

can safely do so. In addition, a version of the program with more traditional EHR capabilities is under development. We aim to make the program available to any groups interested in using this system.

Detection of malaria parasitemia for hotspot identification: employment of loop-mediated isothermal amplification (LAMP) in remote clinics in Kenya

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Background: Identification of asymptomatic populations that may be reservoirs for malaria transmission is key to ensuring eradication. The lack of ability of current diagnostic tools to screen for asymptomatic malaria infection at a field level has made identification of these hotspots of transmission difficult. Molecular methods necessary to detect the low-density parasitemia in asymptomatic malaria, such as polymerase chain reaction (PCR), require considerable training to perform and remain too complex for use in field. Loop-mediated isothermal amplification (LAMP) has proven a cost-effective technique for identifying asymptomatic malaria in resource-limited field settings.

Structure/Method/Design: Student scientists from UC Berkeley and faculty from UC San Francisco Malaria Elimination Initiative informed research scientists at Maceno University about the use of LAMP to detect malaria parasitemia in asymptomatic cases. Early results indicate progress in the use of LAMP for the creation of a hotspot identification map, which will be completed by January 2015. The UC Berkeley-UC San Francisco-Maceno University collaboration continues to build capacity of local research scientists to perform the experimental phase of a hotspot identification campaign and, by default, gain understanding on the evolution of the Plasmodium parasite, change in its species, and hotspot characterization.

Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract): University of California, San Francisco Global Health Group & Malaria Elimination Initiative

Maceno University Kenya

Dr. Eva Harris, UC Berkeley

Summary/Conclusion: Berkeley students have trained interested clinicians in LAMP diagnostics. They have compared successful diagnoses obtained using former RDT methods alongside LAMP tests to determine differences in detection capabilities that have been conveyed to clinicians and researchers. This has been instrumental in identifying asymptomatic populations and building an efficient drug distribution model for targeted ACT treatment.

Data has been collected regarding trends of infection, efficacy of LAMP testing, and potential areas for improvement at every step in our initiative. ACT treatment of individuals who test positive for malaria via LAMP tests will begin as soon as possible, and as will the analysis of whether this corresponds with a drop in infection rates. A local team is carrying out experiments year round to test for variations in *P. falciparum* populations or emergence of drug-resistant strains, which will provide important information about fluctuations in parasite populations and emergence of drug-resistant strains that can be used to tailor anti-malarial strategies.

Anti-Jiggers pilot intervention program and rural health systems strengthening in Western Province, Kenya

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Background: Students for International Development (SID) conducted four global health development projects in summer 2012 in rural Western Kenya: infrastructure development at two rural health care dispensaries, one public health camp, and an anti-Jiggers

four-phase prevention/treatment campaign in partnership with the Kenyan Ministry of Health. Jiggers is a neglected tropical disease endemic to Western Province that can debilitate the use of one's limbs. Neglected tropical diseases such as Jiggers have largely been ignored by the Millennium Development Goals development agenda and have led to highly inaccessible funding mechanisms to address these issues.

Structure/Method/Design: Initial needs assessment meetings were conducted with two rural health dispensaries in Western Province, Kenya, namely Nadanya and Likindu dispensary. Staff, board members, community members, and Ministry of Health officials were consulted, which helped to develop a greater understanding of local health priorities. This informed the rural health systems strengthening projects that were developed, which included infrastructure development and health promotion programming.

Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract): Infrastructure renovations included repairs and upgrades to water catchment systems, sewer systems, maternity wards, and diagnostic labs at Likindu and Nadanya dispensaries. In the Nadanya sublocation, a public health camp was organized, which served over 660 residents within the surrounding Nadanya locality. Patients had access to consultations with doctors and nurses, vaccinations, medications, and referrals. The camp also included workshops facilitated by community health workers (CHWs) about local health concerns such as maternal health facilities, pit latrines, and infectious diseases. The anti-Jiggers intervention treatment and prevention program began with identifying critical patients to treat using a toolkit to assess severity of Jiggers. Over 35 patients were invited to an anti-Jiggers camp where they were treated with potassium permanganate, the current best practice for treating this disease. Afterward, CHWs conducted educational sessions on the myths and realities of Jiggers and all homes of patients were fumigated to remove Jiggers parasites.

Summary/Conclusion: Overall, the projects were successful because they were sustainable and community driven due to extensive consultation with local stakeholders and CHWs. Project limitations include lack of funding for medication shortages and lack of qualified personnel.

Future priorities include monitoring and evaluation, scale up, and research into best practices to further improve the efficacy and integration of the anti-Jiggers intervention with local health units. Improving the evidence base enables public health practitioners to advocate for more funding for the development of treatment and prevention interventions for Jiggers and other neglected diseases.

Rapid Internet-based review of point-of-care ultrasound studies at a remote hospital in Uganda

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Background: Rural hospitals in low-income countries have limited diagnostic imaging resources. Clinician-performed bedside ultrasound (US) is portable, low-cost, and easily deployed in such settings. Since 2009, Global Emergency Care Collaborative has trained mid-level Emergency Care Practitioners (ECPs) at Nyakibale Hospital in rural Uganda to incorporate bedside ultrasound into their practice as a core skill. During the first year of training, ECPs undergo 80 hours of symptom-based lectures, including 7 hours of US didactics. Daily oversight and continued US training for ECPs is difficult due to the lack of regular physician presence.

Objective: To evaluate if a web-based educational platform can remotely advance US skills in a rural district hospital.

Structure/Method/Design: We prospectively evaluated the effect of remote feedback by an experienced physician in the United States on the US performance and interpretation skills of ECPs in Uganda. In March 2012, 10 ECP students were enrolled into a remote educational program for US. Initial ECP education involved didactic and hands-on sessions by U.S. physicians on-site in Uganda over 1 month, after which, ECPs performed US independently for 12 months. The study intervention occurred over the following 6 months. Digital video clips of US performed in Uganda from March 2012 to September 2013 were uploaded and reviewed by physicians in the United States using an educational website (www.emergencyultrasoundservices.com). All US images were rated for quality using an 8-point ordinal scale with better imaging corresponding to higher ratings. During the intervention period, detailed feedback on image quality and interpretation was provided to ECPs via email within 48 to 72 hours. Comparisons between study periods were performed using Wilcoxon signed-rank test and Student's *t* test.

Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract): 1153 studies were performed in Uganda and reviewed in Uganda over 18 months. The US performed were 583 FAST (50.5%), 211 cardiac (18.3%), 158 chest wall (13.7%), 80 trans-abdominal uterus (7.1%), and 26 gallbladder (2.3%). During the independent use period, 6.5 studies/ECP/month were reviewed. During the feedback period, 17 studies/ECP/month were reviewed ($P = 0.039$). FAST image quality scores decreased following initial education (6.6 vs. 3.8, $P < 0.001$), but increased during the feedback period (3.8 vs. 5.7, $P < 0.001$). Interpretation skills also improved during the feedback period (see fig).

Summary/Conclusion: Remote educational feedback improves image quality and interpretation of US studies by ECPs in a Ugandan hospital.

Using technology to improve vaccine delivery in developing countries

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Background: VaxTrac has designed and deployed a mobile, biometric-based vaccination registry throughout several health districts in Benin. The system uses the child's fingerprint to access their vaccine history and inform health workers as to the appropriate course of treatment.

The primary benefit of the system is ensuring that a child receives the appropriate vaccines. The ancillary benefit is the wealth of data about where and when vaccines were administered. This empowers health officials to make more informed decisions, incorporating concepts from demand forecasting, supply chain management, and resource allocation.

We are using the transition to a digital system as an opportunity to re-engineer a number of processes, finding ways to improve the efficiency of the vaccine delivery system.

Structure/Method/Design: VaxTrac provides the technology, training, and ongoing support to the parties responsible for delivering the health services, be it the Ministry of Health or an NGO. We also serve as a technical advisor on issues related to data-driven decision making in vaccination processes.

Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract): VaxTrac has worked closely with the Benin Ministry of Health in addition to both country and international offices of UNICEF and WHO. We are currently building a consortium with

researchers from Emory University School of Public Health and the Benin National University School of Public Health.

Summary/Conclusion: The primary success has been the increase in the amount of available information about vaccine administration and the integration of that data into decision-making processes. Streamlining the data input and reporting mechanisms has greatly reduced the administrative burden on frontline health workers, enabling them to spend a larger proportion of their time actually interacting with patients and improve the quality of care. The introduction of technology into the clinic setting has increased mothers' perception of the importance and "professionalism" of immunization as a health service, leading to a higher coverage rate and better vaccine schedule adherence.

Spurring innovation in designing HIV testing programs: A crowdsourcing contest-based approach

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Background: Designing innovative HIV testing and linkage interventions is challenging. Groupthink, defined as the inclination to produce similar concepts when insulated from outside influences, inhibits innovation and leads to homogenous campaigns with minimal input from key populations. The conventional approach to designing and implementing HIV testing interventions can be enhanced through crowdsourcing. Crowdsourcing is the process of taking a task performed by an individual and outsourcing it to a large group in the form of a contest or open call, often publicized via the Internet. Crowdsourcing has been used extensively in the private sector and championed by the Executive Office of the President of the United States as a cost-effective tool to generate creative, new ideas. For example, open contests with prizes have been used to solicit creative new product ideas through online forums, tapping into the diverse wisdom of the crowds and at the same time increasing community ownership. We crowdsourced the design and development of short films to promote HIV testing at local community-based organizations (CBOs) in China.

Structure/Method/Design: We announced a contest for 1-minute HIV testing promotional videos open to all community-based organizations that deliver HIV testing in China, including Taiwan and Hong Kong. Two open Skype calls were established to clarify the rules and goals of the contest. Judging criteria included reaching untested individuals, engaging the community, and generating excitement around HIV testing. A total of seven eligible entries were submitted within 8 weeks. A multisectoral (public health, medicine, anthropology, advocacy, business) panel of judges selected three finalists during an open event. Short films from finalists will be screened by a panel of film experts at the Macau International Digital Film Festival where CBOs will receive additional capacity building from technical experts to create effective short films.

Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract): Social Entrepreneurship for Sexual Health (SESH) Global, AIDS Care China, Macau International Digital Film Festival, Hong Kong University, London School of Hygiene and Tropical Medicine

Summary/Conclusion: Open contests may provide a cost-effective, structured mechanism to promote innovation in global health. The open contest process has generated greater interest in testing programs and forged new linkages between social media/technology partners and CBOs. Technical (e.g., online forums) and substantive