



Dr. Farrah Mateen: On Bringing Neurology Care to the Developed and Developing World

BY TOM VALEO

When Farrah Mateen, MD, heard about the recent earthquake and tsunami in Japan, she asked herself the question that often occurs to her in the face of such catastrophes: What are the neurological implications? She began sending e-mails to Japanese neurologists asking them about problems they were facing.

“One neurologist from Tokyo said that electrical shortages were causing problems for patients with ALS and other neuromuscular disorders who need a respirator,” she said. “They were having trouble getting respirators to work, and that kind of surprised me. That never came up once in the more than 100 articles I read.” [See “An Earthquake, A Tsunami, A Nuclear Disaster: Japan’s Neurologists On the Front Lines,” on neurotodayonline.com.]

Dr. Mateen, who is completing her PhD in international health at the Johns Hopkins Bloomberg School of Public Health, read those articles after writing

her own on neurological disorders in complex humanitarian emergencies and natural disasters published in 2010 in *Annals of Neurology*.

In that article, she examined the neurological consequences in more than 100 countries where populations experienced displacement, food scarcity, and other crises produced by war, natural disasters, famine, and other forms of social disruption. Her two goals in that paper — to examine neurological disorders in such situations, and to develop guidelines for aid workers, relief organizations, and others who attempt to provide help — also describe the goals of her own burgeoning career.

“People used to tell me that it’s impossible to meld my interest in neurological disease with international health,” said Dr. Mateen, who is also doing a fellowship in neurological infectious diseases and neuroimmunology at Hopkins while completing her PhD. “Some people thought I had an idea that wasn’t



DR. FARRAH MATEEN traveled to China and wrote an article about the association between air pollution there and risk of stroke.

FOR MORE INFORMATION: INTERNATIONAL HEALTH PROGRAMS

University	Department/Track	Degree/Program Type
Johns Hopkins Bloomberg School of Public Health	Department of International Health	MSPH, PhD, DrPH
Harvard School of Public Health	Department of Global Health and Population	MSPH, DrPH
Harvard Medical School	Department of Global Health and Social Medicine	Programs in Global Health and Social Change
University of Michigan School of Public Health	International Health	MPH
University of California Berkely School of Public Health	Global Health	Specialty area study in global health for students enrolled in any of the School's discipline-based programs.
UCSF	Global Health Sciences	MS
University of Washington	Department of Global Health	MD/MPH, MN/MPH, MSW/MPH
NYU Steinhardt	Community of International Health	MPH
The University of Arizona, College of Medicine	Global Health Distinction Track	MD
The Medical School for International Health, Ben-Gurion University of the Negev – Faculty of Medical Sciences, in collaboration with Columbia University Medical Center		MD
Mayo School of Medicine	Mayo International Health Program	A clinical rotation as part of MD
Weill Cornell Medical School of Medical Sciences	Global Health Track	MS
Boston University School of Public Health	Concentration in International Health	MD/MPH Dual Degree Program
University of Notre Dame	Eck Institute for Global Health	MSGH
Oregon State University School of public Health		MPH
Saint Louis University School of Public Health	Department of Community Health - Biosecurity & Disaster Preparedness	MSPH
George Mason University	Department of Global and Community Health	MS
University of Georgia College of Public Health	Center for Global Health	Graduate certificate program
Emory Rollins School of Public Health		MPH
Duke University	Global Health Institute	MSc-GH, MD Third-Year Global Health Study Program, Global Health Certificate Program
University of Pittsburgh Graduate School of Public Health		Certificate in Global Health
University of Southern California, Keck School of Medicine		MS
Tufts University School of Medicine		MPH, Global Health Programs Abroad
Columbia University Mailman School of Public Health	Global Health Track	MPH
UC-San Diego Graduate School of Public Health		PhD (with global health concentration)

feasible, but I believe a need exists. Neurological diseases are not only as common in developing countries, where 86 percent of the world’s population lives, but more common.”

TRAVELS TO 30 COUNTRIES

While training to be a clinician and teacher, she also is acquiring a deep background in public health. And although she strives to grasp the big picture of public health issues, she also travels constantly to see neurology up close in as many as 30 countries. In the past two years alone she has been to Bangladesh, Bhutan, Sri Lanka, India, and Laos. And whenever possible she tries to gain first-hand knowledge from local physicians. For example, Dr. Mateen went to Laos to teach medical students, but also followed the country’s only neurologist for several days.

“He was a phenomenal clinician,” she said. “I learned a lot about tropical neurology from him. For example, one patient had kidney and liver failure, and was jaundiced. The doctor asked me, what does he have? In this country we would consider a range of things, from infections to cancer. In Laos they think immediately of leptospirosis (a bacterial infection caused by exposure to water contaminated by animal urine).”

Recently, Dr. Mateen visited Lebanon and Syria to study the neurological problems of Iraqi refugees there. Using a United Nations database she determined that about 4 percent of the refugees have a brain or nervous system disorder, with epilepsy as the most common problem (30 percent of visits), followed by back pain (27 percent), and headache (12 percent). She reported her findings at the AAN annual meeting in Honolulu last month. (Her study was supported by an AAN Foundation Practice Research Training Fellowship grant.)

A recent trip to China provided first-hand experience of Beijing's notorious air pollution, which contributed to her assertion in a recent article in the *Journal of the American Medical Association* that particulate matter from automobiles, fires, and other sources continues to contribute significantly to strokes in "resource-poor populations."

"In China, stroke is a greater cause of death than heart disease," she said. "And with the high-salt diet, there's more hemorrhagic stroke too. In the US, about 80 percent of strokes are ischemic, but in China there are more hemorrhagic strokes."

"For her to just show up in some remote country where she doesn't know anyone and doesn't speak the language is absolutely unbelievable," said Avindra Nath, MBBS, the NINDS intramural clinical director and chief of the Section of Infections of the Nervous System.

'Some people thought I had an idea that wasn't feasible, but I believe a need exists. Neurological diseases are not only as common in developing countries, where 86 percent of the world's population lives, but more common.'

"She took a great risk visiting refugee camps in Lebanon and Syria. But she doesn't just do things for the sake of doing them," said Dr. Nath, who worked with Dr. Mateen when he was a professor of neurology and neuroscience at the Johns Hopkins University School of Medicine. "She thinks very deeply, and asks a lot of questions. She always wants to know the long-term impact of what she's going to do. For someone at

such an early stage of her career to ask those questions is pretty remarkable."

Born and raised in Saskatchewan, Dr. Mateen obtained her MD at the University of Saskatchewan, and then completed a residency in neurology at the Mayo Clinic in Rochester, MN, in 2009. She attributes her conspicuous motivation, at least in part, to her father, who was born in Delhi, one of 23 children,

and the first one to obtain a formal post-secondary education. "He studied medicine in England," Dr. Mateen said. "He realized he was fortunate to have that educational opportunity, so it was instilled in me how liberating and important education is."

In addition to completing a PhD and a fellowship, Dr. Mateen also seeks out opportunities to connect with others who

share her interest in neurology and public health.

Amartya Sen, PhD, who won the 1998 Nobel Prize in economics, recalls how, after delivering a lecture on India and China to an overflow audience for the Committee on the Social Determinants of Health, he was rushed by Dr. Mateen, who announced she wanted to work with him.

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“She had a well thought-out plan of what she wanted to do, and she also explained to me how it related to my own work,” said Dr. Sen, the Thomas W. Lamont University Professor and Professor of Economics and Philosophy at Harvard University. “It became clear to me that what she had in mind was both

extremely interesting and something in which I could fruitfully be involved. So she came to work with me at Harvard, and it was a wonderful experience for me. Every week she seemed to be producing some new idea, some new exploration, and some new understanding of how the pursuit of pure science could make a real difference to the lives of people across the world. There is no doubt in my mind that in Farrah we have

a person of great creativity and huge promise.”

A ‘NEW GENERATION’ OF NEUROLOGISTS

Justin McArthur, MBBS, MPH, neurologist-in-chief and professor of neurology at Johns Hopkins Hospital, views Dr. Mateen as a leader of a new generation of neurologists and other physicians

who are developing a wider global perspective on health care that will enable them to affect health on a community basis, rather than one patient at a time.

“She’s poised to have a major impact worldwide,” said Dr. McArthur, a mentor who also has worked with Dr. Mateen caring for patients. “I see her working within the WHO [World Health Organization] and the UN [United Nations], where there are few neurologists. She’s also extremely

connected with her patients. She chases down results, tests, makes diagnoses. She's an advocate for each patient just as she is for communities of patients. She's a very impressive young neurologist."

Dr. Mateen said she would like to have a role with a UN agency or some other super-national group working to improve health in the developing world, while at the same time remaining a part of academic medicine. She would like to

continue writing. In 2007 she won the Wakley Prize for an essay published in the *Lancet*. And she would like to continue visiting other countries to study their methods of delivering neurological care. She believes that only through close study of such countries can fundamental improvements be achieved.

"Just because you have data on high-income countries doesn't mean you can just extrapolate that data to

low-income settings," she said. "There are unique things happening in low-income countries, and they deserve their own research and conclusions. The population, environment, risk factors — they're all different."

According to an African proverb she included in a recent e-mail: "The sun does not forget a village just because it is small."

And if her career goes as planned, neither will Dr. Mateen. •

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