Knowledge, attitudes and barriers of infection control among healthcare workers in rural Uganda

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Background: Infection control (IC) practices in resource-limited hospital settings are often inconsistent and incompliant with international standards set out by the World Health Organization (WHO). The prevalence of hospital acquired infections (HAI) is therefore disproportionately higher in resource-limited nations compared to resource-rich nations. Healthcare workers’ (HCW) IC practices have already been studied at larger, urban hospitals (with 400-1500 beds) in Asia and Africa; however, it was found that a good knowledge of IC doesn’t correlate with improved IC behavior, and other factors contribute to those HCWs’ poor hand hygiene (HH) rates. This study addresses the gaps in understanding about infection control in rural, under-resourced African hospitals. The aims of this study are to identify factors that predict appropriate use of IC measures amongst HCWs in rural hospital settings (specifically knowledge and attitudes toward IC), as well as barriers to IC that could be targeted for future HH interventions.

Methods: Structured interviews with 117 healthcare workers (88 employees and 29 clinical students) were conducted at a 160-bed governmental hospital and a 210-bed private hospital in Kisoro, Uganda using a verbally-administered, IRB-approved survey instrument. The primary outcome of IC behavior was calculated with a composite score, where Likert-scale answers were summed together to produce a behavior score for “HH practice” and “glove use.” Composite scores for HH knowledge were calculated, breaking down into “Knowledge of WHO’s Five Moments for HH,” “General Knowledge of HH” and “Knowledge of glove use.” Knowledge scores, attitudes, and barriers to IC were compared to self-reported HH behavior.

Findings: When self-reporting behavior, 80.2% of HCWs reported that they “always” or “frequently” washed their hands between patients, yet running water availability was hospital-dependent. 75% of HCWs’ reported hand sanitizer (HS) was occasionally, rarely or never available. Only 44% of HCWs interviewed have ever had personal access to HS in the past, and, among those HCWs, 78.5% reported always or frequently using it between every patient. Knowledge about the WHO’s “5 Moments for HH” and glove use were correlated with higher composite behavior scores in HH and glove use (p < 0.05). Greater perceived importance about HH exhibited by administrators and coworkers was correlated with higher HH behavior scores (p < 0.01). Perceived lack of time to adequately perform HH was inversely associated with HH behavior (p < 0.05).

Interpretation: In this evaluation, HH behavior and the factors influencing HCW behavior differ significantly from larger, urban hospitals in developing nations. Greater HCW knowledge about HH correlated with better IC practices in these two rural hospitals; however, lack of access to HS/water and time constraints contributed to overall lower rates of HH. These specific factors and unique working environments should be considered when developing hand washing intervention programs in rural, under-resourced African hospitals.

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Development of an interprofessional international experience course for health profession students

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Program/Project Purpose: This program is an annual fall/winter college-level course that includes service learning in Nicaragua for the Schools of Occupational Therapy, Physical Therapy, Dental Health Sciences, Pharmacy, Physician Assistant Studies, Audiology, Professional Psychology, and Healthcare Administration. The program begins with a 2-credit course focused on preparation for the in-country experience and ends with a 2-credit course that includes 10 days in
Nicaragua. Faculty and students travel together to elder homes in Nicaragua to perform needs-based assessments, provide care to elderly residents, offer education to caregivers, and engage with stakeholders to enhance sustainability for the residents. This program exists to give students the opportunity to practice in an interprofessional community setting and learn about global health and citizenship.

**Structure/Method/Design:** Students must complete an application and be selected to participate. In-country the program incorporates sustainability through community based rehabilitation. Participants collaborate with local government, universities, and charitable organizations to increase awareness of the needs of older adults resulting in more involvement from the local community. When students return they help recruit students for the following year by sharing their experiences. In 2013 core faculty championed a change from the previously ‘no credit’ service learning opportunity to the current 4-credit course. The desired outcomes of this program are to create graduates who are leaders in their professions in the areas of care for the elderly and underserved, global citizenship, and interprofessional practice.

**Outcomes & Evaluation:** Since 2007, the program has grown from three programs to now include eight programs in the College of Health Professions. Results of the RPLS, Health Professions Schools in Service to the Nation Service Learning Student Survey, and course evaluations, indicate an improved understanding of their own and others’ roles in preparation for community interprofessional practice, enhanced leadership skills, and increased comfort working with people of difference. Five students have returned to Nicaragua as adjunct faculty, mentoring and training the next class of students. The faculty and students have served 5 homes and 650 older adults in 1650 hours of service, provided 243 hours of education and training covering 211 participants, conducted 18 community meetings, raised $19,000 in grant funding, and donated over 7600 pounds of supplies.

**Going Forward:** Ongoing challenges and opportunities for the program include capacity building due to the lack of training and knowledge regarding needs of older adults, local government support, meeting educational needs of local university students to encourage their engagement, and inspiring our students to understand the critical roles they have in education and capacity building.

**Funding:** Each student pays their travel expenses and a faculty supervision fee. Scholarships, financial aid, and fundraising opportunities are available.

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**Evaluating key skills for global health delivery: A scenario-based interview tool**

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**Program/Project Purpose:** Despite a growing number of professionals from high income countries working in low and middle income countries (LMIC), there is no consensus on the full set of needed competencies for training in global health delivery (GHD). These skills go beyond traditional training to include arenas such as communication and cultural competency, which are critical to navigating the social, managerial, and political challenges confronting this work. We report on a formative evaluation designed to assess potential needs in professionals training to work in LMICs compared with their fellow trainees and inform future curriculum development in GHD.

**Structure/Method/Design:** A 15-question scenario-based interview tool was developed using themes from key informant interviews with global health experts. The Delphi Method was employed in an iterative and anonymous process to create the final version. Each question was interviewer-scored as “excellent” (5 points), “good” (3), or “limited” (1-2) using predefined criteria for each score (total possible score=90). Residents from the Brigham & Women’s Hospital Internal Medicine Residency who agreed to participate underwent the interview. Scores were compared for residents in the Global Health Equity (GHE) program with those in general residency (non-GHE), matched by post-graduate year (PGY) and gender. The same individual conducted all interviews. Mean scores are reported and compared using t-tests.

**Outcomes & Evaluation:** The final tool included 6 thematic areas, based around Accreditation Council for Graduate Medical Education (ACGME) competencies: Motivations & Experience, Patient Care, Mentoring & Training Program Management, Systems-Based Practice, Interpersonal & Cross-Cultural Communication, and Professionalism & Self-care. Thirty-four residents (53% PGY1-2, 47% PGY3-4) were interviewed (50% GHE). GHE residents had a higher mean score than non-GHE (79.2 (SD 8.1) versus 58.6 (SD=10.6), p < .001). Adjusting for age, gender, and PGY, GHE remained a significant predictor for higher scores (p < .001). While PGY did not predict scores overall, more experienced GHE residents (PGY 3 or 4) had higher mean scores than PGY1-PGY2 GHE residents (83.6 ± 4.6 vs 75.2 ± 8.7, p=0.03). Qualitative feedback on the interview tool revealed that GHE residents found the scenarios realistic, relevant, and demonstrative of their skills, with most interviews lasting 25-45 minutes.

**Going Forward:** This tool measuring important technical and non-technical domains relevant to GHD work performed well, with scores reflecting different levels of focus and training in GHD. More work to measure reliability and generalizability in other settings is planned. Given the need to design curricula to build competencies that are not amenable to traditional assessments, we propose this tool may be a valuable addition to other measurements to identify needs for additional skills development and ascertain whether programs are successful in bridging these gaps.

**Funding:** Provided for interviews by Centers of Expertise, Partners Healthcare Graduate Medical Education Office. No funding was provided for tool development.

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**Global health bootcamp: An innovative interprofessional course for clinicians dedicated to equitable global health care delivery**

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**Program/Project Purpose:** Context: The UCSF Global Health Bootcamp (www.globalhealthbootcamp.org), a four-day intensive course developed by an interprofessional team, included concepts of global health systems; specifically infrastructure, value measurement, leadership, ethics, and improvement models. Hands-on pedagogical activities included case studies, ethics simulations, mentoring sessions and ultrasound training. Period/Planning began in July 2013, activity implemented October 2014. Why: Designed to complement clinicians’ will to serve with the skills and expertise needed to serve effectively. Aim: To provide team-based training to nurses,