

## ◆ Definitions

- ◆ The respondents were asked about the distribution of **essential drugs for neurological disorders** by the government through the primary care system. In countries

where the drugs for neurological disorders are reimbursed by the government or social health insurance, they are considered to be available in the primary health-care system.

## ◆ Salient Findings

- ◆ In 22.5% of the responding countries, all standard drugs for neurological disorders are available through the primary health care system.
- ◆ Regarding the various groups of drugs, at least one anti-epileptic drug (mainly phenobarbitone) is available through the primary health care system in 84.4% of responding countries. In 24.1% of low-income countries, no antiepileptic drugs are available through the primary health-care system.
- ◆ Regionally, not even one antiepileptic drug is available through the primary health-care system in 6.2% of responding countries in Africa, 21.4% in the Americas, 10.5% in the Eastern Mediterranean, 18.6% in Europe, 16.7% in South-East Asia, and 22.2% in the Western Pacific.
- ◆ Anti-Parkinsonian drugs are unavailable at primary care level in 39.4% of responding countries.

- ◆ There is large variation in the availability of anti-Parkinsonian drugs across different income groups: 17.2% of the low-income countries reported the availability of at least one anti-Parkinsonian drug, while 84.4% of the high-income countries reported that at least one anti-Parkinsonian drug is available through the primary health-care system.
- ◆ The availability of anti-Parkinsonian drugs through the primary health-care system also varies widely across regions: 12.5% in Africa, 57.1% in the Americas, 73.7% in the Eastern Mediterranean, 79.1% in Europe, 33.3% in South-East Asia, and 44.4% in the Western Pacific.
- ◆ Regarding certain other drugs, immunomodulators such as interferons or immunoglobulins for neurological disorders are available through the primary health-care system in 32.1% of the responding countries.

## ◆ Limitations

- ◆ Responses on specific medications were not obtained on a structured format, so there may be some unreliability in the estimates. For example, some drugs (e.g. aspirin) may have been left out.
- ◆ Some of the respondents from the European Region reported that no drugs are dispensed by the government through the primary health-care system. This could be a possible reason for the nonavailability of even one anti-epileptic drug through the primary health-care system.
- ◆ It is also possible that the availability of the drugs is not uniform across primary care centres in a country as information regarding quality of services and availability within each country was not obtained.

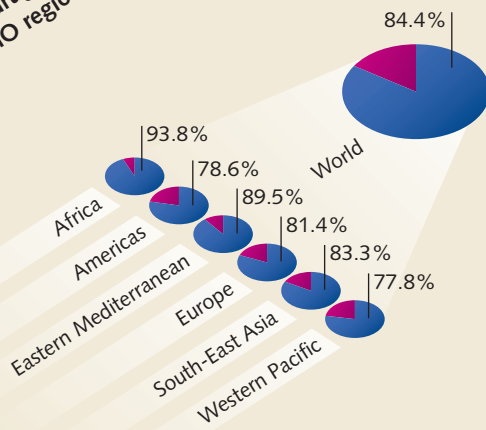
- ◆ Some of the countries responded that government policy provides for these drugs but financial constraints limit their availability in the primary care setting.
- ◆ Availability in a country of even one drug in each category, e.g. phenobarbitone in the antiepileptic drugs, drew an affirmative response. Thus the results fail to differentiate between countries where a wide range of medication is available (e.g. newer antiepileptics) and those where only one or two conventional antiepileptic drugs are available.

## ◆ Implications

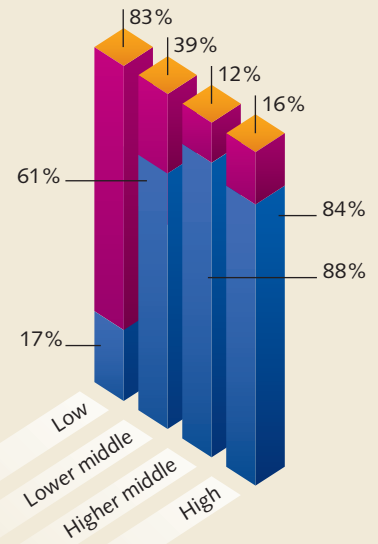
- ◆ The nonavailability of drugs in the primary care setting is one of the many reasons for the treatment gap in epilepsy. Because the treatment gap involves much more than the nonavailability of antiepileptic drugs at primary care level, however, other causes – especially related to access and utilization of health services and the problem of stigma – need to be dealt with to decrease the gap.

- ◆ The inequity in availability of drugs for neurological disorders across regions and income categories and also within a country needs to be tackled in order to improve the level of primary care for neurological disorders.

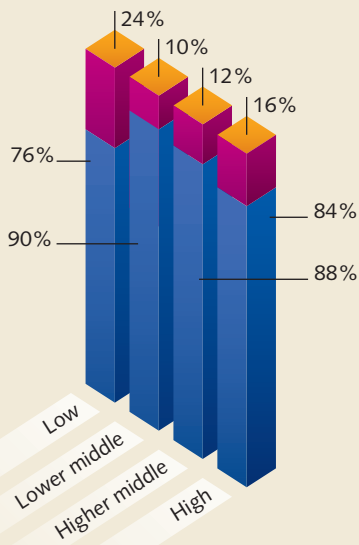
**3.1** Availability of at least one antiepileptic drug in primary care in WHO regions and the world  
N=109



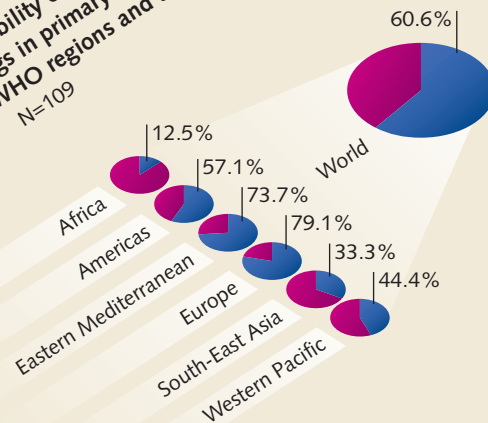
**3.3** Availability of anti-Parkinsonian drugs in primary care in different income groups of countries  
N=109



**3.2** Availability of at least one antiepileptic drug in primary care in different income groups of countries  
N=109



**3.4** Availability of anti-Parkinsonian drugs in primary care in WHO regions and the world  
N=109



## ◆ Definitions

- ◆ Information on the **neurological disorders encountered by specialists** has implications for health care and teaching. To serve as effective patient advocates, providers of neurological care need to understand the local profile and effects of neurological disorders to plan resource allocation for health care and prevention, neurological care, research goals and medical education.
- ◆ The respondents provided the five most frequently encountered neurological disorders in specialist settings. Ignoring the order of the responses, the proportion of countries that mentioned each of the following diseases was calculated globally and for each of the regions.

## ◆ Salient Findings

- ◆ Globally, epilepsy (92.5%) and cerebrovascular diseases (84%) followed by headache (including migraine) (61.3%) top the list of the diseases most frequently seen by a neurologist.
- ◆ Parkinson's disease (46.2%) and neuropathies (35.8%) were the other major diseases encountered in specialist settings.
- ◆ Epilepsy, cerebrovascular disease and headache (including migraine) are also the three top conditions encountered by neurologists in all the regions.
- ◆ More than one quarter of respondents reported that a neurologist's opinion is sought for Alzheimer's disease and other dementias and in multiple sclerosis.

## ◆ Limitations

- ◆ The frequency of neurological disorders in various settings is a rough estimate; data were not collected and calculated using stringent epidemiological research methods as for prevalence studies. The information is based on the impression of a key person in a country and not on actual data from countries.
- ◆ Although this information is available from only 106 countries, the data represent 90% of the world population. Regionally, the data represent more than 80% of the population for all the regions except Africa, where they represent 52% of the population.

## ◆ Implications

- ◆ Major inputs in health care and prevention and priorities for research should be focused on locally prevalent neurological disorders.
- ◆ The training curriculum of neurologists should concentrate on the prevention and management of these disorders.

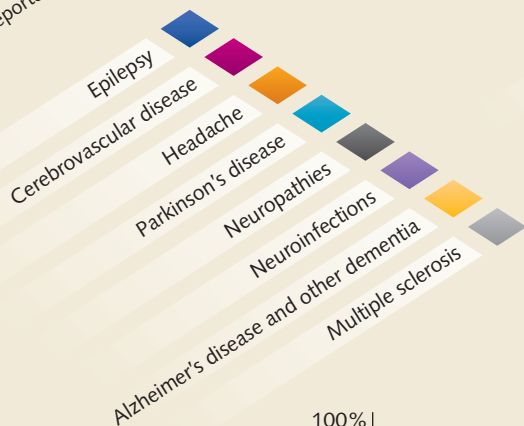
### Review of literature

Epilepsy, headache and cerebrovascular disorders featured most frequently (88%, 88% and 76%, respectively) among the top five neurological disorders in the studies describing the prevalence of neurological disorders in specialist settings (22–38). Neuropathies and neurological problems caused by vertebral disorders ranked next (36% each). Parkinson's disease and multiple sclerosis were also identified among the top five conditions seen by neurologists in 29% of the studies. Cranial trauma (24%), functional and psychiatric disorders (18% each), dizziness and vertigo, and alcoholism (12% each) and herpes zoster and Down syndrome (6% each)

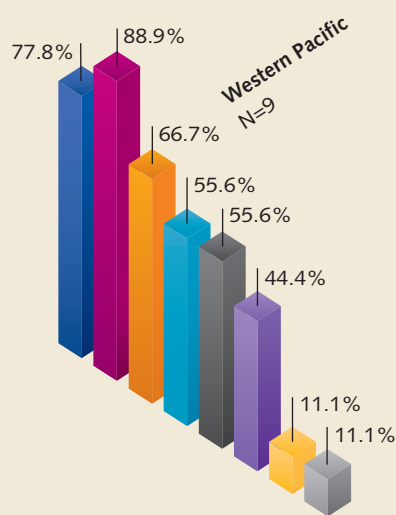
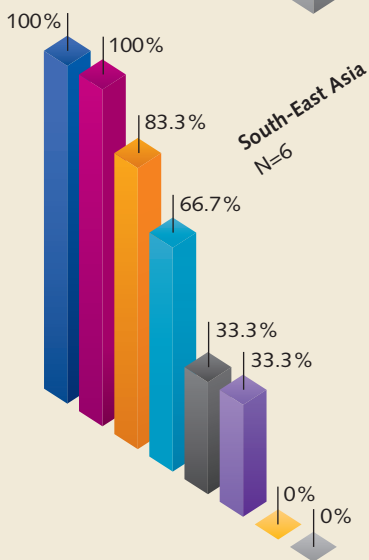
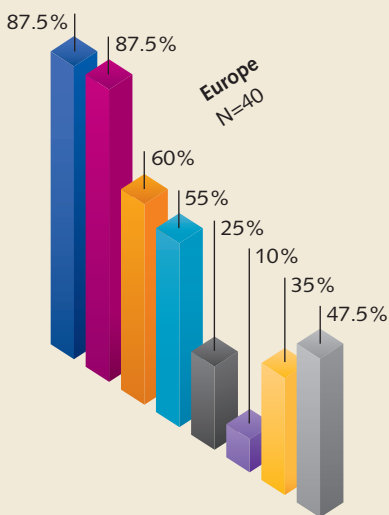
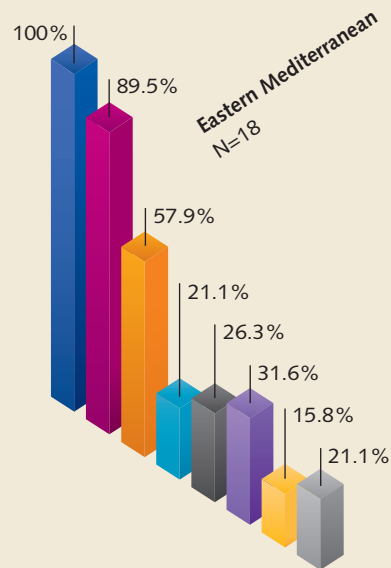
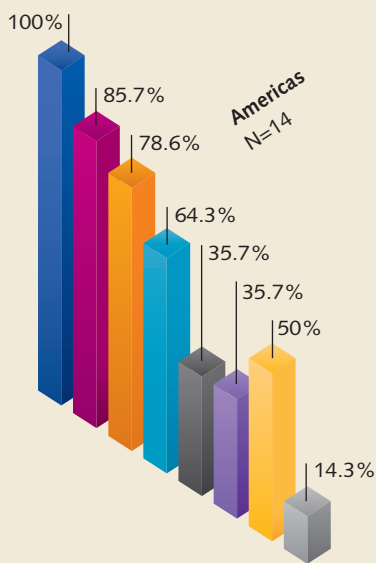
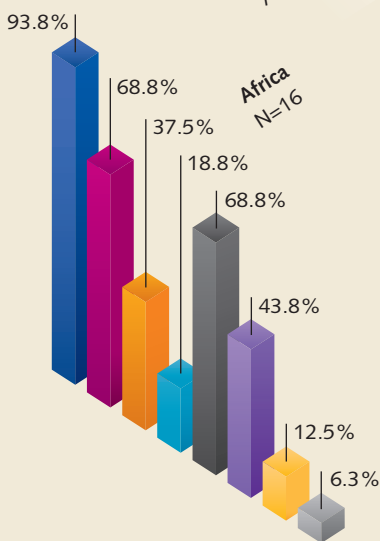
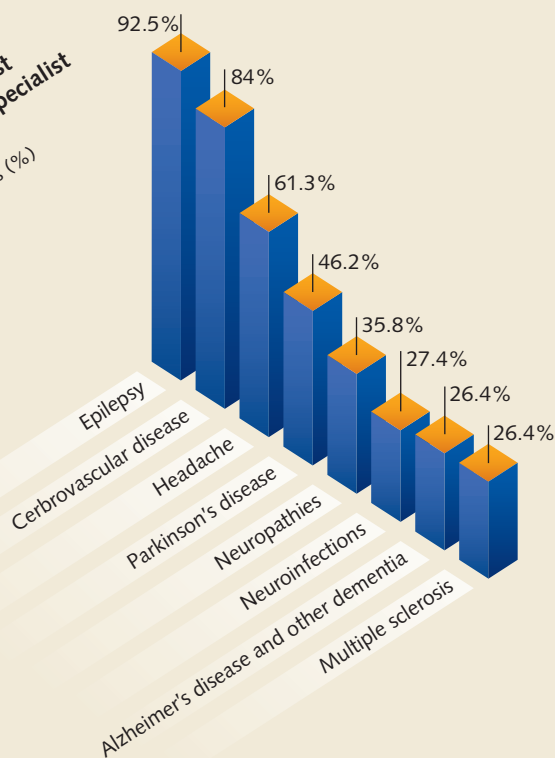
also featured among the top five neurological disorders seen by specialists in some studies.

Cerebrovascular disorders and stroke appeared among the five most frequent inpatient diagnoses in a study describing the neurological inpatient services in 14 post-communist central and eastern European countries (39). Epilepsy was the second most common diagnosis to feature in the top five conditions in 85.7% of the countries, followed by neuropathies (71.4%), neurological problems caused by vertebral disorders (57.1%) and multiple sclerosis (42.9%).

**4.2** Neurological disorders most frequently reported in specialist care in WHO regions  
 Reported by countries (%)



**4.1** Neurological disorders most frequently reported in specialist care by countries  
 Reported by countries (%)  
 N=106



## ◆ Definitions

- ◆ A **neurological bed** is defined as a hospital bed maintained only for use by patients with neurological disorders on a continuous basis. These beds may be located in

public or private neurological hospitals, general hospitals, or special hospitals for elderly people or children.

## ◆ Salient Findings

- ◆ A total of 251 455 neurological beds are reported to be available in 95 countries.
- ◆ The median number of neurological beds in the responding countries is 0.36 per 10 000 population (interquartile range 0.03–1.35).
- ◆ Almost 70% of the responding countries have access to less than one neurological bed per 10 000 population. In terms of population coverage, only 8.8% of people have access to more than one neurological bed per 10 000 population.
- ◆ The median number of neurological beds per 10 000 varies widely across regions: 0.03 in Africa and South-East Asia, 0.15 in the Eastern Mediterranean, 0.17 in

the Americas, 0.26 in the Western Pacific, and 1.71 in Europe.

- ◆ The median number of neurological beds per 10 000 population across different income groups of countries also varies: 0.03 and 0.24 for low-income and lower middle-income countries, respectively, while the numbers are 1.83 for higher middle-income countries and 0.73 for high-income countries.
- ◆ The median number of neurological beds per 10 000 population is higher for countries with smaller populations (0.63 each for countries in population categories I and II) compared with larger populations (0.10 and 0.20 for countries in population categories III and IV, respectively).

## ◆ Limitations

- ◆ In many countries, beds are not earmarked for patients with neurological disorders but are part of the pool for internal medicine, neuropsychiatry, geriatrics, paediatrics or general beds; and these may not have been reported.
- ◆ Moreover, in many countries patients with various categories of neurological disease, e.g. cerebrovascular disease, meningitis, or status epilepticus, are managed on beds allocated to internal medicine, emergency services or intensive care units, and these may not have been reported.
- ◆ No information is available on beds available in rehabilitation, chronic care or centres for the elderly.

- ◆ The lower number of neurological beds in high-income countries compared with higher middle-income countries cannot be fully explained. Among the possible reasons are that many high-income countries may not have beds earmarked for the care of patients with neurological diseases, specialized units (stroke units, spinal centres, epilepsy units) are not defined among the neurological beds or there could be other reporting errors. Many of the higher middle-income countries are in central and eastern Europe, where neurological services are well developed and where a broader spectrum of diseases is labelled neurological, e.g. vertebrogenic diseases, and managed in neurological facilities.

## ◆ Implications

- ◆ Though not essential for the provision of neurological care, designated beds may be considered to be an indicator of the level of organization of neurological services in a country.
- ◆ The inequity in neurological services observed across income categories, population categories and geographical

areas needs to be specifically dealt with. Separate neurological hospitals with a large number of beds may not be desirable, but a neurological facility as a part of a general hospital is necessary for comprehensive management of neurological disorders.

### Review of literature

Very few reports are available (16 countries from the European Region) describing the availability of neurological beds (21, 39, 40). A median number of 3.5 (interquartile range 0.8–7.1) neurological beds per 10 000 population are available in the countries studied. This figure is congruent with the Atlas data wherein a median

number of 3.02 (interquartile range 0.4–6.8) neurological beds per 10 000 population are present in these countries. In European countries, recommendations are available regarding the required number of neurological beds: these recommendations vary from 1.5 to 7.3 neurological beds per 10 000 population (21, 41).

