collected when available included specific surgical field, category of technology used, intent of technology used, effectiveness (e.g. patient outcomes when applied to patient-care, or test-scores when used for education), patient satisfaction, and costs.

Findings: The review resulted in data for 2 LIC, 4 LMIC, and 8 HMIC countries in 21 articles. The most common surgical field was endocrine surgery, followed by orthopedics. Generally, videoconferencing (62%) was the most common technology used, and teleconsultation (38%) was the most common use of technology. Generally, utilizing telehealth in surgery was effective, satisfying to the patient, and economical with no difference noted where calculated although significance was questionable.

Interpretation: Telesurgery exists in many permutations in LMICs. However, there is little evidence in the medical literature illustrating its use other than in high-income settings. Issues such as infrastructure, overstressed workforce, or scalability were just a few of the issues that are relevant, which are ignored by the present literature. Further research is required to evaluate these areas in addition to relevant usage, technologies, and outcomes of telesurgery, especially in low and middle-income settings.

Funding: No funding was received for this study.

Abstract #: 02ITIS019

Scaling up WelTel: an evidence-based, patient-centred mHealth intervention

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Program/Project Purpose: WelTel is an interactive text messaging mobile health (mHealth) program involving weekly check-ins with patients, and follow-up through voice communication when needed. We previously demonstrated the effectiveness of the WelTel intervention in improving HIV outcomes in a landmark randomized clinical trial conducted in Kenya. As part of this program, we are building on our previous work to scale up and conduct a comprehensive evaluation of the WelTel intervention in several government clinics where it is being implemented in Canada and Kenya. The aim is to determine the feasibility, cost-effectiveness and sustainability of the WelTel intervention for improving Human Immunodeficiency Virus (HIV), tuberculosis (TB), Maternal Neonatal and Child Health (MNCH) and asthma patient outcomes. This project is expected to run until January 2017.

Structure/Method/Design: In Kenya, the intervention is being scaled up in the Northern Arid Lands region, where the need for mHealth services is greatest. In Canada, we are focussing on marginalized communities suffering from HIV and TB, where interventions to improve patient engagement are needed. We will use the published Consolidated Framework for Implementation Research (CFIR) to conduct a comprehensive evaluation of the program across all the implementation sites. To encourage viability and sustainability, we are working closely with government and institutional authorities, as well as other implementation partners to develop and harmonize mHealth policies and standards. To enhance economic sustainability, we have developed a hybrid business model (consisting of a not-for-profit arm to operate in Kenya and other low-income settings, and a for-profit arm to operate in Canada and other high-income settings).

Outcomes & Evaluation: So far, we have successfully implemented the program in 7 HIV clinics in Kenya. Based on user feedback, we have developed a robust and user-friendly patient engagement mHealth techonological platform, which works well, even in remote settings. We are currently conducting a comprehensive evaluation of quantitative and qualitative patient and health system outcomes. Initial feedback suggests that the majority of health providers, patients and decision-makers highly value the intervention, particularly its

capacity for keeping vulnerable patients connected to the health care system, and allowing effective remote patient follow up and triage.

Going Forward: We are working closely with health authorities and regulators to develop consistent mHealth policies and standards, as these are required to guide implementation. Based on the feedback we have received from our stakeholders, we are exploring ways to furth

Funding: Grand Challenges Canada, CDC.

Abstract #: 02ITIS020

mMOM - Improving maternal and child health for ethnic minority people in mountainous region of Thai Nguyen province of Vietnam through integration of mHealth in HMIS and user-provider interaction

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Program/Project Purpose: Context: Vietnam is likely to achieve MDG on maternal and child health (MCH) but MCH indicators for ethnic minority people and people living in mountainous regions are far lag behind. Education, access to health care knowledge and services, remoteness from health care services were found as the main reasons. Period: 3 years between 2014 and 2016. Rationale: It is expected that mobile phones can help to mitigate barriers to MCH services of the ethnic minorities and people living in mountainous region and facilitate interaction between them and health workers for better health outcomes. Aim: To develop, pilot and learn about feasibility of a low cost mHealth behavior-change-communication (BCC) model as a part of the existing health management information system (HMIS) in the province for better MCH outcomes in mountainous region.

Structure/Method/Design: The goal is to improve health of pregnant women and the newborns in mountainous regions. Participants and Stakeholders: Institute of Population, Health and Development (PHAD) and Thai Nguyen Provincial Health Department (TNHD) are co-managers; district and commune health departments are implementers of the project; pregnant women and new mothers are the beneficiaries. VEH Medical Investment and Communication (VEH) develop the software. VEH, Simon Fraser University (SFU), Centre for Addiction and Mental Health (CAMH), and consultants from Hanoi Medical University (HMU) and School of Public Health (HSPH) provide technical advisories and capacity building trainings. Capacity Building/Sustainability: TNHD is a co-manager of the project and own project resources after its completion for further use and scaling-up. Staffs of district and commune health centers are implementers of the project; they received various capacity building trainings for full ownership and management of the intervention.

Outcomes & Evaluation: To date, the mHealth BCC and HMIS-integrated model was developed and used. Assessment survey was completed and used to refine the project activities. Data collection for pre- and post-intervention surveys is progressing. Capacity building trainings were completed; graduate students from HMU, HSPH, SFU and University of Toronto have been engaged to the project. Ministry of Health provided MCH materials to the project. Monitoring & Evaluation Results: TNHD and local health workers show great supports and positive feedbacks to the piloting model; they found that it helped to reduce their work load and meet the expected goals of the MOH on MCH. Participating women are very satisfied with the intervention.

Going Forward: Ongoing challenges: The project has only minor challenges thanks to great supports from TNHD and local health workers. Scaling-up to other provinces that do not have a computerized HMIS would be a challenge in the future. The project does not anticipate a
Funding: IDRC Canada.
Abstract #: *02ITIS021*

Distant peer-tutoring of clinical skills, using tablets with instructional videos and Skype: A pilot study in the UK and Malaysia

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Program/Project Purpose: One way to help solve the problem of a lack of funding and trained educators in developing countries is to harness new developments in technology such as mobile health and online learning. This study aimed to assess the feasibility and impact of using specially designed low-cost Android tablets to deliver video tutorials and remote online peer-tutoring for clinical skills between two countries, the UK and Malaysia.
Structure/Method/Design: Nine junior medical students from Malaysia were paired with five senior medical students from the UK, who played the role of peer-tutors. Medical students from NUMED, Malaysia, volunteered to participate in response to an email advertising the scheme that was sent through the medical school administration to all students who were in the lowest quartile of their year group based on first year clinical examination scores. Students from NUMED were selected on a first-response basis and paired randomly and assigned a peer-tutor. Students from Malaysia were given a low-cost Android tablet from which they could access instructional video tutorials. At the end of each week, the peer-tutors would observe their peer-learners as they performed a clinical examination. Tutors would then provide individual feedback using a videoconferencing tool. Outcomes were assessed using Observed Structured Clinical Examination (OSCE) scores, post-study questionnaires and semi-structured interviews with participants. To ensure project sustainability, students who received a tablet paid a nominal fee.
Outcomes & Evaluation: Peer-learners reported an increased confidence in clinical examination of 8.4 ($\pm$1.0) on a 10-point scale and all nine said they would recommend the scheme to their peers. Both peer-tutors and peer-learners were able to establish a strong rapport over video, rating it as 8.4 ($\pm$0.6) and 8.4 ($\pm$0.9) respectively. Peer-learners' rated the sound and video quality of the tablet as 7.0 ($\pm$1.1) but were less satisfied with the screen resolution of the tablet, rating this as 4.0 ($\pm$1.5).
Going Forward: This program illustrates the potential benefits to healthcare professionals in dramatically different locations provided by our frugal innovation in the realm of video tutoring and telemedicine. With improvements to the hardware and refinements to the pro
Funding: We received funding from Newcastle University, UK.
Abstract #: *02ITIS022*

Performance monitoring and accountability 2020: Using mobile phone technology to monitor progress towards family planning 2020

Abstract opted out of publication.
Abstract #: *02ITIS023*

Data sharing for neglected tropical disease drug discovery: Creating a framework for reducing redundancy and improving global collaboration

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Program/Project Purpose: Context. With the ever widening interest in drug discovery for neglected tropical diseases, increasing numbers of academic and industrial research teams are performing medicinal chemistry optimization of potential new drug agents. One risk of this expansion is the duplication of effort caused by compartmentalized prosecution of research projects that are unknowingly focused on pursuing highly similar research directions. The root cause of this issue is the common practice of doing drug discovery research with high levels of confidentiality, a "best practice" that is typical in the for-profit pharmaceutical industry, where developing and protecting intellectual property (IP) is paramount. A new way of thinking about sharing and protecting research data for NTDs is needed. Project Period. January 2014-onward (indefinite). Why the program/project is in place. The development of a secure data sharing portal could strongly enhance and accelerate NTD drug discovery efforts worldwide, both by reducing redundancy and by engaging smaller, resource-constricted organizations who are performing drug discovery research. Aim. To establish, populate, and operate a new data sharing portal that supports drug discovery for neglected tropical diseases.
Structure/Method/Design: Desired Outcomes. We intend to develop a self-sustaining, collaborative data sharing portal that captures chemical structure and biological screening data and that enables the collaborative and informed progression of NTD drug discovery projects, while balancing researchers' desire for information protection (confidentiality). Participants: The recruitment of participants in the program has been primarily by word of mouth, utilizing social media platforms, professional scientific networks, research seminars and posters, and an opinion piece published in PLOS-Neglected Tropical Diseases (DOI: 10.1371/journal.pntd.000286). Sustainability: Viability will be dictated by: (1) Engagement. We plan to have r portal teleconference meetings to discuss recent deposits and ongoing projects. In addition, we aspire to make available unique research resources for participating members in order to incentivize active participation. (2) Funding: we will seek funding from other organizations (NIH, BMGF) in order to further operate the portal.
Outcomes & Evaluation: Successes We have secured $25,000 in funding via crowdfunding and established the database. We have also identified large tranches of data for deposit and shared, and have engaged other academic NTD drug discovery groups Monitoring. None conducted.
Going Forward: Ongoing challenges? The primary challenge has been to recruit participants who will deposit data into the portal and agree to deposit new data on an ongoing basis. Are there any unmet goals? No How are/may future program activities change as a result? N/A
Funding: The pilot phase of this project has been funded by a crowdfunding campaign ($25,000):
Abstract #: *02ITIS024*

An assessment of data quality in Haiti's multi-site electronic medical record system

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Background: The World Health Organization has identified health information systems as a "building block" for health systems