given to Ministry of Health workers in Zambia for feedback and evaluation.
Going Forward: Health work conducted in rural and outlying communities requires access. Our tool, HealthTrax could improve access, time spent on roads, and ultimately increase productivity of health workers. Multiple health and non-health uses should be explored in the
Funding: This project was funded in part by the Bill & Melinda Gates Foundation and an internal Center for Innovation in Global Health Pilot Grant as part of the Stanford University School of Medicine.
Abstract #: *02ITIS012*

Effectiveness evaluation of a large-scale community-based program: Lessons from Ethiopia

A. Karim; JSI Research & Training Institute, Inc., Ashburn, VA/US

Program/Project Purpose: Between July 2013 and January 2014 the Last Ten Kilometers Project (L10K) has scaled-up community-based data for decision-making (CBDDM) strategy within the Government of Ethiopia's Health Extension Program (HEP) to improve maternal and newborn health (MNH) care practices in 115 rural districts (covering 15 million people). The effectiveness evaluation of the CBDDM scale-up was problematic due to lack of appropriate comparison areas. L10K designed and implemented an m-health based MIS to a) monitor the scale-up; and 2) evaluate the effectiveness of CBDDM in the absence of external comparison group.
Structure/Method/Design: L10K supported the district health office staff to train 3,070 kebele leaders, 6,215 health extension workers (HEWs) to organize 75,000+ health development army members (HDAs) to implement CBDDM. The innovation fostered 3,070 kebeles (i.e., communities with about 5,000 population, each) to generate and use data for improving MNH care practices. CBDDM identified underserved population and linked them with HEWs and community leaders to address the barriers in the access to MNH services. Using HEP's supportive supervision strategy to regularly visit kebeles the m-health based MIS gathered MNH service statistics and CBDDM performance data from HEW records. Supportive supervision data were uploaded into the cloud using smart phones which were made available to the managers to monitor CBDDM implementation. The effect of CBDDM on MNH was then determined by examining a dose-response relationship between CBDDM performance scale (that ranged between 0 and 10) and MNH care coverage (obtained from service statistics); communities with greater CBDDM performance were expected to have relatively high MNH coverage.
Outcomes & Evaluation: Data from 2,084 supportive supervisory visits to 804 kebeles between August 2013 and May 2014 indicated that the average CBDDM performance score and MNH coverage was improving over time. Regression analysis of the data demonstrated a dose-response relationship between CBDDM performance and MNH care coverage ($p < 0.05$). For example, communities with one unit higher CBDDM performance score were associated with 3 percentage-points higher coverage of institutional deliveries. The analysis indicated that it is plausible that the scaling-up of CBDDM was effective in improving MNH. CBDDM was accepted by the HEP managers because 1) it was simple to implement; and 2) it was within the policy framework to utilize HDAs to improve HEP service coverage. The acceptability of CBDDM facilitated the scale-up and potentially its sustainability.
Going Forward: There is a potential for incorporating other components HEP (like childhood immunization and family planning) within CBDDM. The analysis also demonstrates that study designs for effectiveness evaluation of large-scale programs can be incorporated within t
Funding: Bill & Melinda Gates Foundation.
Abstract #: *02ITIS013*

Quality improvement practices decrease adverse event rates in a surgical male circumcision program in Malawi

P. Kohler[1], D. Chilongozi[2], D. Namate[3], B. Barr[4], W. Msungama[4], M. Mwale[5], O. Phiri[2], L. Tenthani[2], T. Perdue[1], S. Barnhart[1], J. Krieger[1]; [1]University of Washington, Seattle, WA/US, [2]International Training and Education Center for Health, Lilongwe, MW, [3]International Training and Education Center for Health, Lilongwe 3, MW, [4]US Centers for Disease Control and Prevention, Lilongwe, MW, [5]Malawi Ministry of Health, Lilongwe, MW

Background: As voluntary medical male circumcision (VMMC) scales up in resource-limited health systems, it is important to assess safety outcomes. The global goal to circumcise 80% of 15-49 year old males requires > 20 million circumcisions to avert > 3 million new HIV infections by 2015. Malawi alone is expected to complete over 2 million procedures. VMMC clinical trials demonstrated low adverse event (AE) rates, ranging 1.5% to 8%, but there is little and varied data on AE rates in VMMC programs. Our evaluation aimed to assess and improve AE rates in a VMMC program in Lilongwe, Malawi.
Methods: A pre/post, group problem-solving quality improvement (QI) project involving retrospective chart audits, case-conference classification of AEs using standard criteria, and provider training was conducted at a VMMC Clinic in Malawi. For each identified AE, the timing, assessment, treatment, and resolution of the event was recorded, then the clinical team classified each event for type and severity. During group discussions, VMMC providers were also queried regarding challenges in provision of care. After baseline evaluation, clinicians and managers set forward a QI plan to improve AE assessment and management. A repeat audit was conducted six months later, and chi-squared tests of proportions were used to evaluate prevalence and severity of AEs before and after the QI intervention.
Findings: During baseline audits, we identified 418 (13.9%) possible AEs in 3,000 charts, including 152 (5.1%) excluded after determination of provider misclassification. Of the remaining 266 AEs, the team concluded 257 (8.6%) were AEs related to the procedure (0.2% mild, 7.3% moderate, 1.1% severe). Case conference review concluded that 89% of AEs were not treated appropriately; the majority of these were inappropriate antibiotics prescriptions for mild symptoms. Training or other structural factors were also found to contribute AE rates and misclassification of cases including: provider prescription practices for management of post-operative inflammation were consistent with national guidelines for urethral discharge; available antibiotics were the STI formulary; and providers reported feeling well-trained in surgical care but insecure in skills related to post-operative assessment and care. After implementation of the program QI plan, a repeat process evaluating 2,540 cases found (4.5%) AEs (2.6% mild, 1.1% moderate, 0.8% severe); total and moderate AEs significantly decreased ($p<0.001$).
Interpretation: AE rates from this program are within range of clinical trial experiences. However, we detected problems with post-operative assessment, clinical management, and reporting. The QI process allowed for detection of misclassification and structural barriers, though was limited in the temporal pre/post design. Total and reportable AEs were significantly decreased after the QI process, resulting in improved clinical care as well as more accurate program reporting.

Funding: This program is supported by HRSA U91 HA06801.
Abstract #: *02ITIS014*

Assessing health systems performance in low and middle income countries

E. Macarayan, M. Western, M. Curley; The University of Queensland, St Lucia, AU

Background: Previous studies on health systems performance have struggled in creating better parameters to assess and compare performance, particularly in many low and middle income countries. If only we can create better parameters, we can then create more efficient health system reforms and optimize health interventions. It is therefore crucial to examine how health systems are performing through creating typologies and determining its influence on health outcomes. Typologies have been widely used as a similarity measure to explore mechanisms that lead to program's successes and failures. It also assists in allocating resources and prioritizing interventions that have most impact on key health targets. However, applying such innovations in health systems performance assessment are yet to be examined further. Until better parameters have been done, misallocation of health resources and poorer health outcomes persists.
Methods: This study involves comparative cross-country analysis of health systems performance in 143 low and middle income countries (LMICs) and also examines how each health system building block influence health outcomes, particularly life expectancies (LE). Using three waves of data averaged before the year 2000, 2001-2006 and 2007-2012, we used various statistical techniques such as multivariate regression analysis, factor analysis and cluster analysis to examine characteristics of health systems in LMICs. Data used is from the Health Systems database, which was an output of the USAID-funded Health Systems 2020 and the Health Financing and Governance Projects. Geographical information systems were also used to determine priority areas for health systems strengthening.
Findings: Findings provide visualizations of how health systems of LMICs are performing across the years. It examines how and why health systems performance remains weak in many LMICs and determines which areas for health systems strengthening have most significant influence on health outcomes. Our results show that three categories of performance: a) stagnant health systems or countries that have no significant improvement for each of the health system building block across the years and have an average life expectancy of only 55 years, b) transitioning health systems or countries that are performing well in terms of service delivery and health workforce but needs improved health financing and better governance and have an average LE of 68 years; and c) positive health systems or countries that are performing well in each of health system building blocks with average LE of 69 years. Our results also show which area of each health system building block have the most significant influence on LE such as stricter corruption controls (B=0.67, p=
Interpretation: Assessing health systems blocks allow identifying patterns of performance and priority areas for health systems strengthening. Increasing health financing alone is not enough to have a well performing health system.
Funding: Financial support from the University of Queensland.
Abstract #: *02ITIS015*

Developing evidence of content validity and comprehensibility of a measure of HIV-related stigma for Maharashtra, India

L.L. McCreary[1], L. Nagothu[2], K.F. Norr[1], T.L. Hughes[1], S.D. Tilekar[3]; [1]University of Illinois at Chicago College of Nursing, Chicago, IL/US, [2]Bel-Air College of Nursing, Panchgani, IN, [3]Bel-Air Hospital and College of Nursing, Panchgani, IN

Background: A team of faculty (nursing, health sociology, public health and medicine) from colleges of nursing in Maharashtra, India, and the USA are collaborating to develop a program of research into aspects of HIV-related stigma, an important barrier to effective HIV/AIDS prevention and treatment. Cultural differences between and within countries require researchers to assess the validity of research instruments developed with different populations for use in their intended setting. Guided by classical test theory, the purpose of this initial study was to assess the content validity and comprehensibility of a measure of HIV-related stigma adapted for the general population of Chennai, South India, for use in Maharashtra State.
Methods: Following IRB approvals at both institutions, content validation was conducted of Zelaya and colleagues' HIV/AIDS Stigma Scale, a 24-item measure of stigma adapted from other scales for use in South India. The items for these analyses were presented in English, the language of instruction at the Indian institution. The content validation panel included 12 HIV content experts (faculty in India). Each item was rated individually for relevance to the construct HIV-related stigma, clarity and cultural appropriateness; the set of 24 items together was rated for completeness, redundancy, and appropriateness as a measure of HIV/AIDS-related stigma for the general population. Individual cognitive interviews were conducted with 39 nursing undergraduate students recruited from the Indian institution to ascertain comprehensibility of the item wording and to elicit suggested revisions to improve clarity and understandability.
Findings: The Content Validity Index was extremely high (> .95) for all items on relevance, clarity and cultural appropriateness; the Scale received the highest possible rating for completeness and appropriateness as a stigma measure. However, cognitive interviews revealed 6 items that were frequently misunderstood and required slight revisions to clarify their meaning. For example, in the item, "People with HIV are promiscuous" the word "promiscuous" was not understood by several respondents; the team decided to add "(meaning they have multiple sex partners)" to clarify the item's meaning.
Interpretation: Conducting content validation with experts and cognitive interviews with potential participants provided validation for the use of this measure with the population in Maharashtra. Next, items will be translated into Marathi using a committee approach and another set of cognitive interviews will be conducted with a Marathi-speaking sample. Assessing content validity and comprehensibility of an instrument are essential first steps to ensure valid measurement of any construct of interest to researchers in any setting. These steps lay the foundation for psychometric evaluation with a larger sample to strengthen evidence of the measure's usefulness in the particular setting. Small-scale studies such as this can also serve as exemplar studies in which faculty teaching research can engage their students as a learning exercise.
Funding: No funding listed.
Abstract #: *02ITIS016*

Assessing the feasibility and value of a pilot project using mobile applications and mobile money to enhance a maternal health conditional cash transfer (CCT) program in Nigeria leading to the development of a costed business model for scale up

M. McNabb[1], E. Chukwu[2], H. Salami[3], O. Ojo[3], F. Jega[3]; [1]Pathfinder International, Somerville, MA/US, [2]ICT4SOML, Abuja, NG, [3]Pathfinder Nigeria, Abuja, NG