officer of England's review of the public health function and Sir Donald Acheson's report on inequalities, it is unclear how some of the policies, such as joint working with local authorities, will work in practice. The new statutory duty of partnership is mentioned but not explained. It is unclear how local accountability will be shared between statutory authorities, how the democratic deficit in the NHS will be resolved, how health and local authorities will make their relative contributions, or what role will be played by community health councils and voluntary organisations. The health improvement programmes proposed for England are more ambitiously multisectoral than their Scottish counterparts—which lie purely within the healthcare system.²

This lack of detail, and the recognition that the agenda is evolving, provide opportunities to find better ways of working which must not be missed. Yet the demands of intersectoral working should not be underestimated. The skills needed to develop effective partnerships within the community will require resources and training. Broadening the horizons of those who have traditionally worked only within health care and developing public understanding will take

time. Promoting health is a far less easy concept to grasp than providing clinical care, and measures to tackle the root causes of poverty or crime may not bear fruit for many years.

Previous experience with national (and international) initiatives—for example, the Health of the Nation³ or Health for All⁴—should warn us to be cautious. Although commendable strategies, they were often not seen as core business by health authorities or local practitioners and less important than financial concerns. The need to maintain financial control remains unchanged, and even within the current government's experience we have seen the practical difficulties of banning tobacco advertising. Whatever these difficulties, this white paper places health in the centre of the stage. The challenge now is to turn the aspirations into a reality.

1 Jacobson B, Yen L. Health action zones. *BMJ* 1998;316:164.

2 Secretary of State for Scotland. *Designed to care: renewing the National Health Service in Scotland*. Edinburgh: Stationery Office, 1997.

3 *The health of the nation: a strategy for health in England*. London: HMSO, 1991.

4 World Health Organisation. *Alma-Ata 1978. Primary health care*. Geneva: WHO, 1978.

Continuing medical education

Changes in health care and continuing medical education for the 21st century

Angela Towle

Major trends in health care

A revolution in health care is occurring as a result of changes in the practice of medicine and in society. These include changing demographics and the pattern of disease; new technologies; changes in health care delivery; increasing consumerism; patient empowerment and autonomy; an emphasis on effectiveness and efficiency; and changing professional roles. These are the challenges which will face the medical profession in the 21st century and to which continuing medical education must respond.

Demographics and the pattern of disease

In 20 years' time the proportion of most rich countries' populations aged 65 and over will have doubled to around 20-25%. Old people today consume about a third of total health care spending; if present trends continue, by the year 2000 they will be consuming half.¹ The consequences will be a shift in the need for preventive and curative health care in the direction of the chronic health problems of older people and a large increase in demand for care of very frail or ill dependent elderly patients. There will be even greater pressures to cap spiralling healthcare costs.

No major changes in overall patterns of morbidity are expected, but some health problems will increase. Health loss areas will include the widening of social class disparities, increasing alcohol consumption and

Summary points

The education system must be better able to respond to rapid changes in the outside world and involve employers and users of health services

The culture of the education system, now largely shaped by performance in examinations and emphasis on factual content, must be changed to one which values self directed learners and problem solvers

There is a need to improve the effectiveness of continuing medical education, such as developing better programmes on doctor-patient communication and interprofessional continuing education

drug addiction, and increasing numbers of cases of senile dementia. Areas of uncertain progress or change include cancers, heart disease, and suicide. Solutions to health problems will increasingly rely on disease prevention, encouragement of healthy lifestyles, and improvement of environmental conditions, which may require a reassessment of the roles and responsibilities of health professionals.

This is the first in a series of seven articles looking at international trends and forces in doctors' continuing professional development

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DAVID HITCH

New technologies

New health technologies include diagnostic and screening techniques, medical (therapeutic) interventions and techniques for drug delivery, surgical interventions, and information technology and telecommunications. Not all new technologies will be adopted because of the costs involved, and there will be an increasing emphasis on health technology assessment. The greatest change in health services over the next decade is likely to be as a result of computers and telecommunications technology. These will promote and increase remote monitoring and diagnosis; links between hospitals, between hospitals and general practitioners, between hospitals and clinics; the speed of communication (for example, referrals and specialist reports); and the capacity for remote consultation, operations, and teaching. Much of the technology is still immature and methods for accessing information by clinicians are relatively crude, but progress is rapid. These developments will require substantial changes in the skill mix of staff, and they have major training implications for medical, nursing, and technical staff.

Trends in healthcare delivery

Advances in medical technology will increase the trend to move care away from acute hospitals into primary care, new specialised acute procedure centres, new recovery centres, and the home. With new technologies, much more diagnosis and treatment can be done in the community or at least in daycare settings, with no need for acute beds. The trend towards day surgery as a result of minimally invasive surgical techniques is an example of rapid change. A European Commission study found that nearly all surgical procedures could be partially or totally replaced by less invasive alternatives.² The new technological developments taking place alongside the demographic changes mentioned above are producing changes in how and where patients recover—for example, the use of hotels or hostels alongside hospitals. Some community hospitals have experimented with beds placed under the control of nurses. In Britain, most

purchasing authorities are supporting or planning to support a hospital at home scheme.³

Consumerism, patient empowerment, and autonomy

The public has higher expectations of the quality of service to be provided, especially in countries where spending is visibly rising. The political sensitivity of assured access to high quality health care has prompted both the European Commission and national governments to make public assertions about citizen's rights to care. Better educated and consumerist patients demand more information and greater involvement in decisions about treatment. These demands are supported by trends in ethics and law regarding patient autonomy and informed consent. Public access to personal computers and the internet increases at a dramatic rate, matched by the amount of medical information available on line. In the United States, commercial services provide textbook-type information as well as access to group conversations about subjects such as diabetes and eating disorders. Patients are increasingly involved in making decisions about their health care (for example, using interactive video discs for medical decision making and home monitoring devices to measure blood pressure). As patients become better informed, change in the traditional doctor-patient relationship is inevitable.

When the growth of consumerism and autonomy interact with developments in information technology, there arises the real possibility of what Kassirer refers to as "the next transformation in the delivery of health care,"⁴ in which on line, computer assisted communication between patients and medical databases and between patients and doctors promises to replace a substantial amount of the care now delivered in person. In the not too distant future, individuals may use their personal computers to access authoritative medical databases and, for some common problems such as upper respiratory tract infections, use algorithms available on line to diagnose and even treat themselves (through the use of advanced technologies in the home). Much of the technology already exists; many of the barriers to its use arise from regulation and restrictive practices. Some clinical problems, even complex ones, could be handled by an on line consultation with a doctor in which the computer would function as a "virtual physician" in a new kind of house call. If much care is handled on line, and personal encounters focus principally on the most serious problems, then we may need fewer primary care physicians, nurse practitioners, and even specialists than are being predicted today.

Effectiveness and efficiency

The value of many current treatments remains obscure, and in many cases no proper study of their effect on health has been done. A report published in February 1995 noted that five of the 10 most frequently performed operations in the United Kingdom had no proved benefit. Widespread variations in the use and appropriateness of medical interventions and variability in medical judgments have been described. In the past decade, governments, insurers, and employers in all rich countries have realised that they can no longer pay ever growing healthcare bills. Increasingly the limited

resources available for health care will conflict with increasing demand—due to the ageing population, new technology, and the new emphasis on quality and choice. Those who finance health care are responding by demanding more information about the cost effectiveness and quality of the services they are buying. As well as identifying effective and efficient practices, there will be an increasing trend towards the effective implementation of proved health technologies in routine practice—for example, through practice guidelines, policies, protocols, and computerised decision support systems.

Changing professional roles

Another implication of the drive to identify less costly ways of delivering care while maintaining quality is the need to match staff skills to the task and to emerging technology. This has already led to changes in professional roles and boundaries, both within the medical profession and between health professionals, especially between nurses and doctors. Because of minimally invasive techniques, surgery could disappear as a specialty and gradually be merged with internal medicine so that specialists will deal with organ systems such as the upper gastrointestinal tract.² Over the past decade there has been a steady expansion in the number of nurse practitioners, who have been found to be both cost effective and able to provide care equivalent to that of a doctor.⁵ A study on the extension of the changing boundaries between the clinical work of junior doctors, nurses, and other health professionals (S Dowling, personal communication) showed three types of developments in frontline clinical roles: an increase in the availability and volume of work of an established occupational group (such as electrocardiograph technicians); extension in the type of work done by an established occupational group (for example, advanced neonatal nurse practitioners or surgical nurse practitioners); and a new occupational group with entrants from a wide variety of previous occupations (for example, cardiac surgeon's assistants or transplant clinician's assistants).

Future needs and challenges for medical education

The issues raised above present challenges for the content and delivery of the whole continuum of medical education. Indeed, they go beyond education to raise fundamental questions about the nature of the profession and the practice of medicine, the roles and responsibilities of doctors, work patterns and career structures, and selection into the profession. These considerations are beyond the scope of this article, but medical education will need to recognise and respond to the context in which it operates. The first challenge, therefore, is how to create an educational system which is better able to respond to changes in the outside world than has been the case to date.

Changing the culture of CME

We can conclude that the next generation of doctors will face an exploding volume of literature, rapid introduction of new technologies, more demanding patients, deepening concern about escalating medical

costs, and increasing attention to the quality and outcomes of medical care. Some educational responses to these issues are outlined in the box. Most need to begin during basic education, be refined during postgraduate training, and maintained or updated through continuing medical education (CME). Even with effective CME programmes, it is more difficult to change attitudes and patterns of thinking in practising doctors than to get it right with medical students from the beginning. However, students are strongly influenced by the behavioural role models which their teachers present, so undergraduate education cannot be divorced from CME.

Medical education must respond to the context in which it operates

- Teach scientific behaviour as well as scientific facts
- Promote the use of information technology
- Adapt to the changing doctor-patient relationship
- Help future doctors to shape and adapt to change
- Promote multiprofessional teamworking and care
- Help future doctors handle broader responsibilities
- Reflect the changing pattern of disease and healthcare delivery
- Involve health service employers and users

Future doctors need to learn not only the theoretical scientific basis of medicine but also the scientific basis of clinical practice. If they can easily access up to date and comprehensive information through computers, why do they need to memorise vast quantities of factual information? A second challenge is how to change an educational system which is largely driven by performance in examinations which reward memorisation and recall of factual knowledge and in which teachers or CME providers perceive their role to be that of a content expert who covers the subject on behalf of their students or participants. Such a system ill prepares doctors for a world which demands the ability to acquire, appraise, and use information in order to solve clinical and other problems efficiently.

Involving others in CME

Future doctors must learn how to provide and interpret evidence based information and help patients make the best decision based on the patient's own values and preferences. Despite progress in communication skills training, current programmes clearly do not yet meet patients' criteria for a satisfactory interaction: 80% of patients' complaints are attributed to a breakdown in communication; patients do not receive the amount of information they require; communication problems with doctors are persistently raised in patient focus groups on a variety of health related topics; communication skills actually deteriorate as students progress through the educational system. The challenge is to develop more effective and extensive programmes in which patients are partners in the educational process, as they should be in care.

Doctors are perceived by other health professionals, managers, and health economists as a barrier to the introduction of change. The challenge here is to promote an educational system which encourages questioning, reflective practice, creative thinking, and

CME in the 21st century must be:

- Educationally effective in relation to health outcomes
- Planned systematically on the basis of needs assessment and prioritisation
- Responsive to rapid changes in the world
- Inclusive of service providers and users
- Addressed to promote self directed learning and problem solving
- Based on proved effective educational process
- Informed by the experience of others

team working. Health care increasingly requires the skills of many health professionals, yet the separate educational systems foster professional isolation, suspicion, and stereotyping. The challenge is to develop more acceptable and effective methods for interprofessional continuing education.

Medical education needs to be accountable to those who pay for and use the health services. Another challenge is how to resolve the internal conflict between the autonomy of medical academics to determine the content and process of medical education and the requirement of medical education to prepare a doctor who meets society's needs. How can employers and users of health services be constructively involved in developing and teaching the curriculum?

Preparing for an uncertain future

However unpalatable, doctors will increasingly be required to weigh cost as well as quality considerations in making resource and treatment decisions. They will need to balance needs of individual patients with the needs of the community. Doctors will not be able to avoid a political role and will be involved in making management decisions about resource allocation and in difficult ethical debates. Medical education has been slow to help doctors acquire the expertise necessary to play these roles well. One solution which might help

this and other challenges is to learn from the experiences with the education and training of other professional groups, including those outside the health sector. They, too, are grappling with training professionals for an uncertain future and are likely to have some good ideas which can be applied to medical education.

In looking to the future and rising to some of these challenges, it is apparent that continuing medical education must be developed from two ends: needs assessment and outcome evaluation. Its offerings should be rooted in a systematic study of real needs and the identification of priorities which take account of the perspectives of users and providers of health services, not just the perceived or real needs of doctors. Continuing education is not an end in itself but a means. At the other end of the educational process, providers of continuing medical education need to be rigorous in their evaluation of the effectiveness of their programmes in order to provide convincing answers to the most important questions: do these programmes make a difference to patient care and improve health outcomes?

- 1 Peering into 2010. A survey of the future of medicine. *The Economist* 1994 March 19;suppl:1-20.
- 2 Banta HD. Minimally invasive surgery. Implications for hospitals, health workers and patients. *BMJ* 1993;307:1546-9.
- 3 Shepperd S, Iliffe S. Hospital at home. *BMJ* 1996;312:923-4.
- 4 Kassirer JP. The next transformation in the delivery of health care. *N Engl J Med* 1995;332:52-4.
- 5 Lenehan C, Watts A. Nurse practitioners in primary care: here to stay? *Br J Gen Pract* 1994;44:291-2.

Correction

Competition: What might an online scientific paper look like in five years' time?

Readers may have spotted and been confused by our deliberate mistake in asking for your predictions of what an outline scientific paper will look like in five years' time (20-27 December, p 1696). We mean, of course, an online scientific paper, and the same rules apply.

*A memorable patient***The senior citizen**

The little elderly lady was admitted because of anal pain. As the surgical registrar on call I went to the ward after the operating list to see what problem patients had been admitted.

The staff nurse said: "The little old lady refuses treatment and says she wants to die." So I went to talk to her. She was 75, lived alone, and had no relatives. She had suffered with pain in her bottom for weeks and thought that she had cancer. It was not clear what her general practitioner had told her when he had arranged her admission, but he had not helped her morale.

Her pulse, temperature, and blood pressure were quite normal. Abdominal examination revealed a palpable sigmoid colon, but a rectal examination was impossible because of acute tenderness and spasm. She had a fissure in ano.

"We can cure this for you with a small operation," I told her.

"It's no use, I am too old, and I want you to give me something to end it all."

"I can't do that, especially to a senior citizen," I said.

This was in 1963 and this appellation for pensioners had just recently been coined.

"What did you say?" she said, sitting up and looking surprised. "You're a special breed," I said, "senior citizens are important people. In fact, over half our patients are senior citizens like you, so I will put you on the list for an operation tomorrow."

She agreed to this and told everyone she could that she was a senior citizen.

There is a lot in a name for a depressed and lonely old lady and she went home with renewed vigour and purpose a few days later.

David Hopton, *retired consultant surgeon, York*

We welcome articles up to 600 words on topics such as *A memorable patient*, *A paper that changed my practice*, *My most unfortunate mistake*, or any other piece conveying instruction, pathos, or humour. If possible the article should be supplied on a disk. Permission is needed from the patient or a relative if an identifiable patient is referred to. We also welcome contributions for "Endpieces," consisting of quotations of up to 80 words (but most are considerably shorter) from any source, ancient or modern, which have appealed to the reader.