Interpretation: Stock-out rates were high for this large teaching hospital in Ghana, and treatment default due to lack of HAART supply was common. For those who did not default, there were high rates of stockpiling old medication or clinic-initiated changes to treatment regimen. Although we do not fully understand the risks of taking old, stockpiled medication, multiple changes in medication described in the study increases the risk for side effects and treatment non-compliance.

Abstract #: *2.013_MDG*

Impact of smear-negative results on tuberculosis outcome in HIV co-infected patients at a teaching hospital in Ghana

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Background: Tuberculosis (TB) causes death in one of four HIV-infected patients globally. Among HIV-infected patients, negative acid-fast bacilli (AFB) smear TB has been associated with higher death rate compared to patients with smear-positive TB in Malawi. We hypothesized that smear-negative results may account for high TB mortality in HIV-infected patients in Ghana.

Methods: This retrospective study examined sputum smear-negative versus smear-positive pulmonary TB (PTB) patients seen at Korle-Bu Teaching Hospital Chest Clinic in Accra, Ghana from January 2010 to December 2014. Cases were sputum smear-negative TB patients with HIV and controls were sputum smear-positive TB patients with HIV. Inclusion criteria comprised diagnosis of TB and HIV within study period and age greater than 13 years. Patient characteristics were compared by Mann-Whitney Rank Sum Tests (continuous variables) and chi-square test (categorical variables). P-value < 0.05 was considered significant.

Findings: PTB smear status was abstracted from records of 668 subjects. Of these subjects, 246 (36.8%) had sputum AFB-positive PTB, and 422 (63.2%) had sputum AFB-negative PTB. Overall, 23.8% of the subjects died. Patients with smear-negative PTB had higher median age ($P=0.029$) and higher body weight ($P=0.021$) compared to smear-positive subjects. A greater proportion of smear-negative patients presented with PTB for the first time, while smear-positive patients were more likely to relapse or return after previous treatment default ($P<0.001$). Extra-pulmonary involvement or disseminated TB were more likely to present with negative smear ($P<0.001$). There was no difference in treatment outcome between patients with smear-negative and smear-positive status in our study ($P=0.684$).

Interpretation: This study demonstrates high mortality for both smear-negative and smear-positive patients. However, unlike the Malawi study, smear status did not appear to influence treatment outcome. The high frequency of disseminated TB in smear-negative patients suggests that a high index of clinical judgment and other tests are needed for early diagnosis and treatment. Additional

analysis is planned to understand the impact of HIV treatment on TB treatment outcome and whether that influenced the lack of association of smear results and outcomes.

Abstract #: *2.014_MDG*

Toward the implementation of universal health coverage: Introducing the partners in health's-universal health coverage matrix

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Background: Universal Health Coverage (UHC) is part of the Sustainable Development Goals. Yet, with inadequate staff, weak supply chains and crumbling infrastructure the systems in the world's poorest countries are not designed to deliver on the promise of UHC. We present a novel way to look at UHC from the perspective of morbidity and population.

Methods: In 2002, with a grant from the Global Fund to Fight AIDS, TB and Malaria in Partners in Health and Zanmi Lasante in Haiti leveraged vertical funding for HIV to develop a platform to deliver primary health care as well as HIV services. In 2008, as part of the WHO project, "Positive Synergies between Health Systems and Global Health Initiatives" we tested the assumption that the right system could deliver on HIV targets and increase primary care utilization. This work of health systems strengthening has culminated in the development the Partners In Health Universal Health Coverage (PIH-UHC) matrix that 1) maps universal health coverage targets based on the burden of disease and the population of the clinic, 2) links targets with the staffing, supply chain and infrastructure needed to achieve UHC. Between 2014-2015, the PIH-UHC matrix has been used to align the health care sector reform in Lesotho. We have worked with the Ministry of Health using national norms as well as demographic and health survey (DHS) data to set targets for each clinic.

Findings: Since October 2014, 70 primary care clinics in Lesotho have been analyzed with the PIH-UHC matrix. Based on population and burden of disease, staffing, supply chain and infrastructure were oriented to achieve universal coverage targets (such as 100% facility based delivery). The preliminary analysis of the data from these 70 facilities shows more than 3-fold increase in utilization of services in the outpatient, antenatal, HIV and TB clinics. Facility based delivery has also nearly tripled in several facilities. This work has significant implications for the re-establishment health delivery in post-Ebola West Africa and as increase financing toward UHC is considered.

Interpretation: If a system is designed to link the burden of disease to the staffing, infrastructure and supply chain needed to attend to the population served by a primary health clinic, it is possible to drive utilization of services toward the achievement of universal health coverage.

Abstract #: *2.015_MDG*

Reducing childhood mortality through the private medical sector: An evaluation of world health partners' social franchising and telemedicine network in Bihar, India

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Background: The under-five mortality rate in India is 48 deaths per 1000 live births, well above the 4th Millennium Development Goal of 38. Many of these deaths are due to pneumonia and diarrhea, the leading causes of mortality in children under 5. Most children in India access care through the private medical sector, but current evidence demonstrates that these providers adhere poorly to national treatment guidelines. Social franchising has emerged as an intervention to improve quality of care within the existing private sector, but few studies have evaluated the impact of social franchising on child health, which is the aim of this paper.

Methods: A secondary analysis was conducted of a cross-sectional data collected from June-July of 2013 in 209 clinics within a social franchising network in Bihar, India. 148 clinic visits with children under 5 were observed. Two primary outcomes were measured: 1) provider knowledge of WHO diarrhea and pneumonia management guidelines and 2) adherence to these guidelines. A semi-structured questionnaire and clinical observation checklist were used to assess these outcomes. Bivariate analysis using Fischer's exact test and a significance threshold of $p \leq 0.10$ was used to determine the association between provider knowledge and clinical adherence. Approval for this secondary data analysis was obtained from the University of California, Berkeley Institutional Review Board.

Results: Of the 45 children presenting with diarrhea, 44% received oral rehydration solution (ORS) and 29% received zinc supplementation. 10% of the 63 children presenting with acute respiratory illness were treated with amoxicillin, and about half were treated with an unspecified injectable medication. Knowledge of ORS for diarrhea management was significantly associated with prescription of ORS for diarrhea compared to providers without reported knowledge of ORS for diarrhea (56% vs. 8%, p=0.005).

Discussion: Despite the association between provider knowledge and appropriate management of diarrhea, nearly half of providers who reported knowledge of ORS did not prescribe ORS. Possible reasons include poor symptomatic relief, misperceptions of effectiveness, and insufficient incentives. Given these barriers, improved provider training and incentives, patient education, and enforcement mechanisms are needed to maintain social franchising as a viable option to reduce preventable childhood mortality.

Abstract #: *2.016_MDG*

Kybele-adding postpartum uterine massage to decrease postpartum bleeding in a rural armenian hospital

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Background: Rural Hospitals in Armenia have limited access to uterotonic medications, medical supplies and blood bank services. Uterine massage (UM) was introduced in hopes of decreasing the risk of uterine atony and prevention of postpartum hemorrhage (PPH). The goal was to determine if adding a simple procedure as part of the standard care of the active management of 3rd stage or labor (AMSTL) could lead to improve outcomes for patients at minimal additional cost.

Methods: This is an observational study that included all women with normal spontaneous vaginal delivery (NSVD) in 2013 (n= 864) and in 2014 (n= 883) at Akhurian Hospital. AMTSL included administering Oxytocin 10 units intramuscular after delivery of the anterior shoulder and controlled cord traction. UM was demonstrated by fundal uterine massage after the delivery of the placenta every 10 minutes for about 2 hours. UM became a part of AMTSL standard care in 2014. Primary outcomes was the rate of PPH, uterine atony, bleeding <24 hours or >24 hours and the amount of blood loss if >500 ml or >1000 in all NSVD that occurred in 2013 and 2014. Secondary outcomes included retained placenta, trauma and endometritis.

Findings: Primary finding was a relative risk reduction of 64% for PPH. PPH occurred in 23 NSVD in 2013 compared to 10/883 NSVD in 2014. Uterine atony decreased from 1.7% to 0.6% (p = .02) bleeding < 24 hours decreased from 2.2% to 0.8% (p= .02) and blood loss > 500 ml significantly decreased from 1.9% to 0.8% (p=.02). UM did not significantly decrease bleeding > 24 hours, blood loss >1000ml, retained products, trauma or endometritis.

Interpretation: Study showed that implementing a simple and standard maneuver is associated with 64% risk reduction for PPH. While we recognize the limitations of observational studies the only standard practice that changed was the addition of UM. While there potentially could have been population factors that impacted the findings this seems less likely in a rural area of Armenia with limited migration. These finding show that simple inexpensive interventions can have a marked impact on the health of populations.

Abstract #: *2.017_MDG*

Utilization of health services in a resource-limited rural area in Kenya: prevalence and associated household-level factors

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