Expanding competency-based credentialing in healthcare: A case for digital badges for global health delivery

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Program/Project Purpose: The World Health Organization estimates there are 59 million health care workers worldwide. Many of them have non-clinical responsibilities as managers and policy-makers, but lack opportunities to develop and showcase the necessary skills. Formal programs such as an MBA or MPH are often expensive and inaccessible, while informal recognition is difficult to validate to potential employers and donors. Taking inspiration from competency-based credentialing in education, architecture, and other industries, at the Global Health Delivery Project at Harvard University (GHD) we are developing badges for healthcare delivery. Through our digital badges, we hope to formally acknowledge the skills of health care workers that are not always gained through traditional means and to provide a professional development roadmap for healthcare workers.
Structure/Method/Design: GHD built and operates an open-access platform, GHDonline, with more 14,000 professionals from 182 countries learning, discussion and collaborating on key challenges in global health delivery. We have worked to research, develop, and test digital badges since early 2014. After an expert panel in 2013, our users discussioned key issues as managers in global health delivery. In response we are developing badges in management, public health, and public policy. Participants will be able to receive a "basic" badge after an online assessment and progress to "advanced" badges with additional assessments, coursework, and structured interviews. Badges will be made available for a range of healthcare providers including nurses, pharmacists and physicians. Initial testers and participants will be selected from members of GHDonline. With their feedback we will iterate on the design and content. We are partnering with employers and donors to ensure badges are valuable to recipients. We have assessed existing online courses and resources and have been conducting focus groups and interviews with healthcare providers to test badge components. We are currently prototyping a management and public policy badge to launch in spring/summer of 2015.
Outcomes & Evaluation: Healthcare providers have had positive reactions to the concept of digital badging for health care delivery. There are many online resources related to the field of healthcare delivery available already that will be easier to navigate and be more valuable with the introduction of a badging or recognition system.
Going Forward: We need to broaden awareness of badges among employers and donors in order to make them an accepted credentialing mechanism for healthcare workers. Further work also requires evaluating the scalability of the badges, while taking into consideration the specifics of each country. Ultimately, we aim to pave the way for broader adoption of competency-based credentialing and education in global health.
Funding: We have received support from the Venture Residency Program at the Harvard Innovation Lab and are seeking additional funding, as well as opportunities for public-private partnerships.
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Developing a low cost, mutually beneficial teledermatology collaboration

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Program/Project Purpose: Hillside Healthcare International (HHCI) is a faith-based non-government organization (NGO) founded in 2000. Primary care professionals provide basic healthcare to remote residents of southern Belize. In 2012, a need for specialized dermatology assistance was identified with a high volume of dermatologic cases and a paucity of dermatology specialists in-country. Given the shortage of dermatologists in low resource settings with large numbers of cutaneous diseases, there has been an increased interest to address these challenges through telemedicine. A long-term partnership with the Medical College of Wisconsin (MCW) created a unique clinical and educational opportunity for dermatology faculty, trainees and the primary care physicians in Belize. This Abstract describes how our collaboration launched a low-cost teledermatology program.
Structure/Method/Design: Several factors are required for a low cost, mutually beneficial academic/NGO teledermatology collaboration to be successful and useful. Shared objectives are essential in program development and co-ownership. The entire process must accommodate the legal requirements, technological capabilities, administrative support, and time requirements of each partner. A substantial clinical need must first be recognized, with an interest from subspecialty consultation on the part of the academic institution. Management of the consultations can be integrated into the dermatology residency curriculum, allowing continuity and information sharing over time.
Outcomes & Evaluation: Extramural funding was obtained to purchase essential start-up teledermatology equipment. Key teledermatology program stakeholders at MCW included in-kind support from dermatology faculty and residents, faculty leadership positions on the HHCI board of directors, and legal counsel. Key teledermatology stakeholders from HHCI were predominately leadership (medical and NGO directors), and additional input was sought from HHCI staff. MCW created dermatology training modules for HHCI primary care providers, including instructions on how to capture quality clinical images on cameras provided by nominal extramural funding. A formal medical chart review helped to characterize and quantify dermatologic disease presentation and develop an appropriate medication formulary tailored to differential diagnoses of common endemic diseases. The total cost was less than five thousand dollars.
Going Forward: Lack of reliable internet connection and functioning computers is one of the largest barriers preventing store-and-forward teledermatology use. The inability to see three-dimensional imaging, ask additional follow-up questions, and perform skin biopsies creates challenges for the program. An additional challenge is the limited treatment options and diagnostic modalities available in Belize. Each partner continues to offer their perspectives, edits, additions in each step of development, and implementation. Ensuring the process has the time to develop organically, adapt with partner suggestions, and strengthen as the process further develops, leads to a well thought-out teledermatology program.
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Improving pneumococcal vaccination rates of medical inpatients in Urban Nepal: A trial of quality improvement processes

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Background: Streptococcus pneumoniae infection is associated with high morbidity and mortality in low income countries. In Nepal, there is a high lung disease burden and incidence of pneumonia due to multiple factors including indoor air pollution, dust exposure, recurrent infections, and cigarette smoking. Despite the ready availability of effective pneumococcal vaccines (PNV), vaccine coverage rates remain suboptimal globally, especially in low income countries. Quality Improvement (QI) principles could be applied to improve compliance, but it is a virtually new concept in Nepal. This very first QI study for Patan Hospital in Kathmandu, Nepal sought to measure the baseline pneumococcal vaccination rate of qualifying adult patients discharged from the medical wards and assess reasons for non-vaccination.

Methods: QI interventions were instituted to improve PNV rate, and measure change and the effectiveness of QI methods in producing the desired outcomes using the Model for Improvement, Plan-Do-Study-Act methodology. All patients included in this study were adults discharged from the medical wards at Patan Hospital from June-August 2014. Institutional review board approval was received. Patient eligibility included: unvaccinated, no allergy to vaccine components, and a qualifying diagnosis according to U.S. CDC/U.K. recommendations for PNV. Baseline data compiled by nurses at discharge included a form asking if qualifying patients had received a prior PNV. QI interventions were then implemented including healthcare provider education, a standing order for nurses to vaccinate eligible patients at discharge, and a new medical record form indicating whether the PNV was administered and reasons if not vaccinated. Fisher's exact test was used to compare baseline and post-intervention groups.

Findings: Baseline data showed 2 out of 81 (2%) eligible patients reported a prior PNV; 68 (84%) unvaccinated patients responded that they were not asked or were unaware of the PNV. After QI interventions, the PNV rate significantly increased to 42% (23/56, p < 0.001). The leading reason for non-vaccination was cost (20%, 11/56). Only 5 (9%) unvaccinated patients were not asked or were unaware of the PNV, a significant improvement in that process outcome from baseline (p < 0.001).

Interpretation: QI measures were effective in increasing PNV rates at Patan Hospital despite healthcare providers' limited familiarity with QI methods. QI techniques may be replicable and scalable in other efforts to improve quality in resource-limited settings without great cost. This study would be strengthened with a continous Model for Improvement cycle, including further interventions and analyses to reach target of >60% vaccination rate. The reasons for non-vaccination identified in this study will be used to guide further QI interventions. Hospital system challenges in maintaining higher vaccination rates long term and keeping accurate records for each patient are current challenges.

Funding: Dr. Elaine Kohler Summer Academy of Global Health Research at the Medical College of Wisconsin.

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Sampling patient demographics and treatment modalities using the iPad application "EMcounter" in Mazabuka, Zambia

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Background: The city of Mazabuka, population 200,000, is nestled deep in the country of Zambia. Access to healthcare is poor, with two computed tomography scanners and one medical resonance imaging machine to serve the entire country of 13 million people. Three medical students traveled to Mazabuka to obtain chief complaint, diagnostic and treatment data from patients in the Outpatient Department of Mazabuka District Hospital (MDH) in order to create a database of the patient population with the development of an Emergency Medicine training curriculum as the end goal.

Methods: The study was conducted entirely in the city of Mazabuka, Zambia at MDH. Deidentified patient data were collected in real-time using the iPad app "EMCounter", which allows data to be uploaded using internet connections to a secure data cloud. Data were collected from 877 patients during daytime hours. Attempts were made to capture data from every patient being seen in the Outpatient Department during those hours. Because all data lacked identifying features, written consent was not obtained from each patient; however, verbal consent was obtained prior to any photographic documentation.

Findings: Data collected showed that the majority of patients complained of gastrointestinal, musculoskeletal, or respiratory illnesses, accounting for over half of the total complaints in the Outpatient Department. Medications utilized tended to be supportive in nature, with NSAIDS, vitamin supplements, and Tylenol being the most commonly prescribed medications. Imaging, often difficult and expensive to obtain, was utilized sparingly; 77% of patients received no imaging. Nearly 75% of patients were discharged after initial assessment in the ED. Only 62 of the 877 patients were admitted.

Interpretation: To the best of the authors' knowledge, an assessment of this scale has never been attempted at MDH. Of the final diagnoses, 32% were infectious in nature, a high percentage which warrants further investigation. Additionally, most diagnoses were made with little laboratory data and a heavy reliance on the history and physical exam. Finally, treatments were often either supportive in nature or for the acute problem; management of chronic issues was poor due to the relative difficulty to obtain medications for daily use. These findings demonstrate that the physical exam, public health, and the acute treatment of medical issues are important components to the development of an Emergency Medicine residency training program based in this region.Strengths of the study include the size of the study. Weaknesses include the lack of nighttime data, lack of specificity in diagnosis, and language barriers impeding collection of complete data.

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Launching an interactive cancer projects map: A collaborative approach to global cancer research and program development

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Program/Project Purpose: Globally, 70% of cancer deaths occur in low- and middle-income countries, but these countries receive only 5% of the resources expended by institutions and individuals for cancer care. Outreach efforts of institutions and individuals working to address cancer inequalities in these countries suffer due to a lack of collaboration among on-site groups and difficulty in accessing available resources regarding ongoing projects. In many cases, this leads to duplication of efforts and waste of resources. Information about