Teleneurology is the practice of neurology when the patient and the neurologist are not in the same place, using modern communications technology. Why should you need to know about it? Well there are some serious problems with access to neurology in the United Kingdom, Ireland and the developing world. In the UK there is only about one specialist neurologist per 150,000 of the population now, but if you think this is bad, Mandalay in Myanmar has one neurologist for 2.5 million people. Furthermore, neurological symptoms are a very common cause of acute admission to hospital. Neurologists are increasingly involved in the care of not only these patients but also many outpatients with neurological symptoms referred from general practitioners (GPs) because the consultant physicians who have traditionally looked after many of them are becoming ever less skilled in neurology. The obvious solution to this problem of access – to increase the number of neurologists – will not happen overnight and it is worth looking for some short-term solutions.

Part of the definition of teleneurology is that the neurologist and the patient are not in the same place. The gold standard neurological consultation is face-to-face and this has changed very little since the time of Charcot despite enormous advances in our knowledge about diseases and investigations, and despite advances in communication technology. Indeed, neurologists are often apprehensive about providing an opinion without seeing the patient face-to-face, yet almost all of us give advice when telephoned by GPs, or when stopped in the corridor by a colleague.

The modern communication technology used in teleneurology is not too complicated. Videoconferencing equipment is used extensively in the commercial sector. It now comes in the form of a set-top box including a camera. The information is transmitted over ISDN lines, which are readily available from telecommunications companies in developed countries.

This technology has been applied to neurology to enable real-time consultations between a neurologist and a patient. It requires a bank of three ISDN lines to provide sufficient video quality to view a neurological examination (a bandwidth of 384 kilobits per second in technospeak). This has been shown to be feasible, acceptable to patients and doctors, effective, cost-effective in terms of reducing length of stay for inpatients, and safe with long-term use (Craig et al. 2000). Successful introduction is difficult and three things are essential: first, a local champion; second, technical support from somebody who knows about videoconferencing equipment, and third, sufficient time to get things started (Wootton & Craig 1999). The capital cost of the equipment is usually the least problematic. Once established for inpatients this technique can be applied to neurological outpatients and to patients with epilepsy. The neurological examination, if required, can be carried out by a trained nursing assistant and does not require a doctor.

The other type of teleneurology uses e-mail, which is now very widely available, both in the developing and the developed world. The advantage of e-mail is that it is a store-and-forward technology, so that the referring doctor and neurologist do not have to deal with the referral at the same time. E-mails are legible, they can have clinical pictures or radiological images...
as attachments, but most importantly they get there quickly so that a consultation can be completed within 24 h. This is not something that can be achieved by an exchange of letters. We have shown that e-mail consultation can deal effectively with extremely complicated neurological inpatients in a rehabilitation hospital in Bangladesh (Patterson et al. 2001) and it is ideal for providing neurological opinions from the industrialized world to the developing world.

This technique is also useful for outpatient neurological referrals from general practice, which essentially involve determining whether someone has a ‘structural’ neurological disease that requires specific treatment and management, or ‘non-structural disease’ requiring a diagnosis and reassurance but no specialist neurological follow-up. Using a structured e-mail proforma, a neurologist can do much of this triage without seeing the patient, and without keeping patients waiting for 6 months until they come to a neurology clinic. Happily this system is both safe and sustainable (Patterson et al. 2003). It does not require extra equipment other than a computer with e-mail facility and simple anonymity protocols render the system secure.

It is important to remember that teleneurology is a form of neurology, so it’s for neurologists to organize and not information technologists or hospital managers. It does produce clinical challenges however. To use it you need to live with a little bit of uncertainty and it is probably not for you if you are paranoid about missing a case of neurological Whipple’s disease. Teleneurology will benefit your patients, your referring GPs, your physician colleagues, your hospital managers, and your local politicians. It will also provide benefits for you – the patients you do see face-to-face will be more relevant, you will travel less, and you will be able to do more work from home. It’s definitely time for teleneurology.

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Time for Teleneurology

Victor Patterson

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