Economic change and health service reform: likely impact on teaching, practice, and research in neurology*

There are economic, political, and cultural pressures which are likely to impact upon the future practice of clinical neurology, education, and research. Whatever the cultural variation in health care systems and in the organisation of practice of neurology, I believe that health care reform, however desirable in general, may endanger the future of neurology in relation to other medical work.

This is a gloomy statement but, after reviewing the present pressures on our specialty, I conclude by outlining the necessary changes in practice and the needs for research that will, I believe, allow our speciality to continue to flourish in the future and to provide services needed by our patients.

Helping fix priorities for health care
First of all, in relation to the fixing of national or regional priorities for health care, neurologists need to contribute more vigorously to discussions on the topic, to make known the value of neurological care to the community. Although many academic departments of neurology are interested in common clinical conditions such as epilepsy, stroke, and Parkinson’s disease, the general perception of the speciality through the eyes of non-neurologists seems to be that we remain interested in arcane and untreatable disorders. Neurologists should, in consultation with public health physicians and epidemiologists, assess local and national needs for services.

Neurology is part of the Division of Mental Health of the World Health Organisation. It is encouraging that the Division is currently mounting a series of Regional Workshops on the public health implications of neurology.

Access to neurological care
Although governments are pressing for improved access to care, there may not be great pressure for improved access to neurologists. There are six pieces of evidence for this statement.

Firstly, Wilkinson showed that limited time was allocated to teaching neurology in medical schools in the United Kingdom.1

Secondly, hospital care to a community in the United Kingdom is based upon sizeable district general hospitals, each serving a population of 150 000 to 350 000. Such hospitals are now independent trust hospitals within the NHS, with a commitment to the NHS Management Executive to make a financial return on the capital employed. These hospitals need a range of specialists to care for the local community. Gastroenterologists, respiratory physicians, cardiologists, diabetologists, and so on are well represented, but when trust chief executives look around to employ a further specialist, neurology comes low on their list of priorities. Each year in the United Kingdom there are only about seven to 10 new appointments of specialist neurologists for a population of 57 million.2 Informal discussion with a number of colleagues in subspecialities of internal medicine suggests that their failure to press for the appointment of a neurologist is partly related to their failure to appreciate the value of neurological services, but also to the fact that neurologists do not take part in acute duty rotas. Hard-pressed physicians undoubtedly want help with these. The separation of neurologists from the care of unselected acutely medically ill people admitted to hospital in the UK is shared alone with dermatologists.

Thirdly, there are often advertisements in medical journals for interesting posts in developing countries related to obstetric and paediatric care, preventive medicine and surgical practice, but there is virtually never an advertisement for a neurologist in a developing country. This, I submit, is a further illustration of the low priority afforded by health care systems to our specialty.

Fourthly, the market also speaks. Technical neurophysiological, imaging and other investigations now account, it is believed, for more than a third of the average neurological practice earnings in the USA (M. Menken, personal communication, 1994). If these artificially inflated earnings were to be removed, neurologists, like many other internists, would be poorly paid in relation to the surgical specialties.

Fifthly, neurological interventions did not rank high in the Oregon experiment, in which the citizens of this American state were consulted about the health care interventions that the state should fund.3

Sixthly, neurological services do not figure in the top 20 "aspirations" for developing services in a survey conducted by the National Association of Health Authorities and Trusts.4

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1Based on an invited presentation to the 15th World Congress of Neurology.

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4Neurological services do not figure in the top 20 "aspirations" for developing services in a survey conducted by the National Association of Health Authorities and Trusts.
Effectiveness and outcomes initiatives in neurology
For some disorders, such as Parkinson’s disease and epilepsy, neurologists have no difficulty in determining outcomes and endpoints for clinical trials. In the case of Parkinson’s disease, there are well developed measures of functional status.1 In the example of epilepsy, there is sometimes difficulty in determining how to score a reduction in seizure frequency with a new drug,2 but at least in this condition there is an event, a seizure, the presence or absence of which can be recorded. The Medical Outcomes Study in the USA has also introduced useful generic measures of health status, based upon the RAND insurance study.7 Neurologists have difficulty, however, in defining the effectiveness of much of what they do. How do we define the “cost-utility”8 of reassurring someone with tingling in one arm that they do not have multiple sclerosis, or how do we define the “cost-utility” of managing a muscle contraction headache, in which simple reassurance by a neurologist has been shown to be remarkably effective.9

Even when outcomes can be more readily defined, such as a gain in functional capacity after rehabilitation for stroke, neurologists will have to consider how much is attributable to their care, and how much to natural recovery, good nursing practice, or to physical therapy. It is easy enough to say that neurologists are the people who lead such clinical teams, but purchasers may well look around to see whether there are cheaper ways of organising care that may not involve our speciality to the same extent. More rigorous research into the effectiveness and impact upon outcome of many of the procedures we commonly use in our speciality, such as neurophysiological investigations, language therapy, and the use of spinal imaging studies, are likely to lead to further “utilisation review” of these procedures. It will need to be determined just what value they add to the health status of the patient. Any reduction in the use of such procedures will affect the incomes of the health professionals presently concerned, and future recruitment to these areas.

Purchasing neurological care
Purchasing organisations in the NHS are consolidating into larger groups. A number of district health authorities are merging their purchasing function to reduce central administration costs, and to increase the leverage on, or “clout” with, providers. Such consolidation is likely to lead to more informed decisions about cost-effective care, which is to be welcomed, but the history of bureaucracy is that larger organisations tend to be more rigid and less ready to alter procedures to look after the individual patient. We are likely to see the development of more specific contracts for care based on “practice guidelines.”10,11 Although attempts have been made to produce guidelines for the management of some neurological disorders—for example, ref 12, it is my view that “practice guidelines” are better suited to acute incidents of care, such as the management of myocardial infarction, or, in our speciality, of status epilepticus. In the management of chronic or progressive neurological illness, however, individual variations in severity or rate of progression, and variations in the domestic and economic circumstances of individual patients, and in individual preference for different types of support and intervention, make centrally produced practice guidelines less relevant. In the case of chronic illness and disability, the patient becomes the expert in his own illness and disability.13 There may therefore be difficulties in negotiating with large purchasers individual packages of care that satisfy such patient “experts”.

Care in the community
In all countries in which there is some centrally funded health care, there are government, and thus budgetary, distinctions between health care and social welfare support. Yet for many of those with chronic neurological illness and disability, financial support in the community is as important as the quality of life as health care interventions. The division between health and community care budgets is sharply demarcated in the UK,14,15 and we are beginning to see problems at the interface. For example, help to a neurologically disabled person in taking a bath at home is considered “health care” if the assistance is provided by a nurse, and “social care”, coming from a different budget, if the same assistance is provided by a social welfare worker.

With regard to the appropriateness of care, a term considered elsewhere,16 there is likely to be a wider debate about what is appropriate in neurological practice than in other sub-specialities. For example, the presence of an active spouse—certainly a non-medical variable—largely determines ease of discharge from hospital after a stroke.17 But “utilisation review” by a purchaser may consider continued inpatient care to be inappropriate. As a separate issue, there is ethical debate about high levels of expenditure that produce only marginal gains in the quality of life. One United Kingdom neurosurgical study has calculated that the cost of treating a malignant glioma is over £60 000 at 1984 prices per quality-adjusted life year (QALY) gained.18 As these figures become more widely known, our patients may not receive the care we would like to give them because QALY calculations favour the purchase of other interventions such as hip replacement, for which the cost per QALY gained is cheap. Some of the practical and ethical difficulties in using QALYs have been discussed elsewhere.19

Problems for providers
Providers of neurological care are likely to have to meet purchasers’ demands for reduced costs. The capital costs of provision of imaging and neurophysiological investigation and the associated revenue staffing costs, and the need to use these intensively, are likely to mean the concentration of neurological (and neurosurgical) facilities and related intensive therapy beds on fewer sites. Programmed outpatient investigation will need to be better planned to avoid unjustified, repeated, long distance travel costs falling upon individual patients.

Advantages of concentration of neurological facilities on fewer sites do obviously include greater academic association, and probably improved outcomes related to higher volume. There are disadvantages, however, to the centralisation of neurology, not only in terms of more difficult geographical access by patients, but also a likely increase in the relative isolation of neurology from other specialties. Many non-neurologists feel that we should be more closely related to general internal medicine,20 and to primary care.

Domain of neurological practice
We need to be more explicit about what lies within the domain of neurological practice. Neurologists have to consider how much primary care they should do. The much larger numbers of neurologists in the United States and in many European countries than in the United Kingdom21,22 suggest, in the presence of a similar burden of neurological morbidity, that many American and, for example, Italian, neurologists fulfil many functions that in the United Kingdom are carried out by the general
practitioner. Neurologists in the United Kingdom also need to consider how much continued care and emotional support they should give in the management of chronic illness, and how much should be the responsibility of the primary care team and, for example, community rather than hospital based physiotherapy. Links with neurorehabilitation, psychiatry, geriatrics, paediatrics, and clinical neurophysiology also need to be made explicit. All neurologists will recognise that there are different types of neurologist (table 1), but not all purchasers will.

Users of neurological services
Users of neurological services, the patients, and, for some, their carers or assistants need to have their voices heard. On a national basis, a group of neurological charities responded to *The health of the nation* by proposing specific targets for clinical practice and audit, and specific areas for future research. At a local level, neurologists must encourage their local community to suggest not only what services they would like to see provided, but also how they might be provided. It must be remembered that purchasers are only the proxies for the local voices of patients and potential patients. Local users and their local neurologists together may form powerful alliances in pressing purchasers to set up effective services provided in a way that users want.

The primary users of a neurologist’s services are of course the patients, but it must not be forgotten that, in many senses, general practitioners and other members of the primary care team are also users of neurologists, and their thoughts and wishes about how the service might be provided should also be sought.

Patient choice
Neurological patients need to be better informed about specific choices of interventions that are effective for their disorders, and about the probabilities of favourable and adverse outcomes of each intervention. From the work of the community of neurological researchers, we are now getting increasingly robust information about the efficacy of interventions from randomised controlled trials. For example, we know from the Medical Research Council European carotid surgery trial, which recruited nearly 800 patients, that the risks of surgery for those with a greater than 70% stenosis were significantly outweighed by later benefits. Although 7·5% of those operated upon had a stroke or died within 30 days of surgery, during the next three years the risk of ischaemic stroke in the relevant hemisphere was only 2·8% for those allocated to surgery, compared to nearly 17% for those continuing on medical treatment. Although these probabilities are understandable in technical terms, how can we present these in a form which is comprehensible to patients, and how do we help patients reach a decision about the relative utility of an early stroke or the reduced probability of a later stroke, when they have had no previous experience of such a health state? Research shows that the way that a statement is framed has a major impact upon the way that risks are perceived. This is not a problem peculiar to neurology, but our speciality should take a lead in research as to how best to explain such issues to patients.

Neurological education, training, research, and reform
University medical schools and associated hospitals have until very recently in the United Kingdom operated what is often called a “knock-for-knock” system. The hospitals recognised that much highly competent clinical care is provided free by university faculty. Conversely faculty members gained by hospitals funding investigations which, with the patient’s consent, may be part of a research protocol or randomised controlled trial. A trial of a new therapy for Parkinson’s disease might require the recruitment and careful assessment by repeated follow up of several hundred patients. Although pharmaceutical companies have, quite properly, profit-funded such trials, they seldom, if ever, have borne the full cost relating to inpatient admission, associated investigations, neurological staff time, and so on. It is now more widely realised that pharmaceutical companies have enjoyed a bit of a free ride in these respects. Once costed out properly, such trials may become even more prohibitively expensive than they already are.

Some of the faculty’s infrastructure costs such as laboratory space and secretarial help have also been borne, without too much complaint, by the hospitals. The separation of purchasing and provision now means that this happy arrangement is coming to an end. All hospitals are required to make a profit, and many do not see why they should subsidise research or education in any specialty.

In regard to education, I include here postgraduate education and training. An individual hospital, out to make a profit, will take on neurological residents as “pairs of hands”, but if time is taken away from the coal face of clinical work for a proper programme of postgraduate education and training, the value of neurological residents to the hospital will increasingly be questioned. Why should an individual hospital, out to make a profit, subsidise the training of a nation’s next generation of doctors? It can only do so by charging higher prices, and risk losing patients to the less altruistic hospital in the next suburb. In the United Kingdom, a hospital would almost certainly do better financially to employ staff grade (sub-consultant) neurologists, although probably less good outcomes would be delivered. Specialities which are largely consultative, such as dermatology and neurology, are at risk of being staffed by “do-ers”, by people who see patients expeditiously within a contract price, rather than by thinkers, teachers, and researchers.

There are other research problems. If—for example, the neuropsychological team at a postgraduate university institute want to investigate cognitive abnormalities in complex partial seizures, they require a substantial cohort of patients with certain characteristics. Until recently, such research institutions could depend on a steady stream of referrals from interested neurologists around the country, but now the question is “who pays”? A local purchaser may have already written his contract for the care of people with epilepsy with one or more local teams of neurologists, and will not take kindly to being asked to pay for an extra-contractual referral for a study which

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Table 1 Different types of neurologists

| Neurologists interested in disorders which are common in primary care, such as headaches, migraine, dizzy spells. |
| Neurologists who are interested in how complex medical illnesses affect the nervous system, working closely in liaison with other sub-specialities in medicine. |
| Neurologists whose primary working relationships are with other neurological specialties such as neurosurgery and neurophysiology, or with psychiatry. |
| Internists with a particular interest in neurology. |
| Neurologists who are interested in basic neuroscience research or in clinical neurological research. |
| Neurologists who are particularly interested in physical disability and neurorehabilitation. |
| Neurologists who are particularly interested in a particular neurological disorder such as epilepsy, and concentrate their practice in this field. |
may well not benefit the individual patient, although contributing to knowledge about the disease.

Other government actions also threaten neurological research. Although all who have worked in basic science, in neurological, or in other sciences are aware that real advances in understanding come from scientists following their individual hunches, there is, in developed countries, an increasing tendency for governments to be dissatisfied with the amount of money spent on basic research, the results of which are not applied or are not applicable to the creation of wealth. Lord Rothschild in the United Kingdom more than 20 years ago developed the contracting principle of research, whereby the Department of Health, for example, decided its priorities for research, and then commissioned research in those fields. In the United States, the Nixon administration had its “war on cancer”. The general experience of researchers, however, is that throwing a lot of money at a problem, just because it is a problem, does not mean that the problem will be solved. For example, if the MRC decided to spend a great deal of money on research into motor neuron disease, it is possible that some advances in understanding might be made, but it is rather more likely that the breakthrough will come from a totally independent science, perhaps related to cell transport mechanisms. Increasingly policy tries to direct research into areas of government priority, and into applied research. Although reasonable enough on the face of it in a democratically elected country, all the evidence suggests that really striking advances in basic science, and the resulting spin-offs for the health and wealth of a country, come from scientists pursuing their own hunches and original ideas.

Future of academic centres

Blumenthal and Meyer have suggested three possible scenarios for the future of academic medical centres.27 Firstly, existing functions may be broken up and parcelled out to other institutions that demonstrate that they can perform a subset of the functions as well or better.

Secondly, academic centres may separate into two distinct classes—a small group of “supertertiary” institutions that concentrate on biomedical research and training of researchers, and the care of patients with very complex conditions, and a much larger group of community orientated academic institutions that focus on training less specialised doctors, and providing secondary care.

Thirdly, academic centres may develop or affiliate with integrated health care systems, maintaining leadership by becoming as adept in health services and outcomes research as they have been in biomedical research. Although there are many alternatives, the third scenario is perhaps the most attractive, in so far as it seems likely to encourage delivery of better health care to more people, and the rapid evaluation and dissemination of new advances in care.

Conclusion

In Table 2, I suggest some ways in which clinical neurology can evolve, grow, and mature under the pressures of economic change and health service reform.

First of all, we need to be more political. It is necessary that some of the risks and drawbacks I have outlined, particularly in relation to research, are brought to the attention of governments’ health and science ministers.

Next, neurologists must be more explicit about what they consider to lie within the domain of their specialty. At present, I believe, it sits uneasily between general internal medicine and the brain sciences. Neurologists should be honest enough to recognise that much of their daily work is humdrum—headaches, radicular syndromes, uncomplicated epilepsy, and so on.28 Neurologists therefore need to improve their skills in, and relationship with, what might best be termed “family medicine”. Projections about future manpower requirements in the specialty should take into account the increasing skills of the primary care team and, in the United Kingdom, the introduction of the staff grade.29

Neurologists need to consider how costs might be reduced by altering skill mix. For example, some tasks such as counselling might be devolved to other, cheaper, and possibly more effective, health care workers.

As a leading speciality within the brain sciences, neurology is well placed to become the conscience and guiding light of internal medicine, just as Stevens suggested some years ago in the Annals of Internal Medicine—that internal medicine might be seen as representing the conscience of the whole of medical and surgical practice.20 At the same time, neurologists recognise and need their close liaison with their neurosurgical, neuropathological, and imaging colleagues.

We need to be more explicit about recognising the different types of neurologists, and about recognising that the contractual and funding arrangements may need to be different for each type, and that training programmes should not be too rigid. With regard to training, neurology should recognise that it is largely an outpatient and ward referral speciality, and neurologists seldom by themselves need to manage acutely ill people as inpatients. Like other physicians, neurologists should recognise that the days of equating power in an institution with the number of beds held are now over. They should consider how best to improve the teaching of our young students and doctors in outpatients and in the community.

Whatever the contractual arrangements, neurologists are likely to be increasingly pressed for evidence that they “add value”. The concept of “value added to health”, or “health gain” is a useful one. I believe that it will stimulate a new body of clinical research. For example, neurologists need to define more clearly measurable outcomes that are valued by patients,30, 31 and join psychologists and health service researchers in helping patients assign utilities to these outcomes. Neurologists must also review the evidence for the effectiveness of many of their interventions.

Neurologists need to work much more on clinical decision analysis,32 to outline more crisply the appropriate and cost-effective ways of investigating and treating patients.

Neurologists need to consult much more widely with their local users about how the users want the services to be provided. I am including here in the term user, not
only the patients, but local family physicians, internists, neurosurgeons, among others. The provision of such requested services should of course be within the limits of proven effectiveness.

Neurologists also need to work with others on developing ways of explaining choice to patients. They also need to join other physicians in taking more account of patients’ individual concerns.

Along with other physicians, we must develop robust systems of clinical audit, so that we can be sure that care is routinely well delivered.33

In conclusion, totally state planned medicine, such as that found in the former Soviet Union, did not necessarily deliver good care despite a high ratio of doctors to the total population in that country. Equally, medicine totally dominated by a market philosophy is likely to be frequently costly and sometimes unethical. Within a market philosophy, however, neurologists must learn to sell their specialty. Perhaps neurologists did not need to do so from the time of Charcot until about 20 years ago, but now it must, or neurology may be marginalised.

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ANTHONY HOPKINS
St Bartholomew’s Hospital, London and Research Unit, Royal College of Physicians of London, 11 St Andrews Place, London NW1 4LE, UK

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