

be reconstructed into 3D images. Using the Lytro camera, quantitative volume measurements were generated for a range of nodular KS lesions from patients (ages 17 to 50) admitted to the Dermatology ward at the MCH. Suitable lesions were selected based on nodularity, size, and location.

Follow-up images taken 5-8 days after initiation of chemotherapy were used to observe clinical progression, and images taken with an iPhone camera were used as a traditional method of photography for comparison. Photographs were then uploaded and sent to UCSD for computational processing.

Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract): Medical Education Partnership Initiative (MEPI; UC San Diego-University Eduardo Mondlane collaboration)

Summary/Conclusion: As seen in the initial analysis of images and processed depth maps, the Lytro technology exhibits unique advantages over a traditional camera. In terms of objectivity, the Lytro is superior to the iPhone in that its data files can be used to quantify the efficacy of treatment through volume changes in lesion size. Furthermore, the Lytro allows for a movable focus after the image has been captured. These are features unique to the Lytro and not currently available in any other camera commercially sold. The iPhone, in contrast, shows an advantage in ease of use at the bedside and immediacy of results.

Quantitative results from this pilot study are currently in submission for publication and will be used to obtain funding to establish a protocol of the imaging process and design a stand-alone application that can process the image files at the point of care. With additional development, this technology could provide better prognostic information and improve clinical practices, with broad applicability to populations in areas of Africa where the burden of epidemic HIV and Kaposi's sarcoma is highest.

United States resident physician smartphone use during international clinical rotations

S. Raaum¹, A. Patino², C.E. Vallejo³, C. Arbelaez⁴, C. Milne¹; ¹University of Utah, Internal Medicine, Salt Lake City, UT/US, ²Harvard Medical School, Boston, MA/US, ³Universidad de Antioquia, Emergency Medicine, Medellin/CO, ⁴Brigham and Women's Hospital, Harvard Medical School, Emergency Medicine, Boston, MA/US

Background: Smartphone use in clinical care has increased dramatically over the last decade and has the potential to improve efficiency and aid in clinical care. Studies have shown early adoption in the US graduate medical education system, and more recent data shows innovative uses abroad. Use by US residents in the international setting has not been studied. Given interest in global health by US residents, we conducted a survey to characterize resident smartphone use during their clinical rotations in the international setting.

Structure/Method/Design: An online anonymous survey was distributed in fall 2013 to current emergency medicine (EM) residents at the Harvard Affiliated program and select Internal Medicine (IM) residents at the University of Utah. This pilot study was aimed at identifying residents who had rotated at their program's international clinical sites to determine their smartphone use while outside the United States. Data collected included demographics, smartphone ownership and frequency of use in clinical settings, types of applications used, and barriers to use during clinical work in the international setting.

Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract): In this convenience sample, there were 51 respondents, 35 (69%) EM and 16 (31%) IM residents. 59% were

female and 63% were 20 to 30 yrs old. Eighteen out of the 51 (35%) had worked clinically in an international setting, including countries in Latin America, the Caribbean, Africa, the Middle East, and Asia. Of these, 14 (78%) owned a smartphone and 12 (67%) used it during international clinical work. Most reported owning 1 to 10 smartphone applications (apps); the three most common apps or features used were medication formulary, web access, and email access. During an average clinical month, 55% of residents used their smartphones often (once per day or every couple of days) and almost half used it anywhere from 1 to 15 minutes on an average clinical day. 73% stated that they used their smartphones less in an international setting than in the United States. The most common barriers to use were lack of wireless broadband internet (73%), cost of phone Internet data plan (37%), and lack of phone Internet data plan in the country (37%).

Summary/Conclusion: In this descriptive pilot study, we found that the majority of US EM and IM resident physicians who own a smartphone used it during their international clinical rotations. However, use was brief and limited by Internet accessibility, and was generally less than while in the United States. Further research is needed to characterize smartphone use by US and local physicians in developing countries, and to identify ways to overcome barriers to increase use and aid in clinical care.

Organizing data in a remote clinical location: A mobile electronic data system (MEDS)

A. Schwartz, S. Williams; University of South Florida Morsani College of Medicine, Tampa, FL/US

Background: On international medical mission trips, a major challenge is keeping data on patient statistics in remote clinical locations. Having a reliable way to record this data is useful for planning subsequent trips in addition to identifying targets of transformation to help build a more sustainable health care within a community.

Structure/Method/Design: We have developed a way for health care providers to keep track of several in-clinic data points on international trips. Our solution is a mobile electronic data system (MEDS) program that is capable of being used in remote clinic locations without Internet access. It maintains patient demographics, vitals, diagnoses made, and medications dispensed. In addition, it attempts to improve clinic flow by streamlining patient data transmission within the mobile clinic to providers that may be responsible for providing medications and information to each patient. The program is compatible with many popular devices, including iPads, androids, and iPhones.

This program can save a significant amount of time and resources in planning for medical mission trips. The data it provides can assist trip planners in optimizing the formulary and inventory to best meet the needs of patients at various sites they serve.

Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract): We have worked with Dr. Eduardo Gonzalez and Project World Health to implement our project in the Dominican Republic.

Summary/Conclusion: We have had two successful deployments of this program during medical mission trips in the Dominican Republic, and are currently making improvements for its third use this March. Some of the challenges that we have been working to overcome include finding a reliable power source in a mobile setting and improving efficiency in the program's use. We are also expanding its encryption capabilities so groups that wish to save patient identifiers

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

L. Soudi¹, C. Conroy², O. Vazquez³; ¹UC Berkeley, Psychology, Berkeley, CA/US, ²UC Berkeley, Integrative Biology, Berkeley, CA/US, ³UC Berkeley, Neuroscience, Berkeley, CA/US

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

A. Sultana, A. Hossain; University of Toronto, Toronto, ON/CA

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

B. Terry¹, D. Polan¹, R. Islam¹, J. Mugisha², R. Gaspari¹, M. Bisanzo¹; ¹University of Massachusetts, Department of Emergency Medicine, Worcester, MA/US, ²Mbarara University of Science and Technology, Mbarara/UG

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.