

Upon completion of 1 year of training and fieldwork, all 6 intervention CHWs were retained. Each of the 6 intervention CHWs scored >80% on the knowledge test, implying a high rate of knowledge retention. Important themes identified during the FGD included satisfaction with a 2 step recruitment process, emphasis on communication skills, a preference for audio-visual aids in training and recognition of the importance of a supervisory framework. Respect from society and a positive impact on people was consistently cited as the most satisfying aspects of the job, followed by financial compensation.

Interpretation: A 2 step recruitment process allows better fit between CHWs and the CVD program. Training should emphasize audio visual aids, communication skills and allow adequate practise. Well-trained and supervised CHWs have high work satisfaction and minimal attrition. Recruitment and training processes for CHWs in CVD programs should be more standardized to enable replication, scalability and adequate assessment of their potential to mitigate CVD mortality in low and middle income countries such as India.

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Creation and Implementation of Standards for Ethical Global Health Volunteering

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Background: Growing concern about the quality and ethics of short-term volunteer trips in global health has led to the development of guidelines by a number of organizations and individuals (Caldron, 2016). Some of the best known are the Working Group on Ethics Guidelines for Global Health Training (WEIGHT) (Crump & Sugarman, 2010), the Catholic Health Association (2015), and the University of Minnesota's Global Ambassadors for Patient Safety (GASP). Different guidelines include recommendations targeted at organizations planning trips, criteria for potential volunteers to consider in choosing an experience, and procedures for running medical, surgical, or dental clinics. Such guidelines cover a broad set of issues, from safety concerns for volunteers to procedures for organizing clinics to the nature of partnerships with host communities.

Methods: This paper first reviews the key recommendations in existing guidelines and standards. It then asks about the extent to which they are reflected in current practices in global health volunteering. It is based on surveys and interviews with over 300 sponsoring organizations in the U.S. as well as numerous reports about volunteer experiences.

Findings: The research reveals a lack of attention to standards in many areas such as volunteer preparation, community-based needs assessment, partnership, and evaluation. Additionally, many reports from volunteers indicate a lack of enforcement of ethical principles

regarding untrained volunteers practicing medicine. The paper concludes with a discussion of reasons for the lack of enforcement of any set of guidelines and the consequences for effective health programs.

Interpretation: Volunteers are confronted with innumerable choices of programs and little guidance for choosing the best ones. And sponsoring organizations are subject to few controls on their practices. Guidelines are for now mostly aspirational; serious consideration needs to be given to how to enforce them to improve effectiveness and ethics of volunteer programs for benefit of both host communities and volunteers.

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Cost Analysis of Intramedullary (IM) Nailing and Skeletal Traction for Treatment of Femoral Shaft Fractures in Malawi

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Background: Femoral shaft fractures are among the most common musculoskeletal injuries worldwide. In high-income countries, intramedullary (IM) nailing is the standard treatment. In many low- and middle- income countries (LMICs) skeletal traction is still common because surgical treatment is deemed cost-prohibitive. However, the notion that surgery is not cost-effective lacks supporting evidence. The purpose of this study was to estimate the cost of both IM nailing and traction for treatment of femoral fractures.

Methods: In this prospective observational economic analysis we used micro-costing methods to calculate the fixed and variable costs associated with IM nailing and skeletal traction. Adult patients treated with IM nailing or traction at QECH in Malawi were enrolled. Variable costs assessed include surgical and traction personnel costs, ward personnel costs, medications, surgical implants and disposable supplies. Fixed costs included IM nailing-specific equipment cost and indirect costs such as overhead costs. We conducted sensitivity analysis examining the effects of reducing the length of stay and using different implants on the IM nailing cost.

Findings: Eighteen patients admitted between April and June 2016 were eligible for the study. Eleven were treated with IM nailing and 7 with skeletal traction. For nailing patients, the average length of stay (LOS) was 31.13 days (SD 18 days). For traction, it was 37 (SD 21.5). The total cost per nailing-patient was \$539.04 (SD 145.77), and per traction-patient was \$411.99 (SD 171.8). The mean variable cost per nailing patient was \$295.93, and per traction patient was \$294.68. The largest variable cost was the ward personnel cost (\$225.9, SD \$132.8), and (\$266.01, SD 155.9) for nailing and traction respectively. Implants (\$135.45), were the second largest cost for nailing. The overhead cost per patient per day was \$3.19. At 19 days the cost of nailing was equal to traction and it was cost-saving at a rate of \$11 for each day subtracted.

Interpretation: Costs of treatment for femur fractures are driven largely by personnel costs and length of stay. Despite long delays from injury to surgery, the cost of IM nailing was nearly equal to skeletal traction. Reducing time from injury to surgery would make IM nailing cost saving relative to conservative treatment.

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Developing and Refining the MSGH Degree Program: A Theory and Competency-Driven, Multi-Phase Curriculum Development and Alignment Process

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Program/Project Purpose: This paper will discuss a theory-driven, five-phase process for curriculum development and alignment in a Master of Science in Global Health (MSGH) degree program. Northwestern University's MSGH degree is an inter-professional, competency-driven program that prepares students for careers in the field through generalist, leadership-focused, real-world, practical professional education.

Structure/Method/Design: This five (5) phase curricular process included multiple program stakeholders (faculty, staff, students, practitioners and alumni) engaging in a variety of participatory activities. Phases included: 1) Unit Assessment, 2) Literature and Expert Review, 3) Faculty Course Assessment, 4) Program Implementation, and 5) Alignment/Revision. These processes were a) led by a multidisciplinary faculty and staff team, b) anchored in adult education philosophy and theory, and c) aligned with the degree's guiding vision, mission, and values.

Outcome & Evaluation: Curriculum development and ongoing implementation, alignment and refinement efforts highlight the unique opportunity that global health educators and practitioners possess to collaboratively reexamine, evaluate and restructure educative preparations for future leaders in the global health workforce. Twenty (20) lessons learned identifying best practices and areas for improvement from the five phases will be shared.

Going Forward: Future directions for 2016–2017 implementation, a five-year curriculum development planning cycle, and program sustainability will be highlighted.

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Strengthening Health System - Evidence from the use of Bi-directional SMS-based Screening and Feedback System to Improve Efficiency and Quality of Disease Surveillance in Vietnam

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Background: Mobile health (mHealth) has recently become the emerging and feasible practice to strengthen health systems, especially in low-resource settings. However, most mHealth initiatives are pilot efforts and only conceptually illustrate how to address determinants of health interventions using mobile technologies. Therefore, there is still an urgent need of vigorous evidence about mHealth and its use in public health. This study examined the use of bi-directional Short Message Service (SMS) in disease surveillance in Vietnam, and its evidence in improving efficiency and quality of reporting task.

Methods: 80 health staff from 40 communes of Hoa Binh and Hung Yen provinces got training and participated in two 6-month pilots: one with one-way, and one with bi-directional SMS system to report two diseases: influenza and diarrhea using cell phone. After each examination and checking-in onto the paper logbook, participants were asked to report the case by texting an SMS to a designated number and make notes of successfully reported cases. A central data repository server was set up to collect SMS reports, and aggregate reported patient data. Efficiency and quality of the reporting work were assessed by the evaluation of the qualitative questionnaires, and the comparison of the texted SMS reports to the patient logbooks. Data entry was conducted using EpiData, and data analysis were performed using STATA.

Findings: With the use of bi-directional SMS system for assisting in error screening and reminder and feedback provision vs one-way system, participants were 4.62 times more likely (95% CI 3.93–5.44, $p < 0.0001$) to send correctly formatted text reports, and 3.42 times more likely (95% CI 2.72–4.33, $p < 0.0001$) to have precise information in their texted messages. Results also revealed that while positions, ages or gender of participants did not statistically influence the results, ethnicity and management role did.

Interpretation: The deployment of the bi-directional SMS-based reporting system both significantly improved participant's engagement in SMS texting protocol, and greatly enhance their reporting quality. The study demonstrated a robust evidence of a practical utilization of SMS in disease reporting system to replace the traditional paper-based one that has great potential for the scale-up and national-wide implementation.

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Learning Across Borders: Developing a Pharmacist-Driven Continuing Professional Development Program Through the Baylor College of Medicine International Pediatric AIDS Initiative Pharmacy Network (BIPAI-PN)

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Program/Project Purpose: As the leading provider for pediatric HIV care and treatment in the world, BIPAI has been building