public health facilities in Tanzania, is used by staff to report stock levels and receipts of essential medicines via SMS using their own phones. This information is analyzed and displayed on a web-based dashboard, where decision makers at higher levels of the supply chain access reports and monitor the functioning of the supply chain. In Malawi, under the cStock system, community health workers (CHWs) report stock on hand every month via SMS, after which the system calculates the amount that each CHW should be resupplied and sends this information to resupply points via SMS. In 9 countries, the End-Use Verification (EUV) activity is conducted under the President's Malaria Initiative (PMI), where survey teams from the Ministry of Health and other national programs use mobile phones on a quarterly basis to visit health facilities and collect patient and supply chain data that is used to provide actionable findings to decision makers.

Outcomes & Evaluation: All three mobile supply chain programs have achieved scale, with the ILSGateway in Tanzania now functioning in all 4600+ public health facilities, and cStock in Malawi scaled to all 3000+ CHWs. A mixed-methods midline evaluation in 2013 found that cStock notably improved community logistics data visibility and reduced stock outs. End Use Verification continues to be conducted every quarter in the countries listed, and has collected data from 10000+ site visits since 2009. The data collected in each system is routinely used to make better informed supply chain decisions, leading to better targeted use of scare resources, and increased availability of vital health commodities.

Going Forward: As with all information systems in resource-challenged countries, ongoing sustainability is a challenge. High turnover rates among health facility staff require plans for ongoing refresher trainings. National budgets must be revised to include system main

Funding: cStock was funded through a grant from the Bill and Melinda Gates Foundation, and is being maintained by WHO, Save the Children, UN Foundation, and USAID . The ILSGateway is funded by USAID, and the EUV is funded through USAID under PMI.

Abstract #: *02ITIS029*

AfyaJamii: Introducing a group prenatal and postnatal care model in Kenya

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Program/Project Purpose: Focused Antenatal Care (ANC) is a pillar of Safe Motherhood strategies worldwide. Endorsed by the WHO in 2002, its focus on 4 ANC visits was introduced in Kenya as a strategy to improve the uptake and quality of health services in pregnancy. Although 92% of women report receiving skilled ANC in their pregnancy, fewer than half attend the 4 recommended visits (47%), deliver in a facility (43%), and just 35% receive any kind of postnatal checkup in the first 48 hours after birth. Community health workers see 0.3% of all women postnatally. The very unfocused way in which focused ANC is delivered, without attention to the contextual needs of pregnant women and the challenges faced by health centers, became the focus for change in 2013 for a large Primary Health Care program. The Academic Model Providing Access to Healthcare (AMPATH), in partnership with the Government of Kenya designed and implemented a Group Prenatal and Postnatal Care Model called AfyaJamii (Community Health) in 5 facilities in Busia County.

Structure/Method/Design: Each woman attending her first ANC appointment is registered into a group based on her expected date of delivery, and then, provided monthly appointment dates until her infant's fourth month of life. To provide care jointly to 15-20 women, providers partner with local CHWs to ensure that women and infants receive comprehensive antenatal, postnatal, as well-childcare per guidelines during their 2-hour appointments. By task-shifting measurement of vitals and health education to CHWs and grouping women based on their EDD, over-extended providers in high volume and understaffed clinics are now able to ensure that all women receive enhanced care while capitalizing on the collective energy gained through the group meeting.

Outcomes & Evaluation: To date, 1158 mother-child pairs have participated in this new model of care. To evaluate the impact, acceptability and sustainability of AfyaJamii, we are using a mixed-methods evaluation strategy comparing data from 5 intervention sites and 10 control sites. We have found that uptake of 4 ANC visits, facility delivery, postnatal care and family planning has improved (final analysis to follow). Furthermore, providers and CHWs have expressed greater job satisfaction and less congestion in the clinic the rest of the week.

Going Forward: Harmonizing the postnatal visit schedule with immunization schedule has been the source of poor attendance postnatally. As a result, we have restructured the visits to 3 prenatal visits and 1 postnatal visit. We currently aim to scale this model of care a

Funding: We received funding from Saving Lives at Birth and USAID PEPFAR.

Abstract #: *02ITIS030*

Detecting substandard pharmaceuticals though spectral finger-printing

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Background: Estimates suggest 30% to 50% of pharmaceuticals sold in global markets are falsified or substandard with low active ingredients or contaminants. Substandard pharmaceuticals lead to healthcare failures including, antibiotic resistance, increased morbidity and mortality, and loss of confidence in healthcare systems as individuals equate healthcare systems with negative outcomes of low-quality medications. This subsequently compounds existing challenges to improve global health. Pharmaceutical quality testing methodologies previously developed are aggregated in three categories: Supply-Chain Security (SCS), Laboratory Testing (LT), and Point-of-Care Testing (PoCT). SCS and LT have limited effectiveness in moderating proliferation of substandard pharmaceuticals due to inadequate government oversight of drug stock (SCS), or high marginal cost of testing (LT). PoCT methodologies are attractive alternatives as they empowerment local healthcare providers to assess local drug stocks. These are, however, not widely implemented, as witnessed in field visits, or yield low sensitive and specificity, limiting effectiveness. Western New England University's (WNE) Department of Industrial Engineering, in cooperation with the College of Pharmacy is developing a PoCT methodology intended to: 1) be transferable to frontiers of global health, 2) have minimal skill-based barriers to implementation, and 3) have near zero marginal cost of testing.

Methods: Proof of Concept The methodology leverages intrinsic absorbance profiles of pharmaceutical compounds across the visible light spectrum to determine if suspected samples contain anticipated compounds at labeled concentrations, and are free of unexpected substances (impurities). For this, a discrete set of wavelengths are

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.
Funding: WNEU.
Abstract #: *02ITIS031*

Abstract opted out of publication.

Abstract #: *02ITIS032*

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
Funding: No funding listed.
Abstract #: *02ITIS033*

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.