

**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 continuous 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.

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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