that we may never have good evidence of their efficacy.

The cerebral palsies are very different from focal dystonias, particularly in their involvement of a large number of muscle groups. Hypertonus is often not the main problem, and botulinum toxin could exacerbate the loss of motor control and weakness that often occur unless the problem of motor control is focal hypertonus. Recent publications by a group in Belfast have begun to clarify some of the basic science and clinical issues. The group used a developmental model of a hereditary spastic mouse and in a randomised controlled study injected gastrocnemius before symptoms occurred.[9] This produced obvious transient weakness for up to 10 days, and at maturity the muscle length had been sustained in the treated group but the expected shortening of the muscle belly (contracture) had occurred in the control group.

The group's paediatric study was an open, uncontrolled study of 26 children aged 2 to 17: eight with hemiplegia, seven with diplegia, and 11 with appreciable involvement of both arms and legs ("quadriplegia").[10] The study was confined to the calf (32 muscles) and hamstring (21 muscles) in children without "obvious" fixed contractures in whom "an abnormal increase in muscular activity was interfering with function." Within a few days of injection with botulinum toxin A all but one injected muscle had developed decreased tone, which persisted for between six and 16 weeks. The parents of 14 of the 26 children reported considerable functional improvement with an appreciable shift in ambulatory status; only one child showed deterioration. In the group who received injections into the calf muscles the range of passive and active dorsiflection at the ankle improved mainly in those under 7.

Of those who received hamstring injections (all but five of whom also received injections of gastrocnemius), the range of passive and active movement at the knee increased and the improvements did not depend on age. In two children with appreciable foot inversion and dystonic features injection into the tibialis posterior resulted in substantial improvement. Although many patients relapsed as expected after two to four months, some showed persisting gains and evidence of strengthening of antagonist muscles. No systemic side effects or spread of weakness to surrounding muscles was seen.

A group from North Carolina recently reported the results of a small randomised double blind trial in which botulinum toxin was injected into the calf muscles of children with cerebral palsy.[11] Improvement occurred in five of the six children given active compound compared with two of the six children given saline.

Larger randomised controlled trials are obviously needed. If these confirm benefit then botulinum toxin could find several uses in the treatment of the cerebral palsies. These include the modification of early patterns of axial asymmetry that may influence later development of the spine and hips. It could be used early to modify the effects of spasticity on soft tissue and bone, thereby reducing the extent of later surgery.[12] It could also be used to mimic the effects of possible surgical procedures. It could provide a time window for physical, including orthotic, interventions—for example, in thumb adduction in hemiplegia[13] and unilateral hip adduction in early wind sweeping of the lower limbs in severely affected non-ambulant children. And it could be used to treat focal dystonias within the cerebral palsies, for which surgery has gained such a bad reputation.

Regular injections of toxins over years are unlikely to be acceptable to children despite the toxin's obvious advantages over phenol and alcohol as a local agent, and their effect may not be sustained. Botulinum toxin is expensive and requires further studies combining careful clinical and biomechanical delineation of specific problems and methodological rigour. The subject also demands the cautious style of reporting that the Belfast group has used in an attempt to curb the media impression that this is yet another "cure" for cerebral palsy. Botulinum toxin may become one modality in the integrated management of the cerebral palsies.

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Follow up by telephone

It may be just as good to talk on the telephone as in a clinic

Health service workers seem to regard the telephone as intrusive. For patients and staff alike, mention of the telephone conjures up images of haughty, unhelpful receptionists and tardy, impolite switchboard operators. Its insistent ring demands immediate attention, interrupting the ward round and disturbing consultations. For patients a call from the hospital is often bad news, and they are expected to call the hospital only when absolutely necessary. Even in the newly consumer conscious NHS the interaction between staff and patients over the telephone can hardly be described as convivial.

And yet, with a little imagination, the much maligned telephone could be used to improve patients' care. Take several examples from the United States. Jones *et al* have shown that telephone follow up of patients attending an emergency room can be beneficial.[1] In one month 281 patients (15% of the total) were selected for such contact. Two fifths of the patients needed clarification of instruc-

tions they had received on discharge, and six out of seven patients who reported a worsening of symptoms received medical intervention. More recently, a randomised trial tested whether telephone follow up can be used as a substitute for routine follow up in clinics.[2] Doctors doubled the interval between clinic visits in the intervention group and contacted the patients by phone instead. Patients followed up by telephone received fewer drugs and had shorter stays in hospital. Costs were 25% less in patients managed by telephone.

Successful use of the telephone to communicate with patients in a planned and systematic manner has also been reported in clinical genetics,[3] day surgery,[4] obstetrics,[5] neonatology,[6] and community dentistry.[7] Telephone follow up of a more technical nature has also been reported: patients with a cardiac pacemaker were successfully followed up over the telephone with use of a device to transmit details of the pacing and the electrocardiographic trace.[8] These reports claim that systematic telephone follow up results in convenience for patients, better compliance with treatment, less crowded clinics, and financial savings.

Telephone follow up might well be substituted for follow up visits arranged to tell the patient the results of tests done previously and to ensure the patient's compliance with and understanding of instructions. Fewer patients at clinics would mean that those who attended would get more time. For the patients, travel would be avoided—the biggest bonus. Non-attendance at clinics is common; among the possible reasons is an apparent lack of negotiation between the patient and the care giver about the need, purpose, and method of follow up.[9] Clinic managers should consider the potential offered by a programme of planned telephone follow up to reduce non-attendance and thereby reduce waiting times for clinic appointments.[10]

Planning is necessary

Obviously, much thought and planning are necessary before the introduction of a scheme of systematic telephone follow up. Doctors need to be enthusiastic about the potential benefits, and management and clerical support is essential. Telephone follow up must not be delegated to the most junior member of the team; as in day surgery a senior doctor (or nurse) must take personal responsibility. Selection of patients is crucial, and unambiguous criteria should be in place. At the appropriate clinic visit, follow up by telephone should be discussed with the patient and, if the patient is willing, a time and date fixed for the telephone call. Security and confidentiality are important, and the means by which the doctor and patient will identify each other should be established. Time must be set aside for the telephone calls. Case notes and results of investigations must be available, just as in an ordinary clinic. If a clinic visit proves necessary the doctor or nurse making the call should have the means to book an appointment. A note recording the substance of the conversation and any action taken or advised must become part of the case notes.

The option of follow up by telephone may not be available to the few people without access to a telephone, those with whom the health care professional cannot converse without an interpreter, those with a hearing or other disability that prevents them from using a telephone, and those judged insufficiently articulate to be suitable for telephone contact. Telephone contact will not be the only aspect of health care from which these groups of people are systematically excluded. Phoning patients at work may present particular problems; but faced with the alternative of taking up to half a day off work, many patients may well choose telephone follow up.

Problems don't stand up to scrutiny

And the possible problems? Patients may not be in at the appointed time; they may need urgent medical intervention; they may not feel satisfied that they have been attended to; and the whole process may be too time consuming. None of these stand up to scrutiny. Satisfaction among the patients will depend on appropriate selection of cases, and, given the short time that they usually see a doctor compared with the time spent travelling to and waiting in a clinic, most patients would probably prefer follow up by telephone.

Some doctors might be concerned about the legal implications of patient-doctor contact lacking an opportunity for physical examination. The situation is no different from face to face consultation. In both settings the need for an examination or other medical intervention will depend on what the patient tells the doctor or nurse at the time of the contact. An examination is not precluded by the fact that the contact is by telephone, though arranging one may take a little more effort. As always, clear, complete, and legible notes are the best safeguard against any complaint that may arise. Some doctors might find the loss of non-verbal cues unsettling, but telephone follow up is designed for routine follow up after a complete initial assessment. Its purpose is to confirm understanding by the patient of instructions, convey or repeat factual information about diagnosis and prognosis, and reinforce advice on changes in lifestyle.

Will patients accept the idea? We do not know for sure, but 90% of all households (and three quarters of households headed by unskilled manual workers) in Britain currently own a telephone,[11] and increasing numbers of people in developed countries are using the telephone for other than essential social interaction. With tele-dating, tele-polling, tele-marketing, and tele-shopping all becoming increasingly common, perhaps ordinary patients will be more receptive to the idea of tele-clinics than sceptics might think. Hospitals and general practices have nothing to lose and much to gain by adding telephone follow up to their repertoire of services. While it may not be possible for many patients, for some at least telephone follow up may prove to be the next best thing to being seen in their own homes.

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