Findings: Adjusting for basic amenities, basic equipment, and capacity for diagnosing NCDs, our final model indicates significant associations between EM-NCD availability and geographic region, health facility type, managing authority, and range of HIV services. Adjusting for other variables such as facility type and amenities, private for-profit facilities' number of EM-NCD is 124% higher on average than public facilities ($p<.001$). General hospitals and referral health centers had 80.5% ($p=.017$) and 110% ($p=.006$) higher EM-NCD counts than the lowest level facilities, respectively. Facilities in the Northern and Eastern regions have significantly lower EM-NCD counts than those in the capital region ($p=0.015$ and $p=0.003$, respectively.) Offering HIV care and support services was associated with 35% lower average EM-NCD counts ($p = 0.006$), though offering HIV counseling and testing was associated with 57% higher counts of EM-NCD ($p=0.048$).

Interpretation: By conducting the first Poisson analysis using SARA data, we have identified multiple disparities in the availability of EM-NCD in Uganda. Our findings can be used by health system planners and policymakers to guide the distribution of limited resources. While the primary purpose of SARA is to assess and monitor health services readiness rather than produce data for statistical analyses, we show that it can also be an important resource for answering more complex research and policy questions.

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Improvement in User Confidence and Competency in Novice Endoscopists with the Use of a Smartphone-based Endoscopy Training Application

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Program/Project Purpose: Global endoscopic capacity is limited by a lack of providers skilled in these relatively complex procedures. Endoscopy is useful in early detection and treatment of gastrointestinal cancers. With rising rates of gastrointestinal cancers, there is an urgent need for providers trained in the performance of endoscopy. Current methods of endoscopic training, based on an apprenticeship model, are inadequate to prepare trainees to meet advancing competency expectations.

Structure/Method/Design: We have developed an interactive smartphone-based endoscopy teaching application that focuses on endoscopic techniques and management of commonly encountered GI pathology. The goal is to create a central resource where clinicians can access information required to successfully perform endoscopy which adheres to the standards described by the major gastroenterology societies. The application can provide guidance (through demonstrative videos and verbal instruction) on the technical aspects of performing endoscopy; it also contains information about the cognitive aspects i.e. identifying and managing GI diseases. The application is currently being evaluated by a group of six first-year gastroenterology fellows at Baylor College of Medicine (Houston, TX) to determine feasibility of this novel training tool.

Outcome & Evaluation: We have conducted a "pre-test" survey with the study participants to assess user confidence and knowledge regarding commonly encountered GI conditions. After four weeks of unlimited use of the application, we will conduct a "post-test" survey to examine these same areas of interest and also to obtain feedback regarding the application itself.

Going Forward: We plan to expand this tool to cover a wider range of pathology and to include other procedures such as colonoscopy. We envision that this tool can have important global health applications. Cell phones are increasingly utilized in underserved global regions - we hope to take advantage of this to provide a unique platform for delivery of education. Specifically, we will develop this tool so providers with varying levels of training (i.e. non-gastroenterology trained physicians and even nurses), practicing in low-resource settings, can receive detailed information on how to perform basic gastrointestinal procedures. Future aims would also include development of this tool for other, non-GI procedures that can be encountered in low-resource settings and also for patient-centered education to promote compliance and enhance public health efforts worldwide.

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Human-centered Strategic Planning at a Rural Rwandan Medical School: A Case Study for Navigating Institutional Challenges and Strengthening Community and National Population Health in Low and Middle Income Countries

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Program/Project Purpose: Human-centered design (HCD) for strategic planning of educational, infrastructural, and financial objectives can provide a framework for medical schools throughout LMICs to efficiently increase in-country healthcare providers while concurrently contributing to community and national healthcare priorities. We undertook an HCD strategic planning process for the University of Gitwe Faculty of Medicine and Allied Health Sciences in Gitwe, Rwanda, the first rural medical school in Rwanda, opened in 2013.

Structure/Method/Design: The HCD framework of "empathetic needs finding, definition of challenges, idea-generation, iterative prototyping, and testing-retesting of solutions" was employed. Needs finding through semi-structured interviews of patients, physicians, nurses, University of Gitwe and Teaching Hospital staff, educators, students, community leaders, water and electricity managers, architects, financial planners, and international partners were conducted. A 15-year phased model was proposed with priorities elaborated and debated in multiple sessions. An architecture advisor evaluated Rwandan and East African Community Teaching Hospital standards to assess "needs" for infrastructure versus existing conditions. Similarly, this was done for medical education facilities. Local epidemiology was analyzed against national health priorities. Financial planning considered current budgetary circumstances, capital projects, and student and faculty financial positions.