Building surgical capacity through the implementation of an online neurosurgical curriculum in Preah-Kossamak Hospital in Cambodia

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Program/Project Purpose: The establishment of strong surgical centers in low resource settings is a global health goal. We have employed online strategies to construct a didactic neurosurgery resident curriculum to strengthen and build capacity for the residents at the Preah-Kossamak hospital in Phnom Penh, Cambodia. The curriculum provides a venue whereby residents directly interact with international faculty online, review and discuss course material and surgical cases, and are evaluated with respect to their knowledge. The program was established in 2014 as a three year curriculum.

Structure/Method/Design: The program consisted of pre- and post-assessment examinations, lectures, discussion forum of the lecture material and integrated questions, to permit multimodal assessment and interactivity between residents and faculty. In addition, the curriculum was comprised of two parallel components. The first was course material deemed to be essential knowledge in neurosurgical training, moving from foundational to subspecialty level. The second involved discussion of surgical cases and addressed surgical decision making. We aimed to identify whether this online education model can be applied to surgical education, and by using metrics of course activity and qualitative data to ascertain whether this venue results in greater knowledge of subjects, procedures and outcomes, and elevated ability of case discussion. All neurosurgery residents at the Preah-Kossamak hospital were recruited.

Outcome & Evaluation: Three courses have been so far delivered: the pilot course, to introduce the online model, the first and the second curriculum courses (fundamentals of neurosurgical care, and advanced neuroanatomy). The current attrition rate is 0%, with consistent growth in participation of the residents in the discussion forum (19% increase), the number of discussion posts, and the estimated amount of time spent on the course material. Qualitatively, there is consistent increase in depth of discussion and online conversation between the residents, denoting a sense of comfort with this medium.

This method of surgical education, tailored to the institutions' need, appears to be a powerful tool of supplementing key aspects of surgical training.

Going Forward: Feedback from residents is continually assessed to improve program experience. Additional international locations are being evaluated for curriculum implementation suitability.

Abstract #: 2.005_TEC

Comparative effectiveness of didactic training and short course mentoring versus basic didactic training alone on the capacity of laboratory scientist to perform Smear microscopy for rapid Identification of TB in Nigeria

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Program/Project Purpose: Increasing case detection for TB is a major component in the rapid scale up of the STOP TB program. Low case detection rate is a major barrier to the effectiveness of the STOP TB program in Nigeria. Our mentoring program was designed to train and increase the capacity of laboratory personnel for smear microscopy across two states with high TB prevalence in Nigeria.

Structure/Method/Design: Forty-six laboratory personnel without appropriate skills to perform TB smear microscopy were selected and randomly assigned to one of two training group. Group A: Participants received basic TB smear microscopy training based on the National TB training curriculum and were paired with accredited and experienced Laboratory Scientist for a 2 weeks mentoring program. Group B participants also received the same basic training but did not participate in the short mentoring program. Participants in both groups were then assigned to perform TB testing. Outcome was measured by a pre and post-test evaluation which includes theoretical objective questions and a practical session to produce smear and identify the bacilli.

Outcome & Evaluation: A total of 27 laboratory scientist completed the training in Group A while 19 participants completed the training in Group B. The post evaluation showed that 63% of participants in Group A achieved the standard passing score of 80% compared to only 36% of participants in Group B that attained the passing score.

Going Forward: The addition of a short term mentoring program to basic didactic training significantly improved the capacity of laboratory staff to perform smear microscopy.

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Designing health information skills eLearning interventions for health sciences students in Tanzania: Application of information problem-solving (IPS) model

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Background: We intend to design electronic instructional interventions for the teaching and learning of health information skills in an electronic environment. The designed interventions will be used to teach health sciences students in Tanzania a set of skills to enable them to effectively utilise, evaluate and apply the available

health information on the Internet. This will help in supporting their health sciences education projects and activities. Evidence shows that in Tanzania there is a mismatch between health sciences students enrolled in various health courses and available Health Learning Materials (HLM). Alternatively, available health information on the Internet will address the current challenges encountered by health sciences students. However, accessing the increasing number of health information on the Internet sources requires a certain level of competency and training.

Methods: This study is going to use Design-Based Research (DBR) methodology, whereby the designed interventions will be implemented in three iterative cycles. Both qualitative and quantitative data will be collected at each implementation cycle. Descriptive and inferential analysis will be used in quantitative data while content analysis will be employed in qualitative data. Targeted participants will be drawn from the following: 3 health educators, 1 librarian, 1 ICT officer and 15 health sciences students, all from health training institutions in Tanzania. Researchers will train health educators, the librarian and the ICT officer using the designed interventions on how to conduct basic and advanced searches on the Internet. Later on, they will train students on how to locate online health resources.

Based on the Big6 model, which this study is going to employ, the six processes of IPS which will be taught to participants during the first iteration of the designed interventions are task definition, health information seeking strategies, location and access to health information, use of health information, synthesis and evaluation. Evidence shows that the IPS model is very effective and useful in teaching and learning health information skills in health settings. Studies suggest for an effective outcome of the information skills program, designers and researchers should employ the IPS model. Consequently, participants will be competent in the previously mentioned six processes of locating health information in an electronic environment.

Going Forward: Evidence-Based Medicine Practice is relevant to the developing countries as well as 21st century students. Through the IPS model, students will be able to learn both health information and technology skills. The first iteration is expected to be implemented in early 2016, the obtained results will be used for refinement of the intervention for the next iterations. On the overall, it is anticipated that the designed electronic instructional interventions will be incorporated and integrated into the health sciences curricula in all health science programs in Tanzania.

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Problem solving and learning from clinical cases in rural India using global network of volunteer physician experts

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Program Purpose: There is severe shortage of physicians in rural India, especially specialists and this limits the scope of patient care

and professional growth of physicians and trainees. Jan Swasthya Sahyog (JSS) is a healthcare organization in rural India that provides comprehensive healthcare to rural and tribal population and trains Family Medicine residents. Physicians around the world are motivated by mastery and purpose in their work and are willing to provide assistance to JSS via tele-consultations. We setup a workflow for remote physician experts to provide real-time assistance in clinical management of complex cases in a limited resource rural hospital setting using email for tele-consultation.

Methods: Treating physician sends a case summary along with the objective data and images via email to physicians in USA and India who engage their professional network to answer the clinical question(s) and report back to the entire group. The referring physician eventually reports the case's outcome. All learn from this information exchange.

Outcomes: Since January 2013, this model of tele-consultation has connected experts in USA and India for clinical problem solving of >150 consultations. The expert input has informed interpretation of key investigations such as radiographs, ECG, echo and guided further investigations to arrive at accurate diagnosis. It has also influenced therapeutic decisions taken for patient care. Expert physicians have continued to participate in this activity without financial remuneration.

Going Forward: Next step is formal evaluation of participant feedback and impact on patient care. We are also looking for more efficient technology platform for collaborative problem solving for clinical cases.

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Research project on technology in global health: Finding a means to combat child malnutrition in the developing world

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Purpose: Technology has the potential to become an essential tool in health education across the developing world. Strategies to improve the nutritional health of children involve spreading awareness on both proper diet and growth standards to support and monitor children. A majority of the world's population (including those in rural areas) is currently covered under mobile networks, and the number of mobile technology users has grown beyond the number of those who do not. This opens the path for different modes of technology to reinforce outreach throughout the most inaccessible areas that receive limited medical attention. This research project focuses on case studies of existent technological platforms in order to propose a successful program as the next step forward.

Design: Various technological platforms were evaluated based on the following research questions:

1) What form of technology is most practical to employ in the context of a developing country?
2) How can the variables of availability, accessibility, and adaptability be measured and compared between different technological tools?