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

Jeremy Mudd[1], Livia Jaramillo[2], Esther Kwara[3], Brandon Dale[2], Ernest Kwarteng[4], Nyonuku Akosua Baddoo[4], Audrey Forson[4], Margaret Lartey[4], Awewura Kwara[1]; [1]Warren Alpert Medical School of Brown University, [2]Brown University, [3]University of Maryland, [4]University of Ghana Medical School

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

J.S. Mukherjee[1,2], E.H. Satti[1,2], J.C. Mugunga[1], C.P. Almazor[3], G. Jerome[3]; [1]Partners In Health, Boston, MA, USA, [2]Division of Global Health Equity, Brigham and Women's Hospital, Boston, MA, USA, [3]Zanmi Lasante, Haiti

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.