

Program/Project Purpose: Recent epidemics in Africa and natural disasters across the world have shown the challenging aspects of handling additional burdens on health care facilities in a resource-constrained environment. There is a need for technology innovation to address global health infrastructure limitations. The implementation of a mobile facility engineered with a smart monitoring system allows for rapid augmentation of medical resources to meet increased medical needs in these settings.

Structure/Method/Design: In conjunction with custom-developed patient tracking software and a video interfacing system, we conducted a proof of concept study validating a smart monitoring system in the emergency smart pod in Houston, Texas. The system also incorporated wireless, multiparametric patient sensors that allowed continuous vital sign monitoring and transmission connected to the wireless patient monitoring system. The patient cohort participated in three different scenarios (emergency response, critical care, and triage) and were monitored for different time spans according to their needs. Incremental data analytic assessment was used to provide onsite staff with enhanced clinical educational support and ensure efficient use of the wireless smart pod system.

Outcome & Evaluation: During the 3-week study period, all eligible subjects (n=20) admitted to the emergency smart pod were enrolled in the study, generating a total of 21.7 hours (1.08 hours/patient) of periodic vital sign data (including heart rate, blood pressure, and respiratory rate), heart rate variability monitoring, and heart waveform analysis. Remote communication with off-site physicians allowed for expanded care and real-time feedback. All patients tolerated the sensor monitoring without problems, with manually determined and automated vital signs well correlated with one another. This study showed that a smart monitoring system in a mobile facility is instrumental in addressing patient needs in a range of emergency crisis and disaster situations. Feedback was provided to collaborators to support smart monitoring system improvement.

Going Forward: Additional validation phases will incorporate modeling of interactions of multiple mobile facility units and field testing in a health care resource-constrained location to be determined.

Source of Funding: Paul G. Allen Family Foundation USAID Ebola Grand Challenge.

Abstract #: 1.075_HHR

An Assessment Toolkit for Measuring Outcomes in Nursing Study Abroad Programs

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Background: International experiences and study abroad have become a common type of experiential learning in higher education, including nursing. However, a lack of outcomes measures in nursing study abroad programs, particularly from validated and reliable tools, has been identified in the literature. This poster is the result of a Doctor of Nursing Practice project to develop a toolkit that may be used to measure outcomes in nursing study abroad.

Methods: Outcomes from nursing study abroad programs were identified in the literature. Validated, reliable tools to measure these outcomes were identified through further search, and through an

online survey sent to study abroad directors at randomly selected colleges of nursing that have membership in CUGH.

Findings: Tools were identified for many of the identified outcomes. Those that are available for use along with cost, means of obtaining permission, and psychometric data were incorporated into a toolkit for use by nursing study abroad directors.

Interpretation: Validated and reliable tools are available for many of the identified outcomes in nursing study abroad. These may be utilized to meet the identified need for outcomes measures in nursing study abroad programs.

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Factors Influencing Retention, Job Satisfaction, and Motivation among Jordanian Health Workers

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Program/Project Purpose: In Jordan, about 3.78 million people, including refugees and marginalized populations, living in remote areas rely on Ministry of Health (MoH) services. The MoH's 2013-2017 strategic plan lists retention of staff and attracting new talent into the public health system as two of its biggest challenges. USAID's HRH2030 program performed a national level research study to identify factors influencing retention, job satisfaction, and motivation among doctors, nurses, and midwives within MoH health facilities and to provide evidenced-based recommendations to support the MoH in formulating policies to improve staff retention and recruitment.

Structure/Method/Design: HRH2030 used an exploratory, mixed methods design combining both quantitative (questionnaires and a validated tool) and qualitative (semi-structured interviews and focus group discussions) data collection techniques. The study approached 1,565 health workers in 67 primary health centers, 31 comprehensive health centers, and five hospitals across the four governorates of Irbid, Ma'an, Zarqa, and Amman.

Quantitative data analysis: Responses to individual questions were described and analyzed using frequency distributions, mean, and median scores. Multivariate regression analysis was performed to test the association and contribution of different factors to motivation and satisfaction. Data were disaggregated by cadre, facility type, governorate, and gender.

Qualitative data analysis: Responses were analyzed per group of respondents and by research question, using a framework approach based on the research questions and leading issues in the topic guides. We added new items emerging from the interviews and focus group discussions. Answers between and within groups were compared and contrasted, paying particular attention to differences between cadres and genders.

Outcome & Evaluation: The study found that the top satisfaction factors were patient appreciation, interpersonal relations with colleagues and manager, and working arrangements. The most frequently dissatisfying element was insufficient financial incentives,

followed by lack of adequate supplies, infrastructure, and continuing educational/professional development opportunities, excessive workload, disjointed human resource management practices, and aggression in the workplace.

Going Forward: HRH2030 will disseminate the results of the research with key stakeholders and provide technical assistance to the MoH in developing evidenced-based policies and procedures for improving worker motivation and retention.

Source of Funding: USAID.

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Filling the Gap for Healthcare Professionals Leadership Training in Africa: The Afya Bora Consortium Fellowship

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Program/Project Purpose: The Afya Bora Consortium is a partnership of five African and four U.S. universities with the mission of providing future global health leaders with advanced skills that are beyond the traditional patient-centered training programs for healthcare professionals. Each year, an interdisciplinary group of twenty physicians, nurses and public health professionals participate in a 12-month African-based intensive fellowship to improve skills in leadership, resource management, program monitoring and evaluation, implementation, and applied research.

Structure/Method/Design: The Afya Bora Fellowship provides leadership training in the form of eight in-person and four online modules as well as two 4.5-month mentored attachments at governmental and non-governmental organizations in Botswana, Cameroon, Kenya, Tanzania, and Uganda. The fellows come together during three, month-long highly interactive sessions held in different African countries during which interdisciplinary and multinational learning is encouraged. Afya Bora Fellows complete evaluations of the modules and program as well as self-assessments of learning throughout the year. Data presented here are from all cohorts since 2011 using qualitative analysis of personal reflection reports.

Outcome & Evaluation: Fellows described multiple training gaps the fellowship helped fill. Fellows reported that increased skills in communication would help them to better motivate and align others to address pressing problems in their healthcare systems. Improved understanding of and capacity to use data for programmatic purposes was also identified as essential to their ongoing leadership. Fellows reported that their organizational and management abilities

had improved both from didactic learning and modeling of program faculty and staff. Finally, fellows reported that the rich cohort experience provided them with an added appreciation of the advantages of interdisciplinarity when solving problems.

Going Forward: Well-structured and targeted leadership training is necessary to fill the gaps in traditional medical and nursing education programs. Such training can catalyze healthcare professionals to become more effective in leadership and improve the healthcare systems in their countries while not contributing to “brain drain” (all fellows thus far have remained in their respective countries). The Afya Bora Fellowship can serve as a model for training and research institutions as well as organizations in resource-limited settings to sustainably strengthen human resource capacity to lead and improve health systems.

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Success and Challenges of Implementing a Tablet-Based Trauma Registry in Tanzania

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Background: Trauma is one of the leading causes of morbidity and mortality worldwide, even more so in low- and middle-income countries. Access to epidemiological data through trauma registries has been one of the keys to the success of improvement in trauma care. A partnership between local leadership in Tanzania and the Centre for Global Surgery, founded by McGill-based surgeons, was formed about 10 years ago, and a minimal trauma registry was implemented. It has since then been expanded to a 6 sites across Tanzania and data collection is ongoing more steadily for the last 3 years using a tablet-based registry.

Methods: iTraumaTM is a minimal trauma registry that contains a total of 26 questions about demographics, mechanism of injury, type of injury and outcome. Data is gathered on site on paper by local data collectors and is entered by an archivist on a tablet. Reports are generated with minimal user involvement. Over the last year, a quality assessment of the database was conducted using retrospective data. The database, the collection process and the use of data were evaluated to determine the robustness of the registry.

Findings: Over the course of the last 3 years, over 40 000 patients have been entered in the database through the 6 sites. Each patient file entered is on average 93.1% complete (number of questions answered), which is significantly more than what was collected in local hospital records (42.1%). The iTraumaTM catch rate compared to local hospital logbooks was estimated on average to be 317% (range 111-797%). iTraumaTM data was overall concordant with hospital records (not all data currently available, full analysis pending).

Interpretation: The implementation of a minimal trauma registry in a low-income country in collaboration with local leadership is feasible. A significantly larger amount of information about more