

able to perform all comprehensive obstetric services are the large district hospitals in 3 of the 4 study districts.

**Interpretation:** Access to providers and obstetric services in the 4 study districts is extremely limited, especially for women who need emergent, comprehensive obstetric care. Further analysis will determine the extent to which geographic proximity to obstetric care, and especially to facilities providing comprehensive obstetric care, influences maternal and neonatal outcomes in the study districts.

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### Does a One Size Fit All Approach Work for Community Management of Acute Malnutrition in Rural Malawi?

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**Program/Project Purpose:** The Community-Based Management of Acute Malnutrition (CMAM) program directs the surveillance for ~58,000 children in Malawi's rural Neno District and the care of those identified with malnutrition. In 2015, the Outpatient Therapeutic Programme (OTP) for treatment of severe acute malnutrition (SAM) was subject to 83 stock-outs of ready-to-use therapeutic food (RUTF), affecting each of the 13 health facilities. This resulted in premature termination of treatment for enrolled cases and no enrollment for newly identified cases. We set out to identify the cause(s) of the stock-outs and other challenges in order to meet Universal Health Coverage targets for SAM in children in Neno District.

**Structure/Method/Design:** We completed an in-depth chart and OTP register review from 2015 of the 13 health facilities to identify gaps in RUTF supply. From the register review, we estimated the number of sachets of RUTF required for treatment of SAM. This was based on the CMAM guidelines and compared to the recommendation of 175 kcal/kg/day from the WHO guidelines and research protocols. We compared this to the current practice of a projected 150 RUTF sachets for each treatment course of SAM.

**Outcome & Evaluation:** The mean length of stay (LOS) was 50 days and mean weight was 9.9 kg. The median LOS was 42 days and median weight was 9.3 kg. Based on the means, 173–186 RUTF sachets (175 kcal/kg/day-CMAM guidelines) were estimated for a treatment course for SAM whereas based on the medians 136–156 RUTF sachets were estimated.

**Going Forward:** The amount of RUTF currently distributed is not enough for the treatment of SAM based on the mean LOS and weight, and may be a key contributor to stock outs in Neno District. Our average LOS is consistent with WHO CMAM guidelines, suggesting that the higher estimated RUTF need may be due to the higher average weight in OTP in Neno. Causes of the higher average weight require further investigation and hypotheses include higher rates of kwashiorkor or higher average age. Additionally, our review noted that children are not enrolled during stock outs, and thus are not accounted for in distribution plans, which perpetuates

low stock availability. Mentorship is needed for improved adherence to OTP protocols across the district.

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### Towards a Universal Medical Education Global Health Curriculum: Update on the Bellagio Global Health Education Initiative

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**Program/Project Purpose:** Twenty global health (GH) educational leaders from low-, middle-, and high-income countries (LMICs, HICs) work collaboratively in the Bellagio Global Health Education Initiative (BGHEI) to identify GH curricular elements that could be universally applicable across diverse medical education systems.

**Structure/Method/Design:** Nominal group technique and modified Delphi process are used to efficiently isolate consensus themes and topic areas. Working groups with LMIC and HIC representation use conference calls and in-person meetings to identify further research needs and recommendations for GH education.

**Outcome & Evaluation:** One potentially universal curricular design concept, one universal evaluation concept, and a critical research need were identified, and working groups formed for each. After recognizing the universality of “away” sites (educational settings outside the context of the student's home institution) in GH learning and the need for specific curricular development for these settings, a “Curriculum Development” working group formed to assess the current state of curriculum design and implementation as applied to education in the “away” context, including linking educational goals with patient care outcomes. The importance of transformative, rather than content or skill-based learning, also was thought to be a universal component of successful GH education. The “Transformative Learning” working group is examining how transformative learning theories could inform GH curricular recommendations, with an emphasis on more appropriate learner assessments. There exists a dearth of GH training information for LMIC settings; the “Current Status of GH Education” working group is utilizing standardized questionnaire approaches to fill this knowledge gap. BGHEI demonstrates that GH experts from diverse backgrounds, drawing on advances in sociologic, psychological, and management learning theory, can identify curricular, evaluation, and research needs relevant for a wide range of medical education GH programs.

**Going Forward:** BGHEI working groups continue to explore and define GH educational curricular components and learner evaluation strategies apt to be common to medical education programs across

a wide range of LMIC and HIC settings, with the caveat that more information regarding GH training in LMIC medical schools is needed. Next steps include engaging with other GH educational groups and disseminating findings worldwide through online blog posts, conference presentations, and peer-reviewed publications.

**Source of Funding:** Funding for the initial meeting of BGHEI was provided by the Rockefeller Foundation.

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### Medical Brain Drain in Uganda: Causes and Potential Remedies

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**Program/Project Purpose:** Sub-saharan Africa currently bears 24% of the global disease burden, yet is home to just 3% of the global health workforce (Anyangwe 2007). Despite this crippling disease burden, nearly 30% of graduating physicians in Uganda choose to emigrate each year (Soucat 2013). Medical brain drain refers to this human resource crisis that plagues the healthcare systems of many developing countries, where newly graduated physicians choose to leave the country after receiving their formal medical education. For over a decade, public health leaders have attempted to meet this critical human resource shortage through an increase in the availability and efficacy of medical education (Akuffo 2014).

**Structure/Method/Design:** Through in-depth interviews with 3rd, 4th, and 5th year medical students at Makerere University in Kampala, Uganda, my research attempts to uncover the complex push and pull factors that affect the emigration decisions of Ugandan medical students. While past research has pointed to low pay and overburden as the impetus of the brain drain, my project focuses on sociocultural factors associated with emigration like social ties, national pride, socioeconomic background, as well as lived experience in the health system.

**Outcome & Evaluation:** My findings point to key policy changes that can be utilized by Ugandan medical schools in order to better retain its students. Expanding the diversity of medical students in terms of educational and socioeconomic background, by targeting low income parts of the country in the admissions process will generate doctors more likely to stay in the country and more connected with their home. In addition, strengthening and building upon the community healthcare programs already utilized will allow medical students to appreciate their role in the Ugandan health system. Finally, allocating medical supplies efficiently and appropriately, so students and doctors have what they need to do their job is paramount to overall physician satisfaction.

**Going Forward:** In order to provide for the needs of its own country, Uganda must act quickly to end the high rates of medical brain drain. Through a collaboration of physicians, healthcare policy makers, as well as government officials, Uganda can empower its doctors to provide their patients with the best possible care.

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### Results of a Global Collaboration First Responder Course in Trauma Skills Training in New Delhi, India

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**Program/Project Purpose:** In both developed and developing countries, most morbidity due to trauma occurs in the prehospital period. This increase in morbidity and mortality is partly due to a lack of appropriate critical care education of first responders in rural settings. Multiple studies have shown that prompt, well-executed pre-hospital care by first responders can lead to a reduction in mortality.

**Structure/Method/Design:** The First Responder Trauma and Emergency Care Program aims to educate lay people through implementation of a four-tiered trauma education program, which incorporates high-fidelity simulation, video-recorded debriefing, and retraining. Simulation has previously been shown to be a useful tool in training of trauma-related clinical skills. The study compared comfort in assessing and managing trauma situations among four different groups: students, educators, nurses and physicians.

**Outcome & Evaluation:** A total of 57 individuals were trained with the First Responder Trauma and Emergency Care Program as part of a breakout session with the World Trauma Congress in Delhi, India. Prior to training, 37% (n=19) felt at least moderately comfortable to assess and manage a trauma situation. Following the training program, 73% (n=41) felt at least moderately comfortable. The highest confidence prior to training was exhibited by the staff nurses where 89% (n=8) reported some level of past experience with trauma assessment and care. Of the educators, nurses and physicians, 29% (n=6) felt at least moderately comfortable to manage trauma situations prior to training; 81% (n=10) felt at least moderately comfortable after training. In students, 19% (n=6) felt at least moderately comfortable prior to training whereas 63% (n=19) felt at least moderately comfortable following training.

**Going Forward:** Of the 57 individuals, overall confidence handling traumatic situations increased. A great increase was seen with students. This highlights the course's ability to target the lay population. The increase in self-assessment of confidence among educators, nurses, and physicians may indicate the course as a beneficial source for continuing medical education and highlights the courses ability to target the skilled medical workforce. With a goal of targeting 8 million students in the next 10 years within schools, we feel this program would strongly reduce morbidity and mortality in prehospital settings.

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### Validation of Smart Monitoring System for Mobile Facility Deployed for Emergency Crisis and Post-Disaster Situations

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