

'The second greatest benefit to mankind?'

Cyril Chantler

The Harveian Oration is given annually at the Royal College of Physicians of London under an indenture of William Harvey in 1656. This article is based on the 2002 Oration given on 17 October 2002 by Sir Cyril Chantler MA MD FRCP FRCPCH FMedSci, Senior Associate, King's Fund, London

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ABSTRACT – In 1739 Samuel Johnson wrote an essay on the life of Dr Hermann Boerhaave, Professor of Physic at the University of Leiden, who died in 1738¹. Boerhaave, born 11 years after Harvey's death, could be said to have been influenced by Harvey in that he favoured experimental natural philosophy as the gateway to scientific medicine². He was denied entry into the church because he was accused wrongly of being a follower of the philosopher Baruch Spinoza, regarded as a heretic because he criticised established religious practices; this in spite of strongly supporting the love of God and humanity. Boerhaave decided to become a physician as he was, in Johnson's words, 'equally qualified for a profession, not indeed of equal dignity or importance, but which must undoubtedly claim the second place amongst those which are the greatest benefit to mankind'. It is this claim that I wish to examine. Can we still claim this regard for our profession? Is the medicine we practise, and the way we practise, of the greatest benefit to mankind, and how do we ensure that it is?

The rise in modern medicine

'Life is short and the art is long; the occasion is fleeting, experience is fallacious and judgement difficult', according to the first aphorism of Hippocrates, probably as translated from the Emile Littre version of the corpus, written in French in 1839. According to Dr William Mann, at one time senior physician at Guy's Hospital and Censor of this College, this is probably a mistranslation. The French word *l'expérience* infers both experience and experiment in English. It seems unlikely that Hippocrates would have counselled that experience is fallacious; Chadwick and Mann's version of the first aphorism is more convincing: 'Life is short, science is long; opportunity is elusive, experiment is dangerous, judgement is difficult'³.

The rise in modern medicine is due both to accumulated experience and judicious experiment and it is Harvey who taught us the need to undertake experimental research. Medicine is effective because of the application of biomedical science to the understanding of disease². As James Le Fanu writes, 'The history of medicine in the 50 years since the end of the Second World War ranks as one of the most impres-

sive epochs of human achievement'⁴. Le Fanu goes on to list 36 developments between 1935 and 1998 and selects 12 for special consideration (Table 1).

Whilst the list is impressive, there are many more he could have chosen, eg the eradication of small pox, the development of imaging modalities, the invention of fibre optic endoscopy, modern anaesthesia, the prevention of haemolytic disease of the newborn and, my particular choice – the introduction of oral rehydration solution for children with diarrhoeal illnesses and the science that underpinned it. Le Fanu points out that these discoveries were rarely the outcome of logical progression using scientific methodology, for many required some element of serendipity. Maybe so, but as Pasteur remarked, 'where observation is concerned, chance favours only the prepared mind'. I will return to this later.

There can be no doubt that modern medicine has reduced early mortality and extended life expectancy⁵. We now live with illnesses and disabilities from which we used to die. However, Le Fanu also charts what he terms 'the fall of modern medicine'. As evidence of this fall he discusses, among other matters, the dearth of new effective pharmaceuticals, misuse of technology, the high cost of dying, the reduction in the numbers of clinical scientists, over-optimism in the potential of gene therapy, and the problems that are created by the misuse or misrepresentation of epidemiological data. I believe he is unduly pessimistic. There are exciting possibilities in genome research, both for pharmaceuticals⁶ and in the understanding, treatment and prevention of disease. Perhaps more importantly we need to learn how to apply what we know, so that we benefit rather than harm individuals and society.

Contemporary problems

As doctors we have never been able to do so much for our patients as at present, yet not since the advent of the NHS have we been so criticised^{7,8,9} and perhaps so unhappy¹⁰. The evidence for this is well known so I will not repeat it here, except to note that complaints to the General Medical Council (GMC) increased from 1,500 in 1997, to more than 4,500 in the year 2000⁹. The reasons are not difficult to ascertain. Modern medicine is complicated and system failures occur. Medical errors are the eighth leading

surance that they are healthy when they read of symptoms or diseases that they fear they may have contracted⁴.

How many doctors?

We are fortunate that talented young people still apply to study medicine. Whilst the numbers applying had been diminishing, last year it rose to 10,828 applications for 6,240 places. As an ex-Dean I can assure you that the quality of applicants is high.

Some doctors have been retiring early from clinical practice, but there is no evidence that more recent qualifiers are leaving medicine earlier than their predecessors. Twenty years after qualification, about 80% of doctors can be expected to be practising in the NHS and only 2% to have left medical practice altogether (Table 2)¹⁵. Whilst more women practise part time in the early years after qualification, there is a possibility that over a lifetime their contribution to the NHS will equal that of the men because they will be less likely to retire early. Data to examine this notion is not yet available.

Whilst we are able to recruit and retain doctors, we nonetheless have fewer practising doctors than most developed countries. In 1998 France had 3 doctors per 1,000 population, the USA 2.7, Canada 2.1, and the UK 1.7. However, Japan had only 1.9. Hong Kong, which has an excellent public hospital service, has only 1.3. It will be some years before the recent increase in medical school places feeds through to produce trained specialists and by then we may, on past experience, decide we have too many. In the light of this we need to think about what doctors should do and the way it should be done and how we can make best use of their professional time, whilst allowing a reasonable life outside medicine.

What should doctors do?

The main task for a doctor is diagnosis¹⁶. Working out what is wrong and why it is wrong, requires knowledge of biomedical and behavioural science and an understanding of people and the society in which they live⁷. The purpose of education at university and medical school is to ensure this, and to provide a sound

Table 1. The twelve definitive moments of modern science.

Year	Development
1941	Penicillin
1949	Cortisone
1950	Smoking identified as the cause of lung cancer Tuberculosis cured with streptomycin and PAS
1952	Copenhagen polio epidemic and the birth of intensive care
1955	Open heart surgery
1961	Charnely's hip replacement
1963	Kidney transplantation
1964	Prevention of strokes
1971	Cure of childhood leukaemia
1978	First test-tube baby
1984	Helicobacter as the cause of peptic ulcer

Source: Le Fanu, 1999.

cause of death in the USA, occurring in 2.9–3.7% of admissions and leading to death in 6.8–13.6% of cases¹¹. There is no reason to believe that the position is any different in the UK. Modern medicine and the publicity that surrounds it makes it a victim of its own success. A good outcome of medical treatment cannot be guaranteed. A survey in the north-east of England of the prevalence of cerebral palsy showed that the rate had risen in spite of a fall in neonatal and perinatal mortality. The authors concluded that many babies weighing less than 2,500g at birth who would have died, now survive but with severe cerebral palsy¹².

We spend massive amounts on the NHS but continue to be short of resources, and in spite of such spending and the successes of modern medicine, the prevalence of disability and illness continues to rise. Whilst the extra expenditure on the NHS promised by the Government is most welcome, we would be foolish to believe that restrictions on the service will disappear. All countries in the rich world have the same difficulties in meeting the demand for healthcare and Scotland, which has similar problems of access and outcome to those of the NHS in England, already spends at the European average. The demands for further increases in expenditure are inevitable. Shine¹³ has estimated that new or substitution technology accounts for 30–50% of the rising costs in the USA and that pharmaceutical expenditure will increase from 8% to 14% of total health care costs by 2010.

The rise in the prevalence of reported disability in our population is, partly, the result of modern medicine – taking into account that we now live with diseases from which we used to die – but is also related to a rise in expectation of what it means to be healthy¹⁴ or even an increase in the 'worried well'. The 'worried well' are perhaps also, at least in part, a consequence of the increased publicity which surrounds modern medicine often causing people to need reas-

Table 2. Estimated career pathways of 100 doctors after qualification.

	Years after qualification			
	5	10	15	20
Women				
NHS	82	80	80	79
Whole time equivalents	72	62	60	61
Not in medicine	9	8	7	5
Men				
NHS	82	83	81	77
Whole time equivalents	81	82	79	74
Not in medicine	4	2	2	1

Source: Medical Education, 2001.

foundation for continued learning throughout a professional career.

After establishing what is wrong and why, the next task is to discuss what can be done and what should be done; the two are not synonymous. There is a need to provide care as well as treatment. In a talk to medical students at the John Hopkins in 1984, the Canadian author Robertson Davies pointed out that the twin snakes that entwine themselves around the physician's caduceus, that ancient symbol of our profession, are knowledge and wisdom, and the caduceus is a perpetual reminder that, like the staff, we are required to hold them in balance and prevent each from devouring the other¹⁷. The emblem of the new Academy of Medical Science is an imaginative representation of this.

We have to ask whether in our enthusiasm for biomedical science, or knowledge, we have not lost sight of the need for wisdom in how it is applied. Care with support and assistance to prevent pain and discomfort may be at times preferable to treatment, especially if, as Cochrane put it, treatments are on the margin of the impossible¹⁸. This is perhaps particularly important at the extremes of life, and with progressive conditions such as cancer. Some new cancer drugs appear to be of marginal benefit in extending life and are fearsomely expensive¹⁹. There are alternatives in the form of care and support, but above all it is for the patient to decide, free from pressure from either relatives or clinicians²⁰. We need in some cases to rediscover our skills in listening, providing information, encouraging and supporting patients and understand the ethical and legal implications that surround these difficult issues^{21,22}. I hope that new guidance from the GMC on withholding and withdrawing treatment will be helpful²³.

The Editor of the British Medical Journal is not alone in recognising the profound effect of Ivan Illich's books on iatrogenesis written a quarter of a century ago²⁴. But Illich now goes further, not just blaming the profession for the medicalisation of death, but pointing out that there is now systematic medicalisation of all aspects of our lives, and society at times seems to impose a duty on the individual to cooperate with heroic medicine in order to avoid death²⁵.

Decisions about what should be done belong to the patient^{22,23}. The GMC issued guidance termed *Seeking patients' consent: the ethical considerations* in 1999. This guidance takes the view, which has since been supported by lawyers, that the 'Bolam Rules' which determine the standard expected of a doctor in providing care, should constitute what a reasonable person might expect rather than what medical opinion deems to be appropriate. Patients have a need and a right to be provided with sufficient information to reach an informed judgement²⁶.

Reaching a decision can take time and the patient may, with advantage, wish to consult others, not least other members of the health care team, particularly nurses, or other patients or doctors. The patient may also wish to conduct their own research. In the rush of life in the NHS, time is a commodity in very short supply. Perhaps it is the lack of time for the consultation that has led to the phenomenal rise in practitioners for alternative medicine. There are now more such practitioners

than general practitioners in the UK². Many doctors could be more efficient in their use of time, perhaps time management should be a subject for professional development. An adequate administrative infrastructure, including secretarial assistance, to support clinical teams is absolutely essential.

Many medical duties such as investigations, operations and other treatments are increasingly being performed by members of the healthcare team other than the doctor. This can continue, as the regulatory position is clear: a registered medical practitioner can delegate treatment or care as long as the person to whom it is delegated is competent, though the practitioner retains responsibility. A doctor can refer, which means transferring responsibility, to another health professional who is accountable to a statutory regulatory body, as long as a registered medical practitioner (usually the general practitioner), retains overall responsibility for the management of the patient²⁷. This means that where appropriate, others can carry out invasive investigations and operations, prescribe and treat.

We need to be clear and truthful about the evidence that supports our own practice. Risk and benefit need to be explained as best we can. Few interventions are invariably effective and the 'number needed to treat' to obtain benefit for one patient is a useful concept. A new BMJ publication, *Clinical Evidence*, is available online to NHS personnel, and is a major step forward, as is the National Electronic Library for Health²⁸. Francis Bacon wrote that 'knowledge is power', to which his secretary might have added, that it helps if you can find it! Accessibility is vital. Clinical evidence contains not only an appraisal of the information available but is organised around questions that are likely to arise during a consultation. In any clinical practice there are a number of questions that are asked frequently. Perhaps specialist units and journals could make their answers to such questions available on their own web pages so that others could consult them as required.

Professionals used to have the monopoly over knowledge; now it is widely available, though some of it is of dubious value. The professional's task is to assess and use this knowledge for the benefit of each patient. The physician may not have a monopoly over the knowledge, but the understanding and appraisal of that knowledge requires professional education and training. This is a crucial role for doctors. Diagnosis requires an understanding of a patient's biography as well as of science²⁹. It cannot, as some have suggested, be left to computers.

Moral hazard: ethics and regulation

I define moral hazard as 'the temptation to act, maybe unconsciously, in one's own interests rather than in the interests of others. Patients expect doctors to be honest³⁰ and the good news is that, in spite of recent criticisms, most people believe that they are. In a recent MORI poll, 91% trusted their doctors to tell the truth, top of the poll, compared to 13% for journalists and 19% for politicians³¹.

However, there are problems. Conflicts of interest in publications continue to cause concern as does research misconduct^{32,33}, and there is a steady stream of complaints and

questions to the GMC about financial conflicts in clinical practice. There can be conflicts between NHS work and private practice and recently extra payments from waiting list initiatives have raised similar questions. But moral hazard can be more subtle. How often are we tempted to ignore or not seek scientific evidence when we promote our favourite treatments or promote our pet theories or research? In their wonderful book, *Follies and fallacies in medicine*, Skrabanek and McCormick, quote Bertolt Brecht from his play *Galileo*: 'The chief cause of poverty in science is imaginary wealth. The chief aim of science is not to open the door to infinite wisdom, but to set a limit to infinite error'³⁴. Many years ago our group at Guy's Hospital recommended local infusion of urokinase and heparin into the renal arteries of children with impending cortical nephrosis³⁵. Further experience showed that it was not as effective as we had predicted³⁶. I am not sure we published the second paper with quite the same enthusiasm as the first!

In our role as advisors we need to be up to date, compassionate, patient and honest, taking care to avoid the various moral hazards to which we might be vulnerable. The practice of medicine is not simply about obeying the law, there is an important ethical dimension. This is why the GMC is important for patients and for doctors and the public. In my view, the regulation of the profession should be a partnership between doctors and the public, and the new GMC should work to build trust between both parties and in both constituencies. The GMC is, or should be, the conscience of the profession and should reflect our conscientiousness. Much medical practice takes place in private and the greatest reassurance the public has is the professionalism or values of each doctor^{37,38}. External regulation or employment contracts cannot substitute for this.

The latest edition of *Good Medical Practice*, published by the GMC in 2001²⁷, is organised in accordance with the headings which will be used for appraisal and therefore revalidation. It was subject to wide consultation with the profession and the public before publication. It sets out the standards to which each of us should conform in our practice. It has been said that it represents a Platonic ideal to which we should aspire. It does not. It represents rather an Aristotelean norm, and serious or persistent breaches call a doctor's registration into question. I may be biased but I do not know of any other profession that sets out such a strict code of conduct and I believe the public has good reason to support the trust placed in us.

Clinical research

Most clinical advances have involved clinicians who engaged in research. This is a vital role. Let me provide three examples, two from my own experience. In 1987 I delivered the Teale Lecture to this College on growth and metabolism in renal failure³⁹. The particular problem in 1972 when I became a consultant and involved in treating children with end-stage renal failure, was poor growth, and many of the children who survived were very small and had delayed and inadequate onset of puberty. The professor of obstetrics and gynaecology at Guy's, King's and St Thomas' School of Medicine, Peter Braude, once told me that

Key Points

Advances in medicine depend on experiment and experience

Medical practice encompasses treatment and care

Doctors need to recognise the right of patients to be fully informed, and to take their own decisions concerning how they should be treated

The professional values of the profession are the most important safeguards for patients

Clinicians need to provide leadership in the organisation of clinical care

medical research now depended on the successful collaboration between the clinically-aware laboratory scientist and the laboratory-aware clinician. So it was for us. As clinicians we worked closely with our laboratory colleagues led by Dr Neil Dalton, senior lecturer in biochemistry. As a result we were able to understand why growth was retarded, how to prevent bone disease and achieve good growth without using genetically engineered human growth hormones.

Cystinosis is an awful inherited disease. It is manifest towards the end of the first year of life, with the onset of severe polyuria and polydipsia due to a Fanconi syndrome caused by the deposition of cystine crystals in the lysosomes of proximal tubular cells. It leads to renal failure and whilst renal transplantation is effective, cystine accumulation in other tissues can cause hypothyroidism, diabetes and fatal, progressive dementia. My colleague, Professor George Haycock, and our group were able to demonstrate in 1982 that indomethacin, by reducing glomerular tubular imbalance, eradicated the intense polydipsia which was perhaps the most distressing symptom in toddlers⁴⁰. Later, Dr William van't Hoff and the group published data showing that oral phosphocysteamine reduced the rate of accumulation of intracellular cystine⁴¹. More recently the Guy's group has collaborated with others in identifying and cloning the gene⁴². There are two points I wish to make. First, the use of indomethacin and phosphocysteamine led to significant improvements in the lives of children with this condition. No doubt in due course, so will the identification of the gene. Second, the first two papers were published in *Archives of Disease in Childhood*, an excellent journal, but one that does not have the impact factor of *Nature Genetics*, where the gene paper was published. Impact on patients and on the research assessment exercise (RAE) may differ.

The final example I find particularly exciting. The team at Great Ormond Street Hospital for Sick Children led by Dr Adrian Thrasher has recently used gene therapy to successfully treat severe primary immune deficiency disease, a previously fatal disease. The technique involves isolating primitive CD34+ stem cells obtained from a bone marrow aspirate from the affected child. These cells are then cultured, exposed to a gibbon ape leukaemia virus pseudo-typed retro-viral vector, into which genetic material coding for the common cytokine gamma

receptor chain has been inserted. The cells are then transfused back into the child and mature to produce competent lymphocytes. Follow-up studies have demonstrated sustained correction of the immune deficiency⁴³. More research will be required, not least because recently a child treated in France developed leukaemia. However, this work demonstrates the importance of basic research and translational research and the need for high-quality laboratory science and for clinical academics. Great Ormond Street is fortunate that the NHS funds much clinical research there, and the link to the five-star rated Institute of Child Health is crucial.

Elsewhere the picture is worrying. In my view, the response to Sir Rex Richards report on clinical academic careers in 1997⁴⁴ has been inadequate. I think that part of the problem is that the separate Departments of State for Education and Health will not acknowledge that there is a problem, or accept responsibility for finding a solution. Recent reports demonstrate that the problem foreseen 23 years ago⁴ is now critical⁴⁵⁻⁷ and this at the time of expansion in the number of medical schools, the exciting possibilities for the application of the new biology for the benefit of patients, and the urgent need to be clear about what is efficacious, effective, efficient, and economic in the practice of medicine⁷. Those that organise medical education are employed by universities; most clinical research and much clinical leadership is provided by clinical academics. Who is to protect them?

Most commentators agree that successive RAEs carried out by the Higher Education Funding Council (HEFCE) have been beneficial to British science⁴⁸. I agree, but would assert that the cumulative effect on clinical academe has been harmful. However, when handing out criticism we also need to ask whether we, as a profession that controls the education and training of doctors, have done all that we should to facilitate careers in academic medicine⁴⁹.

Whilst one of the problems of the RAE system is that arguably it does not adequately recognise and support the value of clinical research, another is that it is a blunt instrument. If you are working in an institution with a relatively low RAE score, you may well be publishing good research but will be denied adequate infrastructure funding. An analysis of the 1997 RAE, which classified the results into 4 bands according to the scores achieved, showed that there were almost as many articles and research letters published in the *Lancet* by researchers working in universities with band 3 and 4 scores as those in bands 1 and 2 (Table 3)⁵⁰. However, the allocation of infrastructure support by the HEFCE is much reduced for those in the lower band scores. One approach would be for the HEFCE to apply the same

approach for peer-reviewed research funded by the Association of Medical Research Charities (AMRC) as it does for Medical Research Council (MRC) grants. This was suggested some years ago following the Richards report, and has recently been recommended in a report commissioned by the HEFCE. Every grant provided by research charities would then be supplemented by 45% to allow for infrastructure costs. The research charities might be encouraged to contribute to a fund to make this possible⁵¹. Such a system would ensure proper support for research funded by charities, much of which is applied rather than basic, and would negate the need for further RAEs, at least as applied to clinical research.

One final point before I move on. The researcher and the teacher need to be supported irrespective of who employs her or him, be it the university or the NHS. 'Job plans' should specify time for these activities, as justified, and joint appraisal of performance by the university and the NHS is important⁵², with the university taking responsibility for teaching and research and the NHS for clinical work.

The organisation of clinical practice

The final part of Hippocrates' first aphorism states that 'it is not enough for the physician to do what is necessary, but the patient and the attendant must do their part as well and the circumstances must be favourable'. It is the circumstances of clinical practice that I wish to discuss.

To me it is a clinical imperative and an ethical responsibility for doctors to recognise that no country can meet all the demands for healthcare that a technology-driven health service can generate. Profligacy in the treatment of one patient can lead to the denial of adequate care to another. We must all practise with regard to efficacy, effectiveness, efficiency, equity and economy⁷. I welcome and support the work of the National Institute for Clinical Excellence (NICE) and, difficult though it may be, believe that we have to recognise the need for economical appraisal of what we do. Treatments that are of marginal economic benefit may not be affordable given the opportunity costs. It is, however, important that such restrictions on NHS services are overt, not covert, and that the responsibility is shared between clinicians and society represented by politicians on the advice of NICE.

It has been estimated that 20 conditions account for 80% of healthcare expenditure in the USA and that 70% of personal healthcare expenditure is on those with chronic disabilities⁵³. And yet our health services were designed for episodic interventions not chronic care. This has implications for how we organise clinical practice and for the NHS.

We need to encourage people to try to stay healthy for longer. This is an important issue for public health but all clinicians should play their part. It is also about how we organise care and support for those with disabilities in an aging population. The concept of retirement villages has been pioneered in the UK by

Table 3. An analysis of publications in the *Lancet* from UK medical schools, Jan-June 1997, according to RAE scoring bands.

	No	Band 1	Band 2	Band 3	Band 4
Articles	125	9.1	11.7	5.8	12.6
Research letters	205	12.3	11.5	8.2	8.8

Source: *Lancet*, 1997.

the charity Extracare⁵⁴. Early experience suggests that health can be improved with a consequential reduction in the need for social support.

Healthcare should be organised around the needs of those with chronic disabilities. Such people require care in the community and in hospital and this care needs to be integrated. The importance of this is demonstrated by a recent experience in the USA⁵⁵. The Kaiser system in California manages all patients healthcare needs in the community and in hospital. As a result, 327 bed days are utilised each year per 1,000 population, with an average length of stay of 3.9 days, compared with 1,000 bed days with a stay of 5.1 days in the NHS. In Donald Berwick's words, 'the NHS could become the integrated care system it should be'⁵⁶.

Provision of highly skilled, technologically-based, acute interventions with fully trained specialists providing treatments, needs to be organised around services which serve populations of at least 500,000 people⁵⁷, although such services do not necessarily have to be provided from a single site⁵⁸. Whilst patients may be prepared to travel some distance for treatments, there is evidence that they prefer medical services to be local and readily available⁵⁹. Primary care trusts now have the task of organising care for the populations they serve. Some services currently based in district general hospitals could be provided by specialists, working with primary care physicians and teams, in integrated intermediate health centres (Table 4)^{60,61}. Such community hospitals or facilities, serving populations of 50–150,000, could act as the hinge and hub between acute hospitals and general practice. The task is to fully utilise the potential of all members of the healthcare team: doctors, nurses, therapists, pharmacists, social workers and voluntary and family carers⁶¹. Integrated care requires teamwork between specialist and generalist doctors and between all members of the healthcare team.

Better information systems are vital if services are to be integrated. Many patients are anonymous when they fall ill because their medical record is not available in emergencies, either in the community or when they are admitted to hospital. If all letters,

care plans and case summaries were copied to patients, then each patient could maintain their own summary record which could also be stored by NHS number on a central server with authorised access when needed. Electronic health and medical records are essential if integrated care is to be available. Patients have a right in common law for the confidentiality of their records to be respected and to control what information is available within an electronic record. Under the data protection act they also have to be told what information on them is held on computers. Providing them with copies of summary records now would therefore facilitate the development of the electronic record. This was suggested some time ago⁶², and a Department of Health committee has recently recommended pilot studies⁶³. I think further delay is unnecessary and the policy should be recommended now. Problems can be sorted out by 'action research as experience is gained'⁶⁴.

Managing emergency care

Some pressures are predictable. The increase in the need for inpatient beds in London in the winter is largely related to respiratory disease, probably from complications of respiratory syncytial virus infection in the elderly and peaks on Mondays⁶⁵. Perhaps better community provision, particularly over weekends, could reduce the need for such admissions⁶¹. The London ambulance service transfers 600,000 patients each year to casualty departments; 40% are admitted and these admissions account for 80% of the occupied bed days. A 10% reduction in these transfers would reduce bed days by 5%, which would have a marked effect on planned admissions. An audit by the ambulance service has suggested that a significant proportion of these transfers could be better cared for in community settings.

Emergency care needs to be managed so that emergency admissions do not constantly interfere with planned admissions. One approach would be to manage emergency departments, observation wards and admissions wards as a single entity with a single team of clinicians. The task of the admission ward would be to diagnose, stabilise and transfer either to home, into other care facilities or into a specialist department. Admission wards would need to be flexible and staffed to cope with variable pressures, thus reducing pressure on the speciality wards. The front line services need to be staffed by trained not trainee staff; the initial diagnosis and the development of a treatment or care plan at admission is vital and rehabilitation services should be planned and available seven days a week.

Medical careers and training

The expansion of specialist knowledge and the introduction of new technology means that the tendency for increasing specialisation by some doctors is unlikely to diminish. The introduction of revalidation for doctors, and the involvement of doctors in management, as well as the reduction in the time commitment of clinicians, are all likely to hasten this process. These changes have major implications for the way doctors work and

Table 4. A proposed integrated intermediate health centre

- Staffed by generalist and specialist doctors
- Nurse specialists and community nurses
- Physiotherapy, occupational therapy, etc
- Linked to hospital and GP surgeries
- Organised by primary care groups within PCTs
- Integrated with social and community services
- One stop diagnostic and treatment centre
- 24-hour access for primary care and advice
- Centre for key workers, voluntary sector, training
- Nurse-led acute, rehabilitation and respite beds
- Health living, citizens advice, information centre, etc
- Pharmacy, dental, ocular services, etc

learn. The notion that to be a consultant requires up to seven years of post-specialisation training will need to be reassessed.

Revalidation will require doctors to specify what they actually do and demonstrate that they are competent to do it. As new knowledge is acquired and technology develops, so training will be required throughout one's career. Assessment should be based on competency not just knowledge. Sufficient time will need to be available in each doctor's 'job plan' for further training and development as new responsibilities are acquired. Doctors require and receive a broad and deep education in bio-medical and behavioural science as undergraduates. They acquire general experience and further training during the pre-registration year. The time spent as a senior house officer (SHO) should enable an enlargement of experience and the determination of speciality choice, including general practice. It should not be spent sustaining the NHS. There are currently 99,169 practising doctors in England, of whom 30,685 are general practitioners. There are 24,404 consultants, 12,648 registrars and 15,384 SHOs. Of these SHOs, 1,838 are over 34 years of age and 555 are over 40⁶⁶.

Once a doctor starts specialist training, the task should be to train her or him in as short a time as possible to achieve the competence to join a specialist team where, like all of us, they will continue to learn. As they acquire further experience so their roles and responsibilities within the team will change. We need to develop the notion of 'just in time' training rather than having long periods of education before undertaking consultant or specialist responsibility. We will also need to make it easier for specialists to move to other specialties, again with careful training to ensure competence. Revalidation will be about demonstrating competence to fulfil a defined responsibility and validation for a certificate of completion of specialist training (CCST) should be the same. Experienced doctors should be able to 'ladder across' to other specialities, allowing for the competences they have already achieved and not have to start all over again⁶⁷.

If integration is the key to a successful NHS then teamwork and flexibility are necessary prerequisites. Perhaps we should ask whether the traditional separation of doctoring in the UK between consultants who work in hospitals and general practitioners who work in the community is still helpful. It arose in the nineteenth century in the struggle for a professional livelihood between physicians and general practitioners. Some of this is apparent in George Eliot's *Middlemarch*. The resolution was achieved by medical etiquette. In Rosemary Steven's words, 'the physician and surgeon retained the hospital but the general practitioner retained the patient'⁶⁸. The division was completed by the creation of the NHS in 1948⁶⁹. This analysis provokes a further thought. Maybe the time has come to discard the word 'consultant', which hardly describes what most consultants actually do. Perhaps we should use the word 'specialist' to describe the trained doctor who works as a specialist in the hospital or the community. What we should retain is the notion of one doctor who is community based, who is the usual first port of call and the coordinator of care; the specialist of the medicine of general practice²⁹.

Teamwork, management and leadership

Modern healthcare is delivered by teams of health professionals⁷⁰. The standard expected of teams and the way doctors are expected to contribute to teams are set out in the latest edition of *Good Medical Practice*²⁷ which will be used for appraisal and revalidation. Doctors do not always find it easy to work in teams and share responsibility. They think differently to managers and politicians. As Enoch Powell wrote, 'the politician is all the time concerned with the general consequences of individual decisions' [as indeed are managers]. 'The doctor takes his characteristic professional decisions, not only for individuals but as an individual, on his own single and ultimately unsharable responsibility'⁷¹. In ethical terms the politician and the manager tend to a utilitarian view, whilst for the doctor it is his or her duty of care to the individual is paramount. The fact that such a view may not properly take account of the effect of such decisions on the general working of the system or on other patients is not their prime concern. Doctors and managers view problems from different ends of the telescope.

This antithesis has to be reconciled because both perspectives matter and indeed the increasing involvement of doctors in management shows that in practice it is possible for doctors to work for the benefit of both their individual patients and patients as a whole⁷. There is evidence that good teamwork and reflective practice, with regular appraisal, benefit patient outcomes. Recent research has suggested that the more staff work in teams, the lower the mean mortality index of patients, and the more sophisticated the appraisal system, the lower the deaths after admission with hip fractures⁷². Human factors effect surgical outcomes but when this is recognised, systems can be changed to ensure good results⁷³. Dysfunctional behaviour is still too common, leading to suspensions and complaints to the GMC. We need to learn both during undergraduate education and through professional development how to work in teams and with our colleagues^{74,75}.

One problem, however, is that continuity of care can suffer and teams need to ensure continuity within and between teams in hospital and in community settings⁷⁶. Too often, when everybody is supposed to be responsible, the reality is that nobody actually takes responsibility. At all times patients need to know who is directly responsible for their care; each of us still needs a personal doctor who cares for and about us when we are ill⁷⁷.

We can learn from other complex systems how human factors affect outcomes and how system organisation can reduce error⁷⁸. Too often we blame individuals when something goes wrong, when it is the system that is at fault^{11,70}. Politicians and the media should be encouraged to stop demonising individuals when an error occurs unless there is evidence of gross misconduct or negligence, and I strongly deprecate the recent tendency for the prosecution service to charge doctors, often young, inexperienced colleagues, with manslaughter under such circumstances.

The NHS owes much to Sir Roy Griffiths, whose management enquiry in 1983 introduced the concept of general management to the service. Later in 1993 his report on community care

persuaded a reluctant government that it had to be placed under the control of local authorities⁷⁹. He was a strong advocate of decentralisation, localisation as it is now sometimes termed, the merits of which are now being rediscovered. Roy Griffiths did not intend to introduce a new profession of managers to the NHS. Management is a process that should involve all of us who work in the service and he made no secret of the need for doctors to be closely involved^{80,81}.

When a number of people are involved in delivering a complex service, management is essential. It is the process by which activity is organised, ensuring that the right things are done in the right way. It requires leadership, and doctors and other clinicians have a vital responsibility role to provide this leadership. As Michael Brearley has written, the art of leading teams is not to suppress individuality, but to harness it to achieve the team's goals⁸². Hospitals and universities are what Henry Mintzberg terms 'professional bureaucracies'⁸³. They cannot be managed like machine bureaucracies such as factories, by 'top down' instruction and control. They depend on the myriad of professional skills of those who deliver treatment and care, and they must involve these professionals in the management process and in the design of systems of care. In the Kaiser system it is the doctors and other clinicians who provide the leadership to develop systems that enable people to receive appropriate treatment at home or in a variety of settings in the community rather than in the hospital. The NHS will never be able to deal with waiting lists and delays in access to care as long as it admits people to hospital wards who could be cared for outside or who cannot be discharged because of a lack of community support. At times the problem with the NHS is that you cannot get into hospital because you cannot get out of it. Such pressures lead to further system failures. We all know that the employment of agency staff and the placement of patients as outliers in wards unfamiliar with their needs are a recipe for inadequate care.

The politics of healthcare

I believe strongly that the NHS needs to be decentralised⁸⁴. The monolithic structure, with strong central and political control, simply does not work and it is no surprise that no other developed country, with the possible exception of New Zealand, has adopted this model. In fact, Enoch Powell pointed out in 1966 that it never would⁷¹. At present, the Secretary of State for Health is the person responsible to Parliament for the funding, provision and regulation of the NHS. The King's Fund has suggested that responsibility for provision should be devolved, leaving central government to concentrate on funding, setting broad policy for health and social provision, which are intimately linked, and for ensuring regulation. Political accountability would need to be shared with local authorities who already have responsibility for community care. Primary care trusts (PCTs) could develop as health maintenance organisations, responsible to their constituents, and large hospitals could, like universities, operate as publicly owned corporations governed by charter, outside of direct government control (? Foundation hospitals)⁸⁴.

The new strategic health authorities (SHAs) have the responsibility to oversee capital developments in the NHS. They do not have authority over revenue allocation. It is difficult to affect the changes required to develop a community-based integrated health service in such a system because the removal of a clinical contract from a hospital provider can destabilise the hospital. Likewise, extra contractual referrals can produce financial instability. One approach would be for the SHAs to cover the infrastructure costs of hospitals while the PCTs support the costs of providing treatment. As the provision of service changes so infrastructure costs will increase or diminish, and funding could change accordingly. PCTs could then move contracts, and extra contractual referrals to meet patients' needs and choices, could be made without destabilising the system. Competition by comparison and patient choice both for primary and secondary care are in my view necessary to help to drive up standards and increase efficiency⁸⁰.

There is no convincing evidence that social insurance models are preferable to an NHS funded directly through taxation, other than that they tend to devolve the responsibility for provision. Most of us believe passionately in the values of the NHS, not least equity, or the notion that care should be provided to those who need it irrespective of the ability to pay. Other countries achieve this without monolithic central political control. The energies of those who provide care need to be set free, in Donald Berwick's words, 'only those who deliver care can, in the end, change care'.

Conclusion

My answer to the question posed by the title of this lecture is a resounding 'yes', but I acknowledge that there are problems with modern medicine and how we practise it. We need to understand these problems and, where necessary, make changes if we are to be confident that medicine will continue to be of great benefit to mankind. Above all we need to ask ourselves at all times whether we would be satisfied with the care provided for our patients if we, or a member of our family, were the patient and do all that we can to ensure that the quality is satisfactory.

We shall need help. Doctors in the NHS are under great pressure; we need more understanding and less criticism, more trust and less regulation^{85,86}. There needs to be more recognition that errors are usually system, not individual, failures. Perhaps the public, government and the profession needs, as has been suggested, a new concordat that sets out the rights and responsibilities of each⁸ and explicitly recognises the limits of what the NHS can provide and what modern medicine can achieve.

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