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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/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

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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 - 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

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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