual use has potential to assess implementation effectiveness and impact sustainability. Our study reveals that age and gender are significant factors that may negatively affect technology acceptance.

### Training emergency care practitioners and creating access to acute care services in Uganda: The pilot phase

S.W. Nelson<sup>1</sup>, U. Stolz<sup>2</sup>, B.A. Dreifuss<sup>3</sup>, S. Chamberlain<sup>4</sup>, H.S. Hammerstedt<sup>5</sup>, B. Alfonsi<sup>6</sup>, M. Bisanzo<sup>7</sup>; <sup>1</sup>Maine Medical Center, Department of Emergency Medicine, Portland, ME/US, <sup>2</sup>University of Arizona, College of Medicine, Tucson, AZ/US, <sup>3</sup>University of Arizona, College of Medicine, Emergency Medicine, Tucson, AZ/US, <sup>4</sup>University of Illinois at Chicago, Emergency Medicine, Chicago, IL/US, <sup>5</sup>Idaho Emergency Physicians, Boise, ID/US, <sup>6</sup>Karoli Lwanga Hospital, Emergency Department, Rukungiri, RUKUNGIRI/UG, <sup>7</sup>University of Massachusetts, Department of Emergency Medicine, Worcester, MA/US

**Background:** Acutely ill or injured patients require urgent treatment to avoid morbidity and mortality. Given current physician density in Sub-Saharan Africa (SSA), very few patients are seen by a physician promptly on presentation to a health unit. A novel task-shifting program training non-physician clinicians was initiated in rural Uganda to create access to high-quality emergency care. The Emergency Care Practitioner (ECP) program is a 2-year program incorporating semi-weekly didactics using a symptom-based approach, simulation/procedure labs, and graded clinical responsibility (40 hours of clinical time per week). The initial data on patients cared for by the student ECPs at Karoli Lwanga Hospital are described here.

**Structure/Method/Design:** For the inaugural year, emergency physicians supervised and taught the ECPs. Curriculum content was based on a needs assessment and international consensus documents. Core competencies were adopted from Ugandan and US medical education. Data on all patients seen in the ED were entered into a quality assurance database prospectively. Attempts were made to contact each patient beginning 72 hours after ED discharge to determine vital status. Data are presented as proportions.

**Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract):** A total of 2636 patients were seen from November 2009 to March 2010, with 1778 having follow up (67.5%). Most

common diagnoses were malaria (33.0%), trauma (10.4%) and pneumonia (7.2%). Overall mortality for patients presenting to the ED was 4.1% and 2.5% for children under 5 years of age. Case fatality rates (CFRs) for children under 5 with malaria and pneumonia were 2.3% and 2.6%, respectively. CFR for all trauma patients was 2.9%.

**Summary/Conclusion:** Data from this initial pilot suggest that emergency care provided by these non-physician clinicians improves patient outcomes. Reported CFRs are considerably lower than other published CFRs for SSA. Outcomes need to be monitored as ECPs assume more fully independent practice to ensure continued quality care.

### In-service training of midlevel providers in emergency care in Ghana: Challenges, successes, and lessons learned

A. Niyogi<sup>1</sup>, N. Adom-Boakye<sup>2</sup>; <sup>1</sup>Tulane University, New Orleans, LA/US, <sup>2</sup>KAB Consultants, Accra/GH

**Background:** Provision of emergency medical care is an increasingly important aspect of health care delivery in resource-limited settings. To meet the greater demand for skilled personnel in emergency medicine in Ghana, we developed an in-service course in basic emergency care for midlevel providers (physician assistants and nurse practitioners) working in district hospitals. Midlevels were specifically targeted as this group cares for the majority of the rural population in Ghana.

**Structure/Method/Design:** We held an initial "training of trainers" course for 22 physician assistants from district and subdistrict hospitals within three regions of the country. From this initial cadre of participants, 10 were selected as senior trainers who then received a refresher training course and continue to train colleagues within their respective regions. The course is organized in three parts: didactic lectures, structured case discussions with simulations, and skills stations. Evaluation methods include knowledge-based pre- and post-tests, direct observation, case review, and simulation stations.

**Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract):** Stephan Brenner, MD, MPH; Barbra Villona, MD, MPH & TM, DTM & H; SueLin Hilbert, MD, MPH; Beth Rubenstein, MPH, MBA; Rachel Moresky, MD, MPH

**Summary/Conclusion:** All groups showed improvement in knowledge with average pre-test scores of 56% (SD 14.5%) and post-tests scores of 84% (SD 9.5%). Simulation cases indicate that the majority of the trained midlevel providers learned information sequentially, inconsistently used physical examinations for diagnosis, and rarely reassessed following interventions. Practical skills such as splinting and suturing were more easily acquired than skills in clinical decision making. Most participants felt that case discussions and simulations were the most helpful learning tools and identified symptom-based algorithms as useful reference tools for daily practice and teaching colleagues.

The greatest successes of this program are increased awareness, knowledge and advocacy of emergency medicine, more confidence in basic lifesaving skills, and the development of a focused introductory curriculum targeted to midlevel providers. For continued successful implementation of this program, facilitators must take ownership of teaching materials, knowledge gaps within the senior trainer group must be bridged, and appropriate long-term evaluation methods must be developed.

### Organization and optimization of global health resources for US medical trainees: The Global Health Hub Resource Page Project

E. Park<sup>1</sup>, K. Pettersen<sup>2</sup>, M.S. Lipnick<sup>3</sup>; <sup>1</sup>Boston University School of Medicine, Las Vegas, NV/US, <sup>2</sup>University of California, San Francisco,