identified in laboratory conditions. This spectral "fingerprint" is then replicated in field-tests of suspected pharmaceuticals.
Findings: The Baseline Spectral Absorbance Profile (B-SAP) procedure guides the user through sample preparation and testing that allocates the sample to one of five categories: 1) Expected compound is present at labeled concentration, no obvious impurities 2) Expected compound is present at labeled concentration, evidence of impurities 3) Expected compound is present at non-labeled concentration, no obvious signs of impurities 4) Expected compound is present at non-labeled concentration, evidence of impurities 5) Expected compound cannot be detected. For proof of concept, investigators used 2% Lidocaine HCL as representative of a compound critical for treatment at the frontiers of global health (ubiquitously available and critical for pain management). The B-SAP was developed and tested against six samples of random substances with similar visual characteristics developed by a third party. Four additional sample were included: two of 2% lidocaine HCL, and two of Lidocaine at random concentrations. Testing results correctly allocated each sample to the correct category.
Interpretation: Future research will develop testing procedure and B-SAPs for compounds critical for treatment of WHO defined seven neglected tropical diseases. Current research is also developing a low-cost, portable UV-Vis spectrophotometer to enable maximum field implementation of the B-SAP testing procedure.
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The social side of health information: a new age of communication strategy

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Program/Project Purpose: a. Context/Rationale A disconnect often exists between scientific consensus, health behaviors, and policies. The enduring anti-vaccine movement is one example. We postulate that new and emerging media modalities, including social media, are propagating and amplifying communication challenges, and opportunities. b. Project Period In October 2013, we applied for and received a President's Innovation Fund for International Experiences to explore the use of social media for health in Rwanda, South Africa, Uganda, and the United States. While researching and implementing the program, the Harvard Global Health and Social Media Collaborative formed and is ongoing. c. Aim/Goals/Desired outcomes/ The goal of the Collaborative is to examine the interplay between research dissemination, mass media, and social media by exploring how health information accuracy morphs as it flows between and among various social networks on-line, and how this networked messaging affects health behaviors and outcomes. Our goal is to utilize the expertise and shared interests across a diverse population of scholars and experts to explore and refine agendas for large-scale research, intervention, and education for social health communication strategies.
Structure/Method/Design: a. Participants/Stakeholders The Collaborative includes scholars from the Nieman Foundation for Journalism at Harvard, the Berkman Center for Internet and Society at Harvard Law School, the Shorenstein Center on Media, Politics and Public Policy at Harvard Kennedy School, Harvard School of Dental Medicine, the Harvard Global Health Institute, writers from the Global Health Delivery Project, Boston Children's Hospital, The Boston Globe, The New York Times, the Edmund J. Safra Center for Ethics at Harvard Law School, as well as faculty from the fields of medicine, public health, business, and education.
Outcomes & Evaluation: a. Successful outcomes We developed an innovative guiding framework for rethinking the optimal use of social media for empirical health information communication. Key theories and principles were created and are guiding pioneering strategies for research, education, and intervention. A successful pilot study was completed.
Going Forward: a Ongoing challenges The group's diversity, while essential, requires development of a common global health language and a mutual understanding of one another's roles, responsibilities, and desired outcomes for all sectors. Precise planning and coordinati
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Surgical apgar score and safe Surgery checklist use in Kenya: Preliminary results of over 3,000 cases at a single tertiary care center

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Background: Perioperative Mortality Rate (POMR), defined as all-cause mortality in the first 24 hours after surgery, prior to discharge, or within 30 days after surgery, is a potential indicator of the availability of safe surgery and anesthesia care. Safe Surgery Checklist (SSC) usage has been reported to reduce perioperative death in numerous settings, including low and middle income countries (LMIC). Finally, the Surgical Apgar Score (SAS) predicts postoperative mortality across many surgical subspecialties. However, the SAS has not been validated in LMICs due to a lack of robust perioperative data collection. Moreover, the actual implementation of the SSC in LMICs is unknown.
Methods: To address these knowledge gaps, after IRB approval, we deployed a tool in Kenya that collects case-specific perioperative data with asynchronous automatic transmission to central servers. Data fields include provider training level, patient demographics, surgery and anesthetic details, SSC use, SAS, and POMR. After receiving training on data collection, 30 Kenyan non-physician anesthesia care providers were provided laptops for data collection, which began on June 15, 2014. To analyze SAS, SSC use, and mortality, logistic regression models were created on which 7-day mortality was regressed on SAS.
Findings: Data from a tertiary Kenyan referral hospital is presented, with 3,140 cases reported from June to October 2014. Almost all patients (96.2%) were ASA 1 or 2, 49.5% female, and 7.4% trauma. The SSC was used in a pre-anesthesia timeout in 99.2% of cases. Thirty-five percent of cases were performed under spinal anesthesia. There were two intraoperative deaths; cumulative in-hospital mortality at 24hrs, 48hrs, and 7 days were 42 (1.46%), 47(1.64%), and 54 (1.88%) patients, respectively. Seven-day mortality data was available for 59.7% of patients, with the rest having been discharged home A logistic regression model with SAS alone and with trauma did not show a statistically significant correlation with mortality (AUC 0.603, R2=0.02, P=0.15). Estimated blood loss was significantly correlated (P=0.0005) with in-hospital mortality.

Interpretation: We have successfully implemented a perioperative data collection tool in a LMIC to assess case-specific POMR and key perioperative data, such as SSC use and SAS. Contrary to findings in the developed world, initial results from a LMIC tertiary referral hospital show poor performance of SAS as a predictor of in-hospital mortality. A higher 7-day mortality reporting rate and the possible addition of 30-day mortality might subsequently reveal correlation between SAS and mortality, consistent with previous reports. National IRB approval for other centers is in process, and as additional data is collected from more Kenyan hospitals, we will be able to determine baseline POMR in Kenya overall and the association of SSC use and SAS in a greater variety of settings. (Funding: GE Foundation)
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Setting new standards for transparency & accountability: Using mobile technology for data collection and mapping of bed net distributions in rural DRC

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Program/Project Purpose: In DRC malaria takes close to 500 lives per day, the majority children. Long Lasting Insecticidal Nets (LLINS) can drastically reduce transmission of malaria. Through the Accès aux Soins de Santé Primaires (ASSP) Project, IMA is working with a network of over 4,000 community volunteers (RECOs) to distribute and hang up 670,000 nets in West Kasai Province. The project aims to achieve full coverage in 9 health zonesto reduce transmission of malaria and save lives. IMA is using Open Data Kit (ODK) software on Android telephones to collect information on demographics and disease prevalence and capture geographic coordinates and photos of every net hung in every household. A pilot distribution was recently completed in Nyanga Health Zone, where 30,000 LLINs were hung up in over 13,000 households. The collected data was compiled into an interactive map created in Google's Fusion Tables application, which can be viewed on the IMA blog (http://imaworldhealth.org/ima-drc-revolutionizing-bed-net-distributions-and-taking-accountability-to-another-level/). In October another 8 health zones will be completed in West Kasai.
Structure/Method/Design: The project aims to achieve 90% coverage of LLINs in nine health zones in order to decrease the morbidity and mortality associated with malaria while also reinforcing technical and managerial skills of health zone management teams and health providers. In order to achieve this IMA works closely with the MOH, Sanru (local NGO), and RECOs. IMA trains RECOs on cell phone usage and data collection in each of the 186 health areas. RECOs survey every household in the health area to determine the number of nets needed. RECOs then hang nets for all sleeping spaces that are not covered by a good quality net and take a picture of the recipient and the nets installed. LQAS surveys are performed in all health areas immediately after distribution to ensure 90% coverage has been attained.
Outcomes & Evaluation: IMA successfully hung up, tracked and photographed distribution of over 30,000 LLINs to 13,400 households, achieving 97% coverage in Nyanga health zone. Results for the distribution of the other 8 health zones beginning in mid September will be available in early December. LQAS will be repeated once every six months to monitor coverage. If a health area falls below 80% another hang-up will take place.
Going Forward: The condition of the roads in West Kasai is very poor, making a distribution of this scale very challenging. Training RECOs on phone usage also continues to be a challenge, as many of them have never used cell phones before. Despite these challenges the m
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CryoPop: Merging design with demand to build a low-cost cervical cancer prevention tool

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Program/Project Purpose: Cervical cancer is a completely preventable disease, yet it kills over 250,000 women annually. Women in low and middle income countries can be screened for precancerous lesions for less than $0.05 per test, but access to effective cryotherapy is a major challenge. The CryoPop aims to replace traditional cryotherapy devices to increase access and reduce the cost per treatment to less than $1. The lower upfront price of the CryoPop could enable programs and governments to scale up treatment by up to ten fold without increasing program costs.
Structure/Method/Design: Traditional cryotherapy devices create a cold tip by circulating and expanding high-pressure, gaseous CO2. The CryoPop takes advantage of the fact that CO2 can be used ten times more efficiently by creating dry ice which can then be used to effectively freeze the cervix. The simplicity with which the CryoPop creates and uses dry ice enables it to be low-cost, portable and durable. The project focus is to translate the proof-of-concept into a final product that appeals to users, purchasers, and device manufacturers. We will highlight two challenges that we've encountered during this process. First the applicator, a key component, had to be converted from something that could only be 3D printed into a set of tubes which could be mass manufactured while maintaining product performance. This required iteratively building and testing using a factorial approach. But the ability to mass manufacture doesn't equate to sustainability. Therefore, a related challenge has been to identify a region for market entry where demand would justify building the large quantities that enable the CryoPop to be low-cost. Identifying a target region required iteratively filtering a list of 65 countries, incorporating more detailed market research with each pass.
Outcomes & Evaluation: The applicator has been successfully redesigned such that it meets the key product requirements. Additionally, the systematic approach used for market analysis has identified two states within India that present the highest likelihood of success for launching the CryoPop. This approach could be translated for use on other projects with similar goals of replacing existing equipment that is expensive or fragile.
Going Forward: Until the CryoPop is commercially available, it remains just another compelling idea. In order to convince a device manufacturer to accept the risk that the sale of the CryoPop would entail, the evidence of market demand needs to be strengthened. Therefor
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