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Abstract #: *2.008_MDG*

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

J.R. Measelle[1], A. Mobasser[1], M. Fong[1], C.S. Soulalay[2], C. Nijssen-Jordan[2]; [1]University of Oregon, Eugene, Oregon, [2]Lao Friends Hospital for Children, Luang Prabang, Laos

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/glial 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.

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Abstract #: *2.009_MDG*

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

E. Mgelea[1], S. Aboud[1], D. Urassa[1], E. Kajoka[2]; [1]Muhimbili University of Health and Allied Sciences, [2]Ministry of Health and Social Welfare

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 - 35weeks. 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.

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Abstract #: *2.010_MDG*

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

K.D. Rouleau[1,2,3], J. Meuser[1], D. Ponka[1,4], F. Couturier[1,5], E.J. Mang[1], P. Grand'Maison[5], O. Michaelides[1]; [1]The Besrour Centre at the College of Family Physicians of Canada, [2]University of Toronto Department of Family and Community Medicine, [3]St. Michael's Hospital, Toronto Canada, [4]University of Ottawa Department of Family Medicine, [5]University of Sherbrooke Department of Family Medicine

Program/Project Purpose: The Besrour 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

community, is engaged in efforts to strengthen primary health care, strengthen health systems and increase health professional capacity, globally. The emergence of the Centre is the result of an extensive consultation process developed through annual Besrour Conferences (2012-2014).

Structure/Method/Design: The aim of the 4th annual Besrour Conference 2015 is to highlight the research priorities of the Besrour network based on the needs of its national and international partners. During the conference, participants will discuss ways to leverage its extensive network to generate evidence to support the Centre's goals. Conference participants will include Canadian academic leaders and family physicians, international partners and key stakeholders such as the World Bank Group, the Associations of Faculty of Medicine of Canada and the Canadian Coalition in Global Health Research.

Outcome & Evaluation: Since its inception, the Centre has provided a platform of mutual learning. It has created five working groups to share and advance the work of the Centre, and has begun disseminating its efforts through various means, such as workshops and publications. At the conference, the Besrour network will begin to develop the processes and outcomes of a mutually relevant research agenda, including metrics to measure and guide the progress of Besrour-related activities.

Going Forward: Through its research activities, the Centre will feed into key global partnerships and meet the challenges set forth by the Sustainable Development Goals and the Primary Health Care Performance Initiative.

Abstract #: *2.011_MDG*

Neonatal resuscitation in low resource settings: Challenges to implementation at a district hospital level in Tanzania

M. Mitchell, D. Mohammed, A. Lehman, E. Mahmoud, C. Bweri; Touro University-California, College of Osteopathic Medicine, Vallejo, CA, USA, Shirati District Hospital, Mara District, Tanzania

Background: Helping Babies Breathe (HBB) is an evidence-based protocol on neonatal resuscitation in resource-limited circumstances, which has been shown to reduce neonatal mortality when it is properly implemented. However, only one of seven hospitals studied was a district level hospital so further evaluation is needed to determine if there are enough resources to implement this protocol at rural district hospitals.

Methods: This study examines obstacles preventing implementation of HBB at Shirati Hospital, a resource-limited district hospital in the Mara region of Tanzania. Forty-eight first and second year nursing students attended the 2015 course, and provided feedback about whether they felt they could implement what they learned, and why. Nursing students were selected because they are often in charge of vaginal deliveries at Shirati Hospital. Their feedback provides a vital look into what may prevent implementation of this protocol.

Findings: Of the participants, 25% indicated that they did not have all of the resources to implement HBB at Shirati Hospital, with 14.5% of participants citing the lack of sufficient clean, dry cloths at deliveries. Furthermore, 12.5% of participants reported not having enough bag valve masks in various sizes and 6.25% reported the lack of a drying rack. Clean water and soap were also cited as insufficient.

Interpretation: HBB has been shown to decrease the number of neonatal fatalities following training. However, our results shows that the availability of trained staff might not be sufficient to implement the training in resource limited settings. This emphasizes that programs designed to improve healthcare delivery in resource limited areas should be adequately evaluated at the district level facilities in addition to referral and specialized hospitals. Training workshops in low resource hospitals can be very valuable, but only if the hospital staff has access to the necessary resources to implement the teaching. If these resources are unavailable locally, it may be appropriate to provide sustainable access to these resources when offering a teaching workshop. HBB has shown promising results in the reduction of neonatal mortality in low resource areas, which would justify additional preparation and funding necessary for effective implementation of this protocol.

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Saving up for the future: HAART stock-outs as a contributor to treatment non-compliance among HIV-positive patients in Kumasi, Ghana

K. Moriarty[1], R. Reece[1], B. Norman[2]; [1]Brown University, Providence, RI, USA, [2]Kwame Nkrumah University of Science and Technology and Komfo Anokye Teaching Hospital, Kumasi, Ghana

Objectives: Shortages of highly active anti-retroviral therapy (HAART) have been reported as a significant barrier to HIV care in sub-Saharan Africa, but patient responses to medication stock-outs have not been fully described. The aim of this study was to examine the role of medication stock-outs in contributing to treatment non-compliance among a sample of HIV-positive patients already engaged in care at Komfo Anokye Teaching Hospital (KATH) in Kumasi, Ghana.

Methods: From June to August 2015, 57 patients participated in a one-time interview with a member of the research staff about both personal and structural barriers to treatment of HIV. Participants were recruited from the adult HIV clinic and antenatal clinics at KATH, and were included in the study if they were over 18 and currently on HAART. Medication records for each participant were reviewed and any medication changes documented for the past six months of treatment.

Findings: Nearly three-quarters of participants reported experiencing HAART stock-outs. Of those experiencing stock-outs, 43% reported drug defaults of greater than 2 days as a result of the stock-out, with an average length of default of 30 days. Of those who did not default during the stock-out period, 9% obtained HAART from a private pharmacy, 22% obtained drugs at another hospital and 52% reporting using medication they had saved up during the year or obtained from social contacts, what we refer to as "stockpiling." The frequency of changes to HAART regimens was also high: 84% of the sample reported at least one provider-initiated change to their treatment regimen in the past six months.