warning and routine surveillance systems, epidemiological and outbreak investigation skills, laboratory expertise, information and communication technologies, and management systems. WHO will continue its traditional role of providing support for national capacity building to achieve these core capacities.

A short list of diseases (figure) needing mandatory notification to WHO are included in the decision instrument; however, countries are now also required to assess the international public-health threat posed by any unusual health event, including those of unknown causes or sources, and outbreaks caused by agents with the known ability to cause serious public-health effect and to spread rapidly internationally. Importantly, WHO can now use a range of sources of health intelligence to raise an alarm and begin a process of verification with countries that have not voluntarily reported significant health events. Parties capitalised to the IHR are required to inform WHO within 24 h of the receipt of evidence of a public-health risk that might cause international spread of a disease. Finally, if WHO obtains credible evidence that a public-health event of international importance has occurred and fails to obtain disclosure and cooperation by the affected state, it has discretionary power to release the public-health information required to protect global public health.

The IHR work on the principle of global public good—protecting public health through early detection and response to public-health emergencies benefits the nation concerned and reduces the risks of spread to other nations. Their impact will be limited unless national governments accept their global public-health responsibilities. Furthermore, because most human emerging infectious diseases are zoonotic in origin, there is a need for close collaboration between the veterinary, human health, and wildlife sectors. The regulations of the Office International des Epizooties, the veterinary counterpart of the IHR, face similar challenges as did the IHR (1969), and perhaps need a similar overhaul. The problems currently faced in confronting the threat to human and animal health posed by the outbreaks of avian influenza A H5N1 in Asia amply illustrate this contention. The IHR (2005) will enter into force in 2007.

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Naming seizures

The nomenclature of epileptic seizures has always been confusing. Many historic terms, still in use by the public and even by some physicians, convey little information about the anatomy or physiology of the event. “Grand mal” and “petit mal” are hardly preferable to the simpler “big” and “little”. In 1965 the International League Against Epilepsy (ILAE) formed a commission to develop improved terminology, which led to the International Classification of Epileptic Seizures (ICES), last revised in 1981. This document was supplemented in 1989 by the International Classification of Epilepsies and Epilepsy Syndromes, which takes into account causation and other clinical features. In the ICES scheme, the fundamental dichotomy is between “partial” seizures (arising in a focal area of the brain) and “generalised seizures” (“those in which the first clinical changes indicate initial involvement of both hemispheres”). Despite decades of effort, the ICES terms remain hard to explain to
Comment

non-neurologists and to lay people. One of my patients told an emergency physician that she had partial seizures and was told “you can’t have a partial seizure, either you have a seizure or you don’t!” To explain the concept of generalised seizures to medical students, I tend to fall back on lame statements such as “they seem to begin everywhere at once”. The astute ones recognise the illogicality.

Recently, Mark Holmes and colleagues1 cast doubt on the validity of the concept of “generalised” seizures. With dense-array electroencephalographic (EEG) recordings from 256 electrode-sites on the head and mathematical source-analysis techniques, these investigators showed that absence seizures (“petit mal”) are not generalised. The seizures arise and are sustained mainly by specific areas of the frontal lobes, especially the cingulate gyrus and other anterior mesial and frontopolar regions.

Absence seizures require the alternate 3/s rhythmic firing of both thalamic and cortical neurons,4 but there has been a chicken-versus-egg debate about which comes first.5 Because of the term “generalised”, one could speculate that the whole cortex is abnormal in some way, but this may not be so. Holmes and colleagues’ EEG data suggest that only certain frontal regions are essential for the seizures. The typical loss of consciousness at the start of an absence seizure does not prove involvement of the entire cortex; the anterior cingulate is critical for maintenance of arousal.6 The role of the thalamus might be primary (should we then call them “thalamic seizures”?) or secondary. The anatomically restricted nature of absence seizures has been suggested by other EEG analyses7 and by focal brain-oxygenation changes as measured by functional MRI (fMRI) in an animal model.8

Furthermore, absence seizures involve specific neurochemical features: T-type calcium channels and neurons that secrete γ-amino-butyric acid are integral to their mechanism.9

Holmes and colleagues’ conclusions require verification, perhaps by magnetoencephalography in human beings or intracranial EEGs in animal models, but they make sense. Indeed, it is hard to imagine a physical process which originates instantly and simultaneously over hundreds of square centimetres of cortex. One would have to invoke some kind of magical synchronicity. Although Holmes studied only absence seizures, the findings might be more broadly applicable. “Generalised” seizures of all varieties logically must have an origin in some specific region or system of neurons, but they propagate with such rapidity that they require special techniques to trace their path.

The naming of seizures is not just of academic interest. The presumed dichotomy between partial and generalised seizures drives current therapy. Drugs are chosen for patients based on their effects on partial or generalised seizures, or both. Clinical trials of new antiepileptic drugs require investigators to sort patients into one of only these two categories. Only patients with partial seizures are deemed surgical candidates. If there is no such thing as a seizure generalised from the beginning, perhaps the brain regions identified as initiators or pacemakers for “generalised” seizures should be a focus for research. Pharmaceutical inquiry should explore the local neurochemistry of these sites or systems. In theory, these regions could also be targeted for surgical disruption or electrical stimulation.

Should we discard the ILAE seizure classification? It has been a useful tool for communication among physicians, especially across language barriers. However, we must understand that it is only a working sketch of a complicated picture. It will be supplemented increasingly by more sophisticated descriptions of the anatomical, physiological, genetic, and neurochemical identities of each seizure type.

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I declare that I have no conflict of interest.