

NIH Global Health Interest Group, Seminar Series

September 24, 2012

Seminar Title: Neurology & Global Health: Three Neuroepidemiological Studies

Presenter: Farrah J. Mateen, MD, Dept. of International Health, Johns Hopkins University

In the broadest sense, Dr. Mateen discussed issues impacting the study of chronic vs. acute neurological diseases in low-resource settings, i.e. the developing world. She also described the various health and epidemiology issues that are faced by refugees around the world.

Dr. Mateen first gave a short briefing on some realities in the developing world. One is that neurological and psychiatric disorders account for most of the DALYs (*a Disability-Adjusted Life Year is a measure of overall disease burden, expressed as the number of years lost to disease, disability or early death*) in the developing world, more than TB, heart disease and HIV/AIDS. All told, neurological diseases account for 6% of the global burden of disease and 12% of the total deaths. Moreover, a staggering 85% of all “years that were lived” with a neurological disability have occurred in the developing world.

Dr. Mateen also spoke about the burden of stroke in the developing world. It is currently the 3rd leading cause of death worldwide claiming an estimated 5.5 million of the 55 million deaths per year. While 30% of all strokes are fatal, there is considerable variation in stroke mortality worldwide. Throughout the much of eastern Europe, north Asia and the south Pacific, the mortality rates from stroke are five-times higher than those in the US, Europe and Australia. There are a number of potential factors involved, one being the cost of treatment. In the US, for instance, the cost to treat an acute stroke is relatively inexpensive (~2,000 USD) compared to India (~1,500 USD).

Dr. Mateen spoke about her own work on this subject in rural Bangladesh, which had two main objectives: the first was to determine the burden of fatal stroke in a least developed country, and the second was to establish whether there are unique risk factors for fatal stroke in this population. One major difficulty with working in developing countries is the lack of vital registration records. For example, globally only ~1/3 of countries certify the causes of deaths. In the Southeast Asian region, less than half have vital registration and in Africa only 6 countries have any form of vital registration (no African country has complete records). Because the data were incomplete Dr. Mateen performed verbal autopsies, a method based on verbal interviews, to help determine the probable cause of death in situations where no medical records exist. From these verbal autopsies she was able to identify a variety of risk factors associated with fatal stroke such as hypertension, diabetes, heart disease, cigarette smoking and betel consumption. The latter refers to the betel nut which is chewed by ~10% of the global population for its stimulatory and digestive effects. Although almost unheard of in the West, the betel nut is hugely popular throughout parts of Asia and is the fourth most common psychoactive substance in the world. The International Agency for Research on Cancer recognizes it as a carcinogen and studies have linked its use with increased risk of cardiovascular and cerebrovascular deaths.

In the final part of her talk, Dr. Mateen talked about issues facing refugees. In 2010 global security organizations recognized at least 35 ongoing armed conflicts in the world and in 2009 the UN High Commission for Refugees estimated that 42 million people had been uprooted from their homes out of fear and persecution. In terms of the neurology of armed conflicts, refugees often face unique challenges such as malnutrition and hunger, more spinal cord and traumatic brain injuries, etc.. Also, the neurological disorders in civilians living in an armed conflict are different in both range and outcome than those from combatants involved. Dr. Mateen

studied a total of 127 refugee camps in 19 countries, located in Africa, the Mediterranean and Southeast Asia. She found that in 2011 these refugees visited the hospital >30,000 times, and of the reportable neurologic diseases, ~91% of the visits were because of epilepsy. This is surprisingly high considering that much of the funding goes towards other less prevalent neurological disorders such as meningitis and leprosy. Additionally, neurological diseases appear to affect a high proportion of Iraqi refugees which includes victims of torture and the disabled.

In summary, Dr. Mateen discussed the need for neuroepidemiology to understand and address the neurological disease worldwide and the need for better indicators of illness in resource-poor regions. Moreover, deeply held biases within the health services must be addressed and low cost interventions and preventative measures for neurological diseases need to be developed.