Neurology in Asia

ABSTRACT
Asia is important as it accounts for more than half of the world population. The majority of Asian countries fall into the middle income category. As for cultural traditions, Asia is highly varied, with many languages spoken. The pattern of neurologic diseases in Asia is largely similar to the West, with some disease features being specific to Asia. Whereas Asia constitutes 60% of the world's population, it contains only 20% of the world's neurologists. This disparity is particularly evident in South and South East Asia. As for neurologic care, it is highly variable depending on whether it is an urban or rural setting, the level of economic development, and the system of health care financing. To help remedy the shortage of neurologists, most counties with larger populations have established training programs in neurology. These programs are diverse, with many areas of concern. There are regional organizations serving as a vehicle for networking in neurology and various subspecialties, as well as an official journal (Neurology Asia). The Asian Epilepsy Academy, with its emphasis on workshops in various locations, EEG certification examination, and fellowships, may provide a template of effective regional networking for improving neurology care in the region. Neurology® 2015;84:623–625.

GLOSSARY
AOAN = Asian & Oceanian Association of Neurology; AOCNA = Asian & Oceanian Child Neurology Association; ASEPA = Asian Epilepsy Academy; ASNA = Association of South East Asian Nations Neurological Association; GDP = gross domestic product; MS = multiple sclerosis.

Asia can be subdivided into 4 regions: North East Asia and South Asia, each with a population of 1.6 billion; South East Asia, with a population of 600 million; and West and Central Asia, with a population of 360 million. Although Asia occupies only 30% of the world’s land mass, it accounts for three-fifths of the world population. In this article, only North East, South, and South East Asia are discussed. This is consistent with WHO, where West and Central Asia are under the Eastern Mediterranean and Europe regions.

Based on the International Monetary Fund 2013 database, about 5% of Asian countries are considered economically developed with a gross domestic product (GDP) per capita of >$20,000 USD (Singapore, Brunei, Japan, Hong Kong, Taiwan, and South Korea). The majority fall into the middle income category. Seven percent have a GDP per capita of ≤$3,000 USD (Laos, Papua New Guinea, Cambodia, Bangladesh, Myanmar, and Nepal). Cultural traditions are varied and include Confucian, Hindu, Buddhism, Islam, Christianity, and animist. Sino-Tibetan, Urdu-Hindi-Persian, Dravidian, Malays, Thai-Lao, and Semitic, amongst many other languages, are spoken. In most parts of Asia, English is the principal Western language used, though French is prevalent in Cambodia and Laos.

NEUROLOGIC DISEASE PATTERN IN ASIA The pattern of neurologic diseases in Asia is largely similar to that in the West, with cerebrovascular diseases, headache, and epileptic seizures being the most common complaints seen in practice. Increasingly, patients are presenting with Alzheimer disease and Parkinson disease due to aging of the population.

Disease features specific to Asia include a high proportion of strokes in younger patients, mostly from premature atherosclerosis, a high prevalence of intracranial vs extracranial disease in stroke, the relative commonality of neuromyelitis optica and the optic-spinal form of multiple sclerosis (MS), and a high incidence of sex-linked dystonia-parkinsonism in the Panay, Philippines. Common infectious diseases are...
Japanese encephalitis, tuberculous meningitis, cysticercosis, rabies, and tetanus. Emerging infections with neurologic involvement include enterovirus-71 encephalitis, dengue, sarcocystosis, and Nipah encephalitis.

**NEUROLOGY CARE** Number of general neurologists and neurology subspecialists. According to WHO estimates, there are 100,000 neurologists worldwide, with 20,000 located in Asia. Therefore, while Asia constitutes 60% of the world’s population, it contains only 20% of the world’s neurologists. This disparity is particularly evident in South and South East Asia. South Asia, for example, holds 20% (1.6 billion) of the world’s population but fewer than 1.5% of the world’s neurologists. Based on the author’s personal enquiry from the neurologists practicing in various countries, particularly underserved countries, with one or fewer neurologists per million people, include Bangladesh, Cambodia, East Timor, India, Laos, Maldives, Myanmar, Nepal, North Korea, Pakistan, and Papua New Guinea. As financing for neurologic services in many parts of Asia is largely via out-of-pocket payments, neurologists tend to congregate in large capital cities and in private practice. The shortage of neurologists in the provincial towns and for public patients is therefore even more pronounced. A similar shortage of personnel is seen in many subspecialties including stroke, epilepsy, and pediatric neurology.

**Neuroimaging, clinical neurophysiology services, and pharmaceuticals.** Modern neuroimaging such as CT scans and MRIs, as well as clinical neurophysiology services, are generally available in most of the capital cities, though their accessibility is highly variable depending on whether it is an urban or rural setting, the level of economic development of the country, and the system of health care financing in practice. In Bangkok, for example, the most sophisticated facilities for the diagnosis and treatment of neurologic diseases are available, catering to its residents and medical tourists from all over the world. Five hundred kilometers to the north, however, in Vientiane, the capital of Laos, only CT scans are available, while MRI, EEG, and EMG are not. The most commonly used drugs for the treatment of neurologic diseases are accessible in countries with good public health financing, but for the rest of Asia, the majority, patients have to pay out of pocket, limiting access to most drugs.

**TRAINING PROGRAMS FOR NEUROLOGISTS** To help remedy the shortage of neurologists in Asia, most countries with larger populations have established training programs in neurology. These programs are diverse. Countries previously under British rule tend to require internal medicine certification as a prerequisite for entry into training. A strong background in internal medicine is particularly important in places where most patients are walk-ins rather than referred. The duration of training is usually 3 years, except in Mongolia, Vietnam, and Pakistan (for the diploma program), where training is for 2 years.

In many countries, there is concern over the quality of training in clinical neurology skills. The reasons include a lack of emphasis on good clinical skills, few senior clinicians to serve as tutors, limited subspecialists available for teaching even in training centers, financial constraints leading trainees to spend time moonlighting rather than studying, and large classes of fee-paying trainees receiving limited direct clinical responsibility. Other important issues include older trainees (35–40 years in some countries), inadequate training in EEG and EMG, despite general neurologists being expected to provide these services, a lack of education resources in native languages, and little research output despite an emphasis on research in many programs.

**REGIONAL NETWORKING AND PUBLICATION** There are 3 regional organizations that act as vehicles for networking among neurologists in the region: the Asian & Oceania Association of Neurology (AOAN), founded in 1961; the Asian & Oceania Child Neurology Association (AOCNA), founded in 1983; and the Association of South East Asian Nations Neurological Association (ASNA), founded in 1994 for the South East Asian countries. Each organization holds biennial congresses. There are also subspecialty-based Asian organizations in stroke, epilepsy, clinical neurophysiology, movement disorders, muscle diseases, and MS. They all organize regular regional congresses.

To promote the development of Asian neurology, *Neurology Asia* (formerly *Neurological Journal of South East Asia*) was launched in 1996. It is the official journal of the AOAN, the AOCNA, and the ASNA. *Neurology Asia* publishes 4 issues each year. *Neurology Asia*’s Web site ([www.neurology-asia.org](http://www.neurology-asia.org)) is open access and averages 700 visits a day.

Education is the key to improving neurologic care in the region. The Asian Epilepsy Academy (ASEPA) was founded in 2002 by the International League Against Epilepsy as an educational initiative. Some of its activities may provide a template of effective regional networking. ASEPA organizes approximately 10 workshops on different topics each year in various locations around Asia. The speakers are primarily from within the region. This model has proven to be cost-effective in reaching out to areas that may not be able to afford the more costly regional congresses. The ASEPA-ASNA EEG certification examination consists of 2 parts modeled after the American EEG Board. Over the last
10 years, more than 240 candidates have completed the certification. It has proven to be effective in raising the standard of EEG practices in China and Indonesia. The ASEPA also helps to organize fellowships of 3- to 12-month duration. Fellows are selected based on the needs of their community as well as on merit. Almost all returning fellows continue to serve in their own communities after completion of training.

There are challenges to improving neurologic care in Asia. Regional networking can contribute significantly to improving the quality of care.

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REFERENCES