

Different Needs in Different Regions

Walter Kucharczyk, M.D., F.R.C.P.C.

Plenary lectures at the ISMRM annual meeting have often been vehicles for presenting the latest and most advanced MR developments in the world. Typically these advances are developed and tested in a university or commercial laboratory, presented at meetings such as ours, and if they show promise towards providing new capabilities, new information, or some other significant value, vendors will incorporate them into their products, whereupon they diffuse through the world to varying degrees. The “world” into which they diffuse to the greatest degree is the “ISMRM-world” – Europe, America, Japan, Korea and Australia, and more recently, certain segments of China. Attaining the best possible images with the most advanced sequences is of key importance to many in the ISMRM-world. MR practitioners in the “ISMRM- world” are often willing to invest extra time and money to attain the most information and the best possible images, even if the diagnostic value of the incremental information so achieved is small or uncertain. Other regions of the world have different needs, and have more limited health care resources. The purpose of this plenary is to explore the needs in these regions - those outside the “ISMRM-world”.

In many parts of this other world, xray and ultrasound are the mainstays of imaging. Any type of MRI, let alone high-field MRI with the latest software, is a luxury limited to private centres for upper and middle class patients. For public institutions in these regions, waiting lists are very long, and access very limited. The emphasis is on examining large numbers of patients quickly, yet with sufficient detail to attain a basic diagnosis – no more and no less. Exam cost and exam speed are very important factors. MR centres lower costs by purchasing less expensive scanners (often “low-field”), paying low wages to doctors and technologists, having high patient throughput, and minimizing their use of consumables, all in their efforts to keep charges and costs low. For example, in India the charge for an MRI exam may be as low as \$75, a small fraction of that in the USA. Some clinics in India and China conduct exams every 15 minutes and scan and examine as many as 40 or more patients a day. In this context, performing four basic exams on four patients in one hour has greater value than doing one exam with many additional sequences in that same hour. There is a need for fast and robust MRI protocols.

There is also a need for MR education. MR training and work experience is more restricted in these regions. Advanced scanning equipment is not available at all medical institutions, often limited to major universities or private clinics in large cities. Graduate resident medical education often emphasizes specialization in a particular scanning mode – e.g. ultrasound or CT or MRI - rather than all modes in a particular body system. The scarcity of equipment also affects how hospitals and clinics organize their radiology work and so reinforces specialization in particular scanning modes. As a result of educational practices, only a limited number of radiologists acquire the ability to utilize a range of scanning modalities to investigate abnormalities on a multi-modality organ-system or disease-based approach. There is a need for broader MR education in these regions, and given that MR continues to develop relatively rapidly, this education should be ongoing.

Some scholars argue that expensive technologies such as MR do little to improve overall health care. There is some truth in that view, but the situation can be improved. As an international society of educators and scientists, the ISMRM and its members should work with MR vendors to develop not only cutting edge innovations, but to develop low cost robust MR systems, and fast time-efficient imaging protocols. The ISMRM must also help educate health care providers and scientists in these other regions of the world in MR methods and interpretation.