

Rwandan medical and pharmacy students. To date, Jefferson has hosted 27 Rwandan medical students as part of a 2-month clinical experience during which students attend public health courses, complete observatory clinical rotations, work in the Clinical Skills Center, and participate in community outreach activities. Directed by an interdisciplinary group of student, resident and faculty *global health clinical mentors* across several departments, the curriculum is designed to introduce Rwandan students to the many dimensions of clinical and global public health practice, health systems, and health professions education in the United States.

**Outcome and Evaluation:** The RVCP-RHHP exchange provides the opportunity to expose students from the United States and Rwanda to the practice of healthcare across health systems, institutions, and cultures. Most importantly, this student initiated *bi-directional model* of global health education has the potential to build local and international global health capacity in a way that is fundamentally more equitable, cross-cultural, and inter-professional,

**Going Forward:** Future plans for the RHHP-RVCP project include: (a) continuing to seek opportunities for sustainability, (b) (c) consolidating more clinically focused rotation opportunities, and (d) continuing bi-directional mentoring programs.

**Abstract #:** 2.006\_MDG

### Evaluation of a health education intervention to improve maternal and early childhood nutrition in the Kisumu region of Kenya

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**Program/Project Purpose:** Nutrition during pregnancy and early childhood is a significant determinant of a child's physical and cognitive development, as well as their long-term health. In 2013, the Global Health Initiative (GHI) joined with a local organization, Partners in Community Transformation to initiate a community-based nutrition project in the Kisumu region of Kenya. The goal of this project was to provide Community Health Workers (CHWs) with the tools required to educate community members on maternal and early childhood nutrition. Since CHWs are integrated within the community and make frequent household visits, they are well positioned to disseminate important information about health to community members.

**Structure/Method/Design:** In 2014, the GHI team delivered workshops to CHWs about nutrition during pregnancy and early childhood. In 2015, the GHI team assessed whether this train-the-trainer teaching format was an effective tool for spreading information about nutrition within the community. Focus groups were conducted with CHWs in three villages near Kisumu. Topics included basic food groups, accessibility, knowledge and practices surrounding childbirth, breastfeeding and complementary feeding. In addition, random household surveys were conducted in each village to assess nutrition knowledge among community members.

**Outcome & Evaluation:** Overall, the train-the-trainer method was found to be an effective knowledge translation tool for maternal

and early childhood nutrition in rural communities. The information provided in the workshops was successfully retained among CHWs and conveyed to mothers in the community. For example, household surveys confirmed that 100% of women were aware of the exclusive breastfeeding protocol for six months prior to initiating complementary feeding, and breastfeeding should continue until at least two years of age. While many women were aware of these guidelines, they were not always able to adhere to them due to barriers such as inadequate finances, lack of access to certain foods, or another pregnancy.

**Going Forward:** The train-the-trainer format is appealing because it provides a community with the means to sustainably educate its members on important health topics. Future education teams will apply this teaching method to a variety of health topics in order to bolster overall community health.

**Abstract #:** 2.007\_MDG

### Treatment outcomes of HIV infected adolescents attending a national referral hospital in Kenya

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**Background:** HIV infected adolescents are at high risk of developing antiretroviral treatment failure and drug resistance. The study sought to describe the clinical, immunological and virological outcomes in a cohort of HIV infected adolescents actively on follow up in a tertiary hospital setting.

**Methods:** This was a retrospective review of electronic medical records. Data of HIV infected adolescents aged between 10 and 20 years with at least 6 months of follow up were abstracted. Categorical variables were compared using chi-square and Fishers exact test; continuous variables were analyzed using Student t-test and Mann Whitney test.

**Findings:** Of the 418 eligible adolescents, 312 (75%) were in WHO stage I and II HIV disease. The median CD4 cell count was 665 cells/mm<sup>3</sup>, with 85 % of them having a CD4 cell count exceeding 350 cells/mm<sup>3</sup>. Poor immunological status (CD4 cell count <350 cells/mm<sup>3</sup>) was associated with mid (14–16 years) and late (17–20 years) adolescence, [OR 2.2 (95% CI 1.1–4.4), P=0.032], [OR 2.8 (95% CI 1.2–6.1), P=0.0012] respectively. Mid adolescents (14–16 years old) were more likely to have virological failure (Viral load ≥1000 copies/ml) [OR (95% CI 0.2–1.0), P=0.044].

**Interpretation:** Mid and late adolescents were more likely to have a poor immunological outcome (CD4 cell count <350 cells/mm<sup>3</sup>). Mid adolescence was more likely to be associated with virologic failure (Viral load ≥1000 copies/ml). Interventions focusing on mid and late adolescence are necessary to improve outcomes in this cohort of adolescents.

**Funding:** Afya Bora Consortium Fellowship in Global Health Leadership.

**Abstract #:** 2.008\_MDG

### Developmental neuroscience and stunting: A strong case for action in the first 1000 days

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**Background:** Optimal overall brain development across the first 1000 days of life depends on the receipt of key nutrients during specific sensitive periods. Certain nutrients (e.g., protein, long-chain polyunsaturated fatty acids, iron, copper, zinc, iodine, folate, choline, and vitamins A, B6, and B12) have particularly large effects during this period because specific brain regions are developing most rapidly and have their highest nutrient requirements. These periods of peak growth are also those times when the deficiencies of specific nutrients, particularly ones that support basic neuronal/glia metabolic process, are most deleterious. Stunting is associated with impaired neurological and cognitive development in very young children and will likely have lasting implications for subsequent brain and physical health. Southeast Asia has one of the highest prevalence and total number of stunted children (30%, 15.6 million; UNICEF-WHO-/World Bank 2014), with Laos PDR having among the highest rates in this region. To date, the effects of stunting on the developing brain have not been investigated well in this region generally, or in Laos specifically.

**Method:** Standard cognitive development tasks were administered to a cross-sectional sample of infants and young children at each of 6 ages: 2 months (e.g., facial imitation), 6 months (e.g., deferred imitation), 12 months (e.g., habituation), 18 months (e.g., visual expectation), 24 months (e.g., distraction), and 36 months (e.g., relational binding). At each age, subsamples of 15 seriously stunted (height-to-age Z scores < -2.0; WHO Growth Standards) and 15 nutritionally healthy children (n=30 per age group; total sample N = 180) were recruited to participate while receiving outpatient services at the Lao Friends Hospital for Children in Luang Prabang, Laos.

**Findings:** At each age level, stunted children performed significantly worse on a preponderance of tasks than nutritionally healthy children (Cohen's *d*s ranged from .39 to 1.09). Of concern, performance-related differences between the two groups increased with age.

**Interpretation:** Malnutrition, especially stunting, is related to very early disparities in healthy brain development in Lao infants and young children. These disparities appear to increase overtime.

**Funding:** Grants from Friends Without A Border, NY and the University of Oregon Lewis Center for Neuroimaging.

**Abstract #:** 2.009\_MDG

### HIV Positivity rate and long turnaround time of early infant diagnosis of HIV infection testing results in Lake Zone, Tanzania

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**Background:** Early infant diagnosis (EID) of HIV infection strategy was adopted in Tanzania in 2006 with a goal of identifying HIV-infected infants and to initiate treatment to reduce morbidity and mortality. The aim of the current study was to determine rates of perinatal HIV infection and turnaround time of HIV testing results.

**Methods:** Retrospective analysis of dried blood spot (DBS) data from Ministry of Health and Social welfare database was done to establish study positivity rate and turnaround time of EID of HIV infection results. All DBS specimens collected between June 2011 to December 2013 were tested using HIV-1 DNA PCR assay at Bugando Medical Centre zonal laboratory. Median turnaround times were calculated from the time of blood draw to return of results to the mother or care taker of the infant. Regression analysis was performed to assess the likelihood of HIV transmission using STATA version 13.

**Findings:** A total of 10,454 DBS specimens were tested using HIV-1 DNA PCR assay between June 2011 and December 2013. The overall mean age of infant at initial EID of HIV infection testing was 16.5 (range 4 – 99) weeks compared to national guidelines of testing at 4–6 weeks. The mean turnaround time was 69.5 days (10 weeks) with a range of 4 – 35 weeks. The average positivity rate was 8.5%. The age of infant was significantly associated with perinatal transmission of HIV. The odds of HIV positivity rate increased with age of the infants where the likelihood of positive HIV-1 DNA PCR test results increased by 3% (OR; 1.03, CI: 1.027 – 1.034; *p* < .000) for each increase in a week of age. Use of antiretroviral therapy in pregnant women had protective effect on HIV transmission (OR 0.40, CI: 0.26 – 0.61; *p* < .001).

**Interpretation:** The age at EID testing and turnaround time of HIV-1 DNA PCR results were unacceptably high, and deliberate efforts are needed to provide a functional, reliable and efficient systems for timely HIV-1 DNA PCR testing. This analysis demonstrated reduction HIV perinatal transmission, however, these finding are limited to specimens with complete medical record information.

**Funding:** None.

**Abstract #:** 2.010\_MDG

### Family medicine at the heart of health systems: Reaching for evidence

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**Program/Project Purpose:** The Besrou Centre is a hub of international collaboration to advance family medicine globally with the goal of creating a healthier world for all. The Centre provides Canada with an opportunity to share its expertise in family medicine and receive a worldly collection of knowledge from innovative partners into its own health system. The Centre, alongside the global