

Program/Project Purpose: The growing interest in global health electives among medical students as well as the emerging emphasis on capacity building and sustainability of global health programs necessitate the development of new models of global health education. New models will need to address the limitations of former models, which include a lack of bidirectional exchange, cultural isolation, and inadequate psychosocial support. Additionally, early exposure to global health education will be imperative to ensure that students cultivate a strong foundation of agency and commitment to the field.

Structure/Method/Design: We implemented a team-based approach to global health education in Harare, Zimbabwe that attempts to address these limitations. The approach is anchored by the principle of peer mentorship, which allows medical students to live and work closely with their resident and attending physician counterparts in the host-country. This model provides capacity building support to foster mutual appreciation between the host-country medical system and the visiting medical team as well as a structure capable of promoting cultural immersion and customizable global health education for elective participants.

Under the current system, global health electives are not offered to medical students until the fourth year, limiting their ability to establish a lasting commitment to long-term international work. To address this issue, our program enables students to engage in global health education throughout the entirety of their four-years in medical school.

Upon selection, students are immediately matched with mentors and participate in pre-departure training to prepare for international placement during the summer after their first-year. This is followed by two years of further training and mentorship. The program culminates in students returning to their original locations during their fourth year for a second international elective.

Outcome/Evaluation: This new model engenders a sense of agency amongst student participants. By bridging the gap between interest and capacity, the program fosters a deeper sense of commitment to the field and creates a platform for students to mature into global citizens and emerge as instruments of social change in order to combat the increasing healthcare disparities of society on a global scale.

Funding: Western Connecticut Health Network Global Health Program.

Abstract #: 2.091_NEP

The role of transnational donor networks in facilitating access to medical equipment in Ghana and Sierra Leone

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Background: Medical technologies are essential to healthcare delivery yet, in resource-limited settings there is a pervasive shortage that severely limits the capacity of clinicians to assess, diagnose, treat, monitor, and prevent diseases. There have been few attempts to address the disparity in availability of medical technologies, and fewer yet were successful. Transnational donors for example, have taken on the responsibility of providing funds for almost 80% of medical equipment in some countries, yet 70% of equipment goes unused and abandoned. This means that for every dollar spent on donations, 62.5 cents goes to waste.

The question then arises about what role donors play in facilitating access to healthcare, specifically, medical equipment, in countries such as Ghana and Sierra Leone. The study will explore how existing policies on equipment procurement and donation incorporate transparency and accountability. The study will also identify opportunities for optimizing transnational donation programs.

Methods: We will develop a case study based on a review of policy and guideline documents, and on survey data and semi-structured interviews of recipient facility owners, technicians, clinical staff, and staff of donor organizations. The case study methodology is appropriate for descriptive or exploratory research into complex topics and for inquiry into a new research area where existing theories lack application. We will secure copies of national and institutional policy documents from donor organizations and from the Ministries of Health. Surveys and interviews will cover knowledge of donation guidelines and policies, details of donation experiences, assessments of quality, and integration.

Findings: We will target 50-60 individuals for the survey and 20-25 individuals for the interviews. To eliminate the possibility of an incomplete assessment, respondents will be required to provide an answer to every question.

Interpretation: This study will contribute to the growing body of research at the intersection of health policy, transnational philanthropy, and development. Findings from this study will be useful to policymakers in improving utility (or value) of donated medical equipment, and subsequently enhancing health benefits.

Funding: Funded in part by the Canadian Institute for Healthcare Research.

Abstract #: 2.092_NEP

Global migraine epidemiology: Systematic review and meta-analysis of 302 community-based studies involving 6,216,995 participants

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Background: Community-based and centralized population-based neuroepidemiological studies are the basis to assess accurate representation of true incidence and prevalence of public health burdens. Such studies serve as a crucial source of information for planning, policy-making, and research prioritization in health care. Migraine is a common cause of neurological public health and socioeconomic burden worldwide; it is underestimated, misdiagnosed and under- or mistreated.

Methods: To assess global pooled migraine epidemiology, a systematic review using advanced search strategies employing PubMed/MEDLINE and Web of Science was conducted for community-based studies by combining the terms “migraine”, “community-based”, and names of every country worldwide spanning all previous years until August 31, 2015. Methods were in accordance to PRISMA and MOOSE guidelines. A meta-analysis was performed to identify pooled migraine prevalence, examine cohort heterogeneity, and study inter-generational variations.

Findings: A total of 302 community-based studies involving 6,216,995 participants (median age 35 years, male-to-female ratio

0.91) were included. 82% applied International Classification of Headache Disorders (ICHD) diagnostic criteria. Median responder rate was 83.4%. Median age of migraineurs was 32 years (IQR 24.6–38.7). Prevalence period ranged from lifetime in 73 (28.5%), one-year in 149 (58.2%), two-years in 4 (1.6%), 6-months in 18 (%), and 3-months in 12 (7%) studies. Pooled crude migraine prevalence was 11.6% (95% CI 10.7–12.6%; random effects); 10.4% in Africa, 10.1% in Asia, 11.4% in Europe, 9.7% in North America, 16.4% in Central and South America. Weighted migraine prevalence stratified among females, males, rural, urban, and school/college was 13.8%, 6.9%, 11.2%, 8.4%, and 12.4% respectively. Sensitivity analysis revealed similar random-effects weighted prevalence between ICHD-using studies versus all studies (11.6%), likewise between one-year versus all studies (11.6%).

Interpretation: Migraine affects one in ten people worldwide; it is twice common in females. Higher prevalence was found among school/college students and urban residents. Geographical variations were observed with Central and South American region featuring higher prevalence compared to other regions.

Funding: None.

Abstract #: 2.093_NEP

"Its spirit is strong": Shawi spirits, healers and diarrhea in the Amazon

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Background: Indigenous communities' perceptions of illness may not always reflect known biomedical causes of disease. These perceptions make some health interventions ineffective, reinforcing a higher burden of illness in Indigenous communities. In particular, waterborne illness remains a public health issue. The goal of this research was to explore how Shawi perceptions of the causes of diarrhea, as a symptom of waterborne illness, relate to Shawi beliefs and cosmology about water. Further, the research explored implications for the effectiveness of biomedical healthcare interventions in the Peruvian Amazon.

Methods: This study used participatory qualitative methods. 22 semi-structured interviews were conducted from August 21 to September, 2014, in two Shawi communities. Study communities were located on the shore of the Armanayacu River, in the Balsapuerto district of the Alto-Amazonas province, in the Loreto department of Peru. Interviews were conducted with: parents of children younger than ten, persons associated with traditional medicinal practices, individuals with expertise in Shawi spiritual beliefs, and health technicians at the government medical clinic used by each community. Interview results were analyzed using a thematic phenomenological approach combined with ATLAS.ti qualitative analysis software.

Findings: Qualitative analysis found that the two Shawi communities did not perceive drinking untreated water as able to cause diarrhea. Shawi perceptions about diarrhea correlated strongly with Shawi cosmology, spiritual beliefs, and the Shawi traditional health system. Community

members perceived diarrhea to arise from three different pathways: diarrhea caused by water spirits, diarrhea caused by a traditional healer, or diarrhea caused from feelings of hunger due to food insecurity.

Interpretation: The number of participants was limited by time constraints, and analysis was made difficult by multiple language translations. However, the study clearly found that many Shawi perceptions of illness do not reflect biomedical causes of diarrhea (hygiene, sanitation, parasites). Current interventions for diarrhea disease in the Amazon do not recognize community perceptions of the causes, which may render these interventions ineffective. Therefore, understanding and appreciating Indigenous health perceptions is key to improving the design of waterborne illness health interventions.

Funding: National Geographic Society Young Explorer Grant and The Explorers Club Youth Activity Fund Grant.

Abstract #: 2.094_NEP

Influence of the 2014 West African Ebola epidemic on essential health service utilization in a Liberian district

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Background: The recent 2014 West African Ebola virus disease (EVD) epidemic has so far affected 10,672 Liberians, resulting in 4,808 deaths. This study aimed to delineate changes in essential health service utilization at the level of a Liberian district with comparisons to the previous year.

Methods: Data was collated from monthly Health Management Information System (HMIS) forms sent by the 11 health facilities in Zorzor district (population 40,704) to the Liberian Ministry of Health & Social Welfare over 2013–2014 and analyzed for trends. IRB approval was obtained for secondary data analysis as no individually identifiable health information was used.

Findings: There was a global decline in many key indicators, especially in the field of maternal and child health. Amongst the significant findings was a decrease in the number of four or more antenatal care visits (-66 women, $p < 0.001$), maternal tetanus immunization (-32 women, $p = 0.02$), male condom distribution (-681 units, $p = 0.005$), Pentavalent vaccination for children under age 1 (-22 infants, $p = 0.02$), vitamin A supplementation for children aged 12–59 months (-31 children, $p = 0.01$), and for children under age 5, insecticidal net distribution (-24 units, $p < 0.001$) as well as the number of children with diarrhea and pneumonia who were appropriately treated (-54 and -68 respectively, $p < 0.001$).

Interpretation: The drop in infant immunizations, Integrated Management of Childhood Illness (IMCI) services for children under age 5, as well as antenatal care and family planning is concerning. Since Zorzor district only had 15 confirmed EVD cases, with just one affecting a healthcare worker, it is possible that this decrease in health service utilization is associated with fear and stigma rather than direct fallout. Further analysis was difficult as credible sources to derive denominators for the calculation of proportions and ratios were lacking, in addition to the nature of