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is then printed on paper and used as a visual and discussion aid for supervision.

Outcome & Evaluation: In this study, CHWs were randomized to receive one-on-one feedback facilitated by the CHW Performance Dashboard, or qualitative feedback without the aid of the dashboard. The performance of each CHW was tracked over six months along three performance indicators: the quantity, speed and quality of care. The RCT tests if this supervision tool improves CHW performance in terms of the quality, speed, and quantity of services they provide.

Going Forward: Since this dashboard study, Muso and Medic have extended their partnership to deploy the Medic Mobile application within Muso's health system. By the end of 2016, all of Muso's CHWs will be equipped with smartphones with the Medic Mobile application which will provide task reminders, patient tracking, decision support, and real time performance feedback. Medic Mobile and Muso are planning to proactively open source, not only the technology, but all tools, methods, and best practices that are developed through their partnership.

Source of Funding: Segal Family Foundation.

Abstract #: *1.068_HHR*

Effectiveness of Supportive Supervision Visits on the Consistency of Community-Based Neonatal Sepsis Management Skills of the Health Extension Workers in 167 districts of Ethiopia

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Background: The health extension program of Ethiopia initiated Community-Based Newborn Care (CBNC) strategy to reduce its persistently high neonatal mortality rate. The strategy trained 7,010 health extension workers (HEWs) in 3,952 health posts in 167 districts to provide community-based management of neonatal sepsis, conducted prompt post-training follow-up, continued coaching through supportive supervision, and conducted review meetings. This study examines the effects of the supportive supervision on the consistency of neonatal sepsis management skills of the HEWs.

Methods: The study domain was limited to the 3,924 health posts in 167 districts covering 18 million people supported by the Last Ten Kilometers Project of JSI. A historic longitudinal program monitoring data captured during follow-up visits from case record registers in the intervention health posts between January 2014 and June 2016 was used for this study. Consistency of neonatal sepsis management was defined as consistency of the recorded classification, treatment, and follow-up for neonatal sepsis cases according to the national CBNC protocol. The health post level repeated measures were accounted using random effects multiple logistic regression models. The models also accounted for secular trend to assess the effects of frequency of supportive supervision on the probability that a health post consistently conducted management of neonatal sepsis.

Findings: About 72% (2,864) health posts received at least one supportive supervision visit, 21% (815) received two, and 6% (245) received more than two visits. The consistency of neonatal sepsis management by the health posts improved significantly ($p<0.05$) over the observation periods-from 60% in January-June 2014 to 72% in January-June 2016. The consistency of neonatal sepsis management was 65%, 68%, and 79% during the first, the second, and the third supervision visits, respectively. The regression analysis indicated that the effect of supportive supervision that was observed between the first two and the third rounds of supervisory visits were statistically significant ($p<0.05$).

Interpretation: The findings of this study suggest supportive supervision visits were effective intervention in improving the consistency of skills of neonatal sepsis management. As such, at least three rounds of supervision are needed to maintain the consistent skills of management of neonatal sepsis at community level.

Source of Funding: None.

Abstract #: *1.069_HHR*

PREventing Maternal And Neonatal Deaths in Rural Northern Ghana (PREMAND): Access to Basic and Comprehensive Obstetric Care

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Background: Maternal and neonatal health outcomes in low-resource settings are largely contingent on access to skilled providers for basic and comprehensive obstetric care. Services considered "comprehensive" include cesarean sections and blood transfusions; two procedures often needed urgently to save the lives of mothers and babies. This study explored the availability of basic and comprehensive obstetric services across four districts in the northern region of Ghana; an area known for its sparse population, high rates of poverty, and limited access to health facilities.

Methods: As part of a larger study of maternal and neonatal mortality, trained field workers identified the location of health facilities and types of obstetric care available in a four-district catchment area across northern Ghana. Field workers administered surveys at all health facilities in the districts to determine the type and number of health providers available as well as the type of obstetric services offered. They also took GPS coordinates to map the location of each facility.

Findings: 91 facilities were identified across the four districts. 86% (N=78) have at least one nurse and slightly more than half (N=47) have at least one midwife. Only 8% of facilities (N=7) have one or more physicians on staff. 63% of facilities (N=57) provide some form of delivery services, although only 10% (N=9) are able to provide all aspects of basic obstetric care (administration of IV medications, manual removal of placenta and retained parts, assistance in vaginal delivery, basic neonatal resuscitation, etc.). For women requiring comprehensive obstetric services, only 5% of facilities have providers able to perform blood transfusions and even fewer (3%) have providers able to provide surgery. The 3 facilities

able to perform all comprehensive obstetric services are the large district hospitals in 3 of the 4 study districts.

Interpretation: Access to providers and obstetric services in the 4 study districts is extremely limited, especially for women who need emergent, comprehensive obstetric care. Further analysis will determine the extent to which geographic proximity to obstetric care, and especially to facilities providing comprehensive obstetric care, influences maternal and neonatal outcomes in the study districts.

Source of Funding: USAID Ghana 641-A-14-00008.

Abstract #: *1.070_HHR*

Does a One Size Fit All Approach Work for Community Management of Acute Malnutrition in Rural Malawi?

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Program/Project Purpose: The Community-Based Management of Acute Malnutrition (CMAM) program directs the surveillance for ~58,000 children in Malawi's rural Neno District and the care of those identified with malnutrition. In 2015, the Outpatient Therapeutic Programme (OTP) for treatment of severe acute malnutrition (SAM) was subject to 83 stock-outs of ready-to-use therapeutic food (RUTF), affecting each of the 13 health facilities. This resulted in premature termination of treatment for enrolled cases and no enrollment for newly identified cases. We set out to identify the cause(s) of the stock-outs and other challenges in order to meet Universal Health Coverage targets for SAM in children in Neno District.

Structure/Method/Design: We completed an in-depth chart and OTP register review from 2015 of the 13 health facilities to identify gaps in RUTF supply. From the register review, we estimated the number of sachets of RUTF required for treatment of SAM. This was based on the CMAM guidelines and compared to the recommendation of 175 kcal/kg/day from the WHO guidelines and research protocols. We compared this to the current practice of a projected 150 RUTF sachets for each treatment course of SAM.

Outcome & Evaluation: The mean length of stay (LOS) was 50 days and mean weight was 9.9 kg. The median LOS was 42 days and median weight was 9.3 kg. Based on the means, 173-186 RUTF sachets (175 kcal/kg/day-CMAM guidelines) were estimated for a treatment course for SAM whereas based on the medians 136-156 RUTF sachets were estimated.

Going Forward: The amount of RUTF currently distributed is not enough for the treatment of SAM based on the mean LOS and weight, and may be a key contributor to stock outs in Neno District. Our average LOS is consistent with WHO CMAM guidelines, suggesting that the higher estimated RUTF need may be due to the higher average weight in OTP in Neno. Causes of the higher average weight require further investigation and hypotheses include higher rates of kwashiorkor or higher average age. Additionally, our review noted that children are not enrolled during stock outs, and thus are not accounted for in distribution plans, which perpetuates low stock availability. Mentorship is needed for improved adherence to OTP protocols across the district.

Source of Funding: None.

Abstract #: *1.071_HHR*

Towards a Universal Medical Education Global Health Curriculum: Update on the Bellagio Global Health Education Initiative

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Program/Project Purpose: Twenty global health (GH) educational leaders from low-, middle-, and high-income countries (LMICs, HICs) work collaboratively in the Bellagio Global Health Education Initiative (BGHEI) to identify GH curricular elements that could be universally applicable across diverse medical education systems.

Structure/Method/Design: Nominal group technique and modified Delphi process are used to efficiently isolate consensus themes and topic areas. Working groups with LMIC and HIC representation use conference calls and in-person meetings to identify further research needs and recommendations for GH education.

Outcome & Evaluation: One potentially universal curricular design concept, one universal evaluation concept, and a critical research need were identified, and working groups formed for each. After recognizing the universality of "away" sites (educational settings outside the context of the student's home institution) in GH learning and the need for specific curricular development for these settings, a "Curriculum Development" working group formed to assess the current state of curriculum design and implementation as applied to education in the "away" context, including linking educational goals with patient care outcomes. The importance of transformative, rather than content or skill-based learning, also was thought to be a universal component of successful GH education. The "Transformative Learning" working group is examining how transformative learning theories could inform GH curricular recommendations, with an emphasis on more appropriate learner assessments. There exists a dearth of GH training information for LMIC settings; the "Current Status of GH Education" working group is utilizing standardized questionnaire approaches to fill this knowledge gap. BGHEI demonstrates that GH experts from diverse backgrounds, drawing on advances in sociologic, psychological, and management learning theory, can identify curricular, evaluation, and research needs relevant for a wide range of medical education GH programs.

Going Forward: BGHEI working groups continue to explore and define GH educational curricular components and learner evaluation strategies apt to be common to medical education programs across