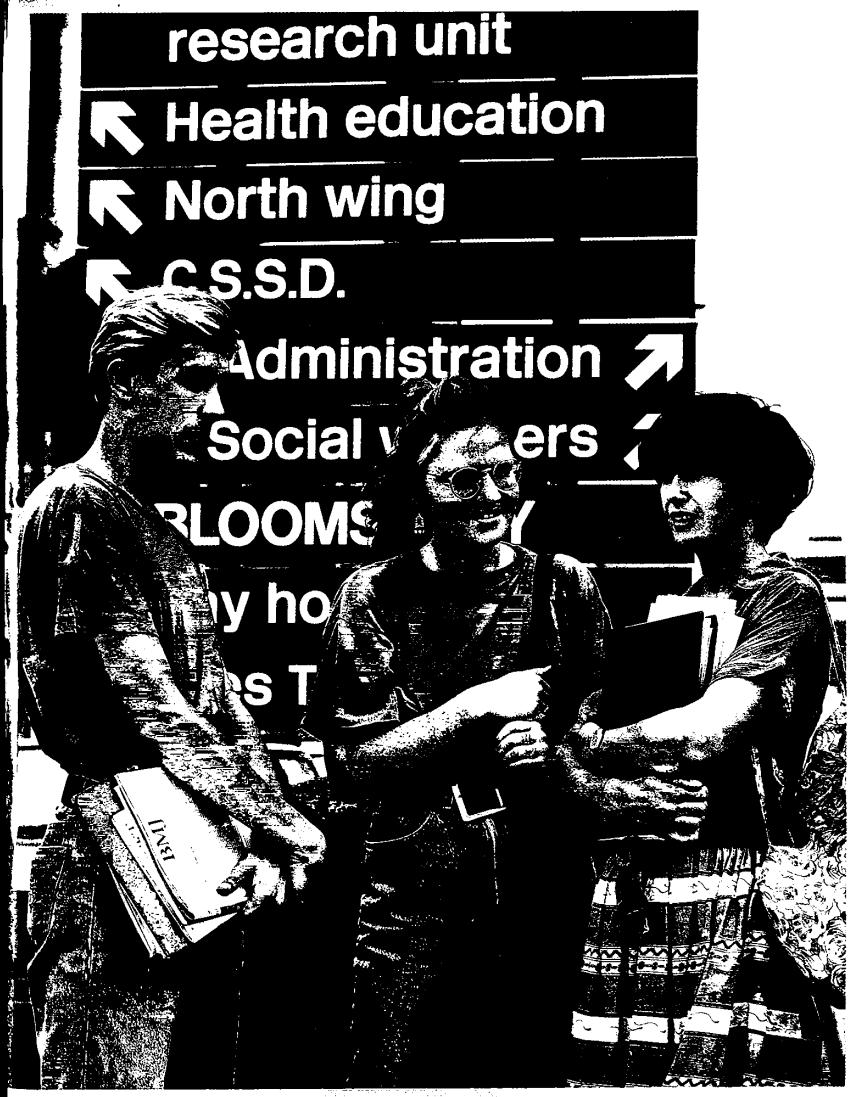
Undergraduate Medical Education



London and the future

Undergraduate Medical Education

London and the future

Undergraduate Medical Education

London and the future

Angela Towle

King's Fund Centre

for the King's Fund Commission
on the Future of Acute Services in London

ISBN 0 9518893 2 X

Published by the
King's Fund London Initiative
2 Palace Court
London W2 4HS
(telephone 071-727 0581)

Cover photograph by
Raissa Page/Format

Design and print by Intertype

Contents

TABLES

THE AUTHOR

Angela Towle has held a joint appointment at the King's Fund Centre and St Bartholomew's Hospital Medical College since January 1990. During this time she has conducted a major national enquiry into "Undergraduate Clinical Teaching for the 1990s" involving all the UK medical schools. In addition, she has been doing development work at St Bartholomew's involving outpatient clinic teaching, and a project for the teaching of gynaecology and surgery in general practice settings. Prior to this appointment she worked at the Wellcome Tropical Institute, assisting Ministries of Health and universities in several African countries to develop programmes of continuing education for doctors working in rural hospitals.

Acknowledgements

I should like to acknowledge the help I have received with this paper through discussions I have had with my colleagues at St Bartholomew's, especially Professor Lesley Rees, Professor Robert Davies, Professor Lesley Southgate, Dr John Moore-Gillon, and Dr Ken Grant. Ideas have also been implanted through conversations with numerous others, particularly Professor Andrew Haines at University College & Middlesex and Dr Nigel Oswald at Cambridge.

Executive summary

Medical schools are currently experiencing difficulties in providing undergraduates with the right quality and quantity of clinical experience. This is largely because the curriculum has failed to respond to changes in the patterns of health care and in the National Health Service. The situation is particularly serious in London where these nation-wide changes are compounded by concerns over the viability of the university teaching hospitals.

There is widespread agreement that the curriculum needs to change, not only to take into account external pressures but also because of complaints from students and teachers within medical schools about the curriculum being overcrowded, irrelevant, and unco-ordinated.

A national enquiry by the King's Fund Centre revealed a consensus of opinion about the principles upon which future undergraduate curricula should be based. In summary these are:

- reduction in factual information;
- active learning;
- principles of medicine (core knowledge, skills and attitudes);
- development of general competences;
- integration (vertical and horizontal);
- early clinical contact;
- balance between hospital/community; curative/preventive;
- wider aspects of health care;
- interprofessional collaboration;
- methods of learning/teaching to support aims of the curriculum;
- methods of assessment to support aims.

The latest consultation document on undergraduate medical education from the Education Committee of the General Medical Council (GMC) advocates that factual overload should be remedied by the development of "core plus options" curricula. This would allow medical schools a greater degree of flexibility than hitherto and encourage a greater variety in the courses offered to students.

Undergraduate medical students need to receive both a scientific education and a vocational training. They therefore need to learn in a university environment and in environments which will enable them

to gain the necessary clinical experience. Moves towards more integrated teaching between basic and clinical sciences implies that students will require access to university and clinical settings throughout the entire curriculum.

Traditionally, the teaching hospital has been the dominant teaching environment for medical students, but this is increasingly difficult to justify on educational or financial grounds, especially in London. Other clinical settings besides the wards need to be developed – particularly a more extensive use of outpatient clinics, general practice and clinical skills laboratories. This would require major changes in attitudes, curriculum planning and organisation, and resource allocation.

If the requirements for teaching are based on patients as opposed to hospital beds, students should be able to learn wherever there are patients. If new types of health care facilities are developed, such as local secondary care centres, there is no reason why these could not be suitable environments for teaching undergraduates.

If the medical schools could lessen their reliance on their teaching hospitals, they would be better placed to develop the unique opportunities which London has to offer for undergraduate teaching in relation to its local populations. Closer links between the medical schools and the local community could bring mutual benefits in terms of providing improved health care for the population through service and research, and improved teaching for undergraduates through their involvement in the health problems of the local people.

Change in undergraduate medical education will be evolutionary rather than revolutionary, but the direction has been clarified by the King's Fund Centre study and the GMC consultation document. The determination of the GMC to see real changes to the curriculum will be a major factor in determining the speed and extent of progress. All medical schools are currently either reviewing their curricula or discussing the need to do so. Mechanisms are needed, both within medical schools to ensure that curriculum review is an ongoing process, and between medical schools and the community at large to ensure that curriculum development is responsive to continuing changes in the pattern of health care.

Abbreviations

AUTGP	Association of University Teachers of General Practice
DHSS	Department of Health and Social Security
DHA	district health authority
GMC	General Medical Council
GP	general practitioner
LHPC	London Health Planning Consortium
NHS	National Health Service
SIFTR	Service Increment for Teaching and Research
UFC	Universities Funding Council

INTRODUCTION

The education of undergraduate medical students is primarily the responsibility of the universities and is funded by the Department of Education and Science through the Universities Funding Council (UFC). Teaching, however, is carried out by both National Health Service (NHS) and academic (university) staff, and requires the students and teachers to have regular access to patients. The NHS is responsible for the provision of the facilities that support the clinical part of the undergraduate curriculum. Most of this NHS support for undergraduate education is provided in hospitals where the education of students is inextricably linked with the general provision of services to patients.

The provision of undergraduate medical education is thus based on a partnership between the universities and the NHS, which ultimately depends on funds, allocated by Parliamentary vote for distinct purposes. An added dimension is that the General Medical Council (GMC) has a statutory duty to promote high standards of undergraduate medical education. One of the ways it fulfils this role is by publishing recommendations on the undergraduate curricula of medical schools at approximately ten-year intervals.

Traditionally, the undergraduate course has been divided between a "pre-clinical" basic medical sciences period, lasting two academic years, and a "clinical" period, lasting thirty-three months, although there is now a tendency towards more integration between these components. The clinical course, normally based in the university teaching hospital, comprises attachments in general medicine and surgery, and a series of rotations through the major clinical specialties.

Most medical schools, and particularly those in London, are experiencing difficulties in providing students with the necessary clinical experience. This is because, for a variety of reasons, teaching hospitals do not provide the ideal learning environment that they once did. Indeed, there is currently much nervous discussion about the viability of the London teaching hospitals and their associated medical schools in view of the latest NHS reforms. Pressure for reform of the undergraduate curriculum is coming from several directions and it is inevitable that the next few years will see steady, if not revolutionary, change.

It is not the intention of this paper to attempt to speculate on the impact the NHS reforms might have on medical schools, or to create a vision for the future of medical education in London. There are too many unknown factors to make this a valid approach. However, it is possible to predict the direction of change in the undergraduate

curriculum over the coming years, and the consequent requirements for clinical teaching. The aim of this paper, therefore, is to highlight the fundamental principles upon which the future curriculum will be based, and to discuss the implications in terms of curriculum design and the issue of where students should learn, with special reference to London. In this way the likely developments in undergraduate medical education can be linked into a wider vision for the future of health services in London.

CHAPTER 1

Undergraduate medical education in London

Foundation of the London medical schools

Originating from the practice of students being apprenticed to members of the staff, medical teaching in London was based on the hospitals, and the schools developed, not in relation to the University of London but to the hospitals. Of the twelve undergraduate teaching hospitals in London, two are mediaeval religious foundations (St Thomas's and St Bartholomew's), five resulted from philanthropic activity during the eighteenth century (Charing Cross, Guy's, London, Middlesex, and St George's) and five appeared during the nineteenth century at a time when the development of medical education was becoming of special concern (King's, Royal Free, St Mary's, University College, and Westminster).

The dates of foundation of some of their medical schools are difficult to determine precisely but probably the London Hospital Medical College, instituted in 1785, foreshadowed the modern pattern more closely than did the three schools which regard themselves as earlier foundations (St Thomas's, St Bartholomew's and Guy's). Six of the twelve made their appearance during the period 1828 to 1835, as a result of the ferment of interest in medical education at that time. The most recent foundations are St Mary's (1854) and the Royal Free Hospital Medical School, formerly the London School of Medicine for Women (1874), which started admitting men in 1947. Since 1900 all the schools have been affiliated to the University of London, although they remained much more closely associated with their parent hospital than to the university, and were dominated by the clinical staff of the hospital. This has resulted in strong individual traditions, and fierce loyalties and rivalries between the different medical schools.

The London teaching hospitals were generally situated in populous areas not yet significantly threatened by the development of hospitals in the rapidly growing fringes of the city. They had an abundant supply of patients from Greater London as well as a large number of referrals from all over the country. This abundant supply of patients was adequate for the small number of students then attending the schools, so that, except for instruction in infectious diseases and psychiatry, all clinical teaching was carried out within the main hospital.

According to Le Quesne (1987):

> *the combination of these factors gave the London schools their characteristic pattern, with their emphasis on bedside teaching in 'firms', their isolation from the university and, with all their teaching on site, their sense of being a closed community. For many years these famous schools gave an*

excellent training to generations of students, instilling in them high standards of professional conduct and clinical practice. But in many ways they reflected a structure of medicine and an approach to medical education which were passing, and already in the 1930s there were intimations of the forces which were to bring about the great changes that we have seen in the past 40 years.

Developments, 1940–70

Whilst many of these changes have come about in response to circumstances which are peculiar to London, others have affected all the medical schools in the country. Such changes were the introduction of the compulsory pre-registration year, and the admission of women to all medical schools, both resulting from the publication of the *Report of the Inter-departmental Committee on Medical Schools* (Goodenough Report, 1944). By the late 1940s it was increasingly apparent that the growth of knowledge in the sciences related to medicine was causing medicine itself to undergo a profound change, thereby requiring changes both in the purpose of medical education and in the staffing of schools. The Goodenough Report and later the *Report of the Royal Commission on Medical Education* (Todd Report, 1968) both pointed to the need to shift the emphasis in teaching away from the amassing of factual knowledge to a more scientifically based approach to medicine. At the same time it was appreciated that, if the schools were to keep abreast of, and make contributions to, this great emergence of scientific knowledge, then they should be closely related to the science departments of the university, and in addition should be staffed by people who had the time and opportunity to devote a major part of their efforts to research and teaching.

The Todd Report was also noted for:

- its attention to the status of general practice and primary care;
- the contribution of the behavioural sciences to medicine;
- the growth of preventive medicine;
- the desire to see an integrated five-year curriculum instead of two sharply divided stages (pre-clinical and clinical);
- less congested, better planned clinical courses;
- the need for a BMedSci. degree for all students;
- the envisaged effects of computers.

Reflecting many of the recommendations of the Todd Commission, in 1973 the University of London introduced new curriculum regulations which broadened the course content. Into the basic science component of the course was introduced the study of the behavioural sciences, statistics and genetics, and into the clinical component was introduced an exposure to general practice and community medicine, with an increased emphasis on psychiatry and paediatrics.

In its recommendations relating to the London schools, the Todd

Commission was influenced by two main considerations. Firstly, that there were too many, too small schools in London with the result that few had a sufficient complement of adequately staffed academic departments; secondly, that the schools were too isolated from the multifaculty colleges. Based on these considerations, they recommended a major reorganisation, with the amalgamation of the twelve schools into six larger ones, each of which was to be closely interrelated to a multifaculty college. Not surprisingly, these proposals provoked opposition and, although the university set up a committee to implement these plans, little was achieved. The main reasons for the failure in implementation appear to be the inherent topographical difficulty of some of the proposed affiliations, especially with multifaculty schools, the lack of any realistic appraisal of the financial aspects of the proposed changes, and, finally, the absence of acceptance by the schools that changes of such magnitude were actually required (Le Quesne, 1987). At the time the Todd Report was published in the late 1960s, money was still plentiful and the mood was expansionist. However, the financial recession in the mid-1970s greatly changed the picture.

Crisis in the 1970s

Towards the end of the 1970s, the deans of the London medical schools, worried by the prevailing circumstances and fearing the closure of a school, approached the Vice-Chancellor of the University of London to set up a working party to examine matters. For a number of years there had been concern within the university about the continually increasing constraints being placed on medical and dental resources as a result of a combination of factors:

- the reorganisation of the NHS in 1974;
- the implementation of the recommendations of the Department of Health and Social Security (DHSS) Resource Allocation Working Party;
- demographic trends affecting acute bed needs in London in the next decade and beyond;
- the increasing trend towards specialisation;
- the movement of registrar posts away from London.

All these factors, combining with a reduction in financial provision to the University of London, led to the need for a review of the activities of the medical and dental schools to see whether any rationalisation was possible without impairing the high standards of medical and dental education and research in London.

As a result, in 1979 the Vice-Chancellor set up a working party, chaired by Lord Flowers, to undertake a major review of resources for medical and dental education within the University of London. The essential themes underlying the recommendations of the Flowers Report (1980) were in many respects similar to those of the Todd

Commission. The emphasis was on the advantages (on both academic and financial grounds) of creating fewer, larger schools, and of the desirability of close association of the postgraduate schools and institutes with the general medical schools. Less emphasis was placed on association with multifaculty colleges, essentially because of the practical difficulties of achieving this in London. The report recommended that medical and dental education should be protected by grouping the present medical institutions into six schools of medicine and dentistry in place of the thirty-four separate institutions then in existence. Costs would be largely contained by a general worsening of staff–student ratios. The report was hotly debated for nearly two years and the outcome, eventually agreed by the Senate at the end of December 1981, has shaped subsequent medical and dental strategy.

While the Flowers working party was looking at the problem from the medical education point of view, a complementary discussion document was produced by the London Health Planning Consortium (LHPC) in 1980. This document attempted to identify the lines of development along which planning might proceed. In formulating its proposals, the LHPC exchanged information with the Flowers working party to facilitate a complementary approach by each body. The LHPC pinpointed the problem in London: "The level of clinical facilities needed to support the medical schools concentrated in the centre can no longer be justified on service grounds" (LHPC, 1980).

The LHPC proposed links between the main teaching hospitals and complementary hospitals, which were designed to meet both service and academic needs. The proposals divided London naturally into geographic zones within which the medical schools might be expected primarily to operate and in which teaching hospitals should concentrate their services in co-operation and partnership with other district general hospitals.

Restructuring in the 1980s

The restructuring which followed the Flowers Report resulted in the present shape of medical education in the University of London, although there are currently eight medical schools rather than the six originally envisaged by Flowers (see Table 1.1).

As the 1980s progressed, it was apparent that the circumstances which forced the major restructuring of medical education in 1980 had not eased but worsened, and that it was necessary to again review the situation based on experiences over the past eight years. A working party set up under the chairmanship of the Pro-Vice-Chancellor, Professor Clark, had the remit to identify teaching and research strategies across the University of London in order to rationalise them into an overall academic plan. The Clark Report (1989) noted that:

> *the mutual and traditional interdependence between a medical school and its university hospital is being weakened by the increasing rationalisation of medical services introduced at local level by Regional Health Authorities, and at London-wide level by the Department of Health. Thus the*

Table 1.1

The re-organised pattern of the London medical schools, with annual student intake

		Pre-clinical	Clinical
A	1) University College and Middlesex	195	215
	2) King's College and King's College Hospital Medical School	105	115
	3) St Bartholomew's, The London and Queen Mary College	200	250
B	1) Charing Cross and Westminster	155	175
	2) Guy's and St Thomas's (United Medical and Dental Schools)	195	225
C	1) Royal Free	100	100
	2) St Mary's*	100	110
	3) St George's	150	160
		1200	1350

A = Three schools involving mergers with multifaculty colleges. The relationship of St Bartholomew's and The London with Queen Mary College is in the form of a confederation (City and East London Confederation) rather than a complete merger.
B = Two new schools formed by fusion of two existing schools.
C = Three schools remaining freestanding.

[*Since the original publication of this table, St Mary's has merged with Imperial College]

Source: Adapted from Le Quesne, 1987

identity of a medical school with one main parent university hospital is weakened by the need for students to go to many other hospitals, and by the services to be developed on a regional basis. Therefore the university hospitals themselves cannot expect to be expert in everything.

The report recommended the establishment of loose collaborative arrangements termed "academic clusters", primarily on a geographic basis and voluntary in nature. Such clustering would help meet the need to link medical and dental education with multifaculty institutions wherever possible (as in the recent merger between St Mary's and Imperial College) and enable institutions to share facilities for teaching and patient care. However, it was also noted that the advantages which clustering would bring might be offset by developments consequent on the latest NHS reforms: "Until the position is made clear concerning these consequences, the relationship between the needs of the university informing regional clusters and those which suit the NHS remain problematic" (Clark, 1989).

The tension between the university and the NHS in London has been heightened in recent months following the introduction of the NHS reforms. These difficulties and other problems and pressures for change which are currently affecting undergraduate medical education at a national level are considered in detail in Chapter 2.

CHAPTER 2

Current problems in undergraduate medical education

There is widespread recognition that undergraduate medical education in Britain will have to change over the next few years. The pressure for change is coming from both within the teacher and student body and from outside the medical schools, particularly as a result of changes in the patterns of health care and in the NHS. While all medical schools are affected, those in London are facing even greater problems due to the intensity with which some of these pressures are operating and because of factors unique to the capital. This chapter first summarises the problems currently facing undergraduate medical education in general and then provides a brief analysis of the London situation.

Changing patterns of health care

Over the past fifty years there have been major changes in demography, in patterns of illness, and in the work of teaching hospitals. Advances in the treatment of acute infections have led to a shift in the care of these illnesses away from the hospital into general practice. People are living longer and the elderly form a higher proportion of the population: the chronic, degenerative diseases of old age and multiple pathology predominate in which the main emphasis is on the management of disability and handicap rather than on the cure of specific diseases. Accordingly, the general practitioner (GP) and the resources available in the community have become increasingly important.

At the same time there have been unprecedented advances in medical treatment. On the one hand this has resulted in highly specialised and expensive procedures such as open heart surgery and organ transplantation, and on the other hand it has enabled invasive surgical procedures to be replaced by non-invasive or minimally invasive techniques which have led to increasing amounts of day surgery or short-stay operations. One consequence has been that more people are diagnosed and treated as outpatients while those admitted to hospital tend to be sicker, have more complex pathology or are in need of highly specialised management.

All these factors have a major impact on undergraduate clinical education. Many illnesses previously treated in hospital are not now seen on the wards. In many cases the management of disability has become as relevant as the treatment of disease and takes place increasingly in the community. The reduced length of stay in hospital of patients reduces the opportunity for undergraduates to get to know patients and study their progress over time.

In addition, these changes in the patterns of health care have attendant implications for costs at a time when there are ever higher public expectations about the quality and methods of treatment available, about preventive care and about the control of chronic or fatal conditions. Trends in treatment which allow a larger and faster throughput of patients reduce the cost per patient while others which involve increasingly sophisticated technology and drug therapy involve a higher cost per patient. The increasing demands made upon the NHS and their wide implications for medical education come at a time when resource constraints are becoming ever more severe.

The NHS reforms

The NHS reforms have radically changed the role of district health authorities (DHAs) and the health boards of Scotland and Northern Ireland. In future they are to "purchase" the clinical services required for the health care of their population from "providers" which are either directly managed units or NHS Trusts. The separation of purchaser and provider is an essential component of the internal market and concern has been expressed that purchasing decisions may not take sufficient account of academic needs. For 1991–2, districts will be funded on the basis of their historic patient flows; after April 1992 purchasers will be free to seek new arrangements. Teaching hospitals will thus be affected by two major factors: the funding position of their host district and the extent to which they attract patients from other districts.

From the point of view of teaching hospitals, failure to attract sufficient contracts from purchasing authorities could ultimately render the hospital non-viable. The extent to which hospitals will be dependent on cross-boundary flow for their continued viability varies from something in the region of five per cent of cases to over sixty-five per cent. Some teaching hospitals will need to contract with sixty or seventy health districts to cover their current workload. In the case of regional or supraregional specialties, it appears likely that current referral patterns will continue at least for the foreseeable future. However, undergraduate teaching requires a broad clinical base. The "run of the mill" cases essential for teaching which are most likely to be lost to teaching hospitals are dependent on cross-boundary flow.

The Medical Committee of the UFC, charged with the task of advising the Council on issues arising from the implementation of the NHS reforms, held a series of meetings with representatives from all the medical schools at the beginning of 1991. In its report, the Committee states:

> *The potential impact of these changes (particularly capitation funding) upon the universities with medical schools is very great and has not been fully understood by some schools. Short term issues such as bed closures and reduction in university funds for the medical faculty tend to dominate thinking, leaving less time for the longer range issues to be considered. The extent of the problem varies greatly between NHS regions and is much more pressing in the larger conurbations.*

Capitation funding and cross-boundary flow are not the only aspects of the NHS reforms which are having an impact on undergraduate medical education. The proposal to include statements of NHS hospital consultants' agreed commitments to teaching and research in their job plans has been widely welcomed by universities, but concern has been expressed on the contracts for clinical academics under the so-called "knock-for-knock" (informal cost sharing) arrangements. While the growing volume and/or complexity of clinical work is continuing to erode academic time, there are, in addition, new demands for greater involvement of senior clinical staff in management and medical audit.

There are also problems in the distribution of the Service Increment for Teaching and Research (SIFTR) designed to compensate for the additional service costs of hospitals supporting undergraduate teaching and research. Considerable progress has been made in agreeing the distribution of SIFTR between hospitals used for teaching (UFC Medical Committee, 1991) but much less work has been done on the distribution of SIFTR within individual teaching hospitals. There is a danger that SIFTR will be entirely committed to reducing teaching hospital contract prices and that freeing money for funding specific service consequences of teaching and research may prove extremely difficult. Focusing SIFTR more specifically on service costs might make it possible for the money to be used to pay for special clinics, arising directly from teaching, in which little service but much teaching is done without cost to hospital or referring general practitioners (Richards, 1990). The problem is that other aspects of the teaching hospital's work previously funded in a general way out of SIFTR would then be left unfunded unless additional resources were found.

Pressures from within the medical schools

These external pressures and changes are becoming more acute at a time when there are many signs of dissatisfaction among medical teachers themselves. Undergraduate teaching is recognised to be "uneven in quality, variable in commitment and lacking in co-ordinated objectives" (Richards, 1988). "British medical schools are attracting some of the most able young people in the country and simply boring them to death" (Fraser, 1991). The main complaint is that the curriculum is grossly overcrowded with factual information, some of it likely to be out-of-date before the student even begins to practise, and there are ever increasing pressures to include yet more topics in the course. The problem seems to be most acute in the pre-clinical part of the curriculum: "There is an increasing body of objective evidence to confirm the strong (if not universal) impression that the great bulk of what is taught (and particularly what is examined) is neither retained nor useful" (Charlton, 1991).

There is alarm that highly motivated and enquiring school leavers are too often being turned into passive absorbers of facts which are required only to enable them to pass examinations. Students enter medical schools highly motivated and with generally good approaches to learning, but their medical teachers are noticing that they rapidly experience loss

of motivation, growing cynicism and difficulty in seeing the relevance of much of the material they are required to learn, especially in the first two pre-clinical years. As a result, in their clinical course students can neither remember nor use the basic science information they apparently learned successfully a few months earlier. The reason is that the basic and other sciences are taught out of a clinical context. They appear irrelevant and so encourage students to compartmentalise their knowledge. While most medical schools have many examinations which all too frequently encourage rote learning of facts rather than developing an understanding of principles and the ability to solve problems, they do not have systems for providing comprehensive and non-threatening feedback to students on their performance.

At the same time, questions are being asked about the appropriateness of hospitals as the major places in which undergraduates should learn medicine, and a "feeling" that more time should be spent in the community in order to reflect the true pattern of health and disease in the population. The fact that many of today's health problems are chronic, degenerative diseases must be reflected in the curriculum which has been biased towards acute hospital medicine. Curriculum planners are also beginning to recognise the need to take account of rising public expectations with regard to medical care. The care of the dying, communication skills, social factors in medical care, and legal aspects are examples of topics currently promoted by external pressure. There is particular concern that communication skills should feature more prominently in the curriculum, since this is an area of increasing public complaint, and that these should be taught explicitly rather than learned by (sometimes bad) example.

Dissatisfaction with the curriculum is one source of pressure for change. Dissatisfaction with the quality of teaching is another. A major difficulty is that a student's education is controlled by those whose principal interests lie in areas such as patient care or research rather than in teaching. Much clinical teaching is done by NHS employees who fall outside the control of the universities. Medical teaching qualifications do not exist and virtually no opportunities for educational training or staff development exist in any of our medical schools. Students complain about methods of teaching, and "teaching by humiliation" is still the favoured method by far too many consultants. The particular circumstances of clinical teaching – the presence of the patient, the authority of the clinician, the nature of the illness and ethical issues – make effective clinical teaching a highly skilled activity. It is beginning to be realised that clinical teaching cannot be left to chance: that good clinicians/researchers are not necessarily good teachers and that even the naturally gifted could benefit from staff development designed to enhance their skills and maintain their motivation. Further pressure to improve the standard of university teaching in general is coming from the academic audit unit recently set up by the Committee of Vice-Chancellors and Principals.

A related issue is the decline in the numbers of academic staff of medical schools (between 1981 and 1987 this was equivalent to the closure of two medical schools) and the increasing number of staff on

short-term contracts funded from outside the university. Reductions in the funding of the university system have led to a progressive reduction in the number of academic posts funded wholly by universities. Between 1979–80 and 1983–84 the total number of full-time medical academic staff fell from 2165 to 1728 and in 1986–87 it fell further to 1652. At the same time the number of full-time academic staff not wholly financed from university sources – that is funded by the NHS, the Medical Research Council, the medical charities or industry – has risen from 749 in 1980–81 to 1855 in 1986–87. Most staff funded from outside sources are on short-term contracts for defined research projects in scientific subjects. They do not compensate for the full-time university staff who have been lost, particularly in clinical departments, and can contribute only in a limited and ephemeral way to curriculum development and teaching. It is becoming an increasing problem to maintain standards of teaching and ensure commitment to the philosophy and aims of the curriculum when teaching is done by so many people whose main responsibilities and interests lie elsewhere.

Problems in London

The problems described so far in this chapter are generic to medical education. There are further problems, however, affecting London medical schools, as a result of the over-supply of teaching hospitals in the capital and the fact that approximately one-third of the country's medical students are educated in London.

The population of both inner and outer London has fallen while the number of people living in the home counties has steadily increased. In planning to provide services to meet these changes in population, the health authorities are faced with a pattern of acute hospital provision which has been largely determined by history. Many hospitals were built when the distribution of the population was very different and, as a result of migration, many parts of London now have facilities far in excess of local needs. Even when allowance is made for the fact that many of the hospitals in London serve a wider population because of the specialist services and expertise that they offer, there is still a significant over-provision of acute hospital facilities in central London compared with the rest of the country.

While the Secretary of State for Health has a responsibiltiy to provide health services for the general public, he also has a duty to make available for clinical teaching and research such facilities as are reasonably required by medical schools. From the university's point of view, it is desirable that such facilities should be available in reasonable proximity to the academic institutions which use them. The problem in London is, in essence, that the level of hospital facilities needed to support the medical schools concentrated in the centre can no longer be justified on service grounds.

Although there are variations among the medical schools in curriculum design and the mix of clinical facilities used, there are some basic requirements which have been traditionally regarded as necessary and which are now under threat. The medical schools and the

University of London regard it as important that students should spend a high proportion of their time within a university environment. The scientific component of the undergraduate course and the, at least in theory, integration of teaching make it important for the clinical facilities to be near to the medical school, particularly in the first and second clinical years. At the same time, the early part of the clinical course concentrates on the basic clinical methods of history taking and examination which are taught through clerkships on general medical and surgical firms. Most schools prefer to avoid using highly specialised firms for teaching at this stage of the course, although this is becoming very difficult in view of the fact that general medicine and, particularly, general surgery are increasingly rare in the main teaching hospitals. The need for many students to be attached to general firms working at hospitals within or near to the main university campus is not unique to London but is compounded in the capital by the close proximity of the medical schools to each other within a comparatively small area.

Over the years, the medical schools have sought to adapt to the increasing pressure on facilities in different ways. Most have negotiated access to further facilities away from their immediate locality and strong links have been developed with local district general hospitals. Students value their experience at these hospitals because they are generally busier, have a more general case mix and are more welcoming to students who often feel "like a spare part" in the teaching hospitals with their large complement of postgraduate trainees, student nurses, etc. However, it has the disadvantage of separating students from the university environment at an early part of the course, and may result in great variations in the quality of teaching and clinical experience. Many schools have also made increasing use, for general teaching, of a wider range of medical and surgical specialties which have been recognised separately from those of general medicine and general surgery, but this is increasingly resulting in some students spending weeks on a firm which sees little else but breast cancer while others see little but varicose veins and hernias. These problems have been compounded by bed closures due to the financial difficulties of many London teaching hospitals, resulting in a general lack of patients, especially for elective surgery.

The NHS reforms are likely to cause further problems for London medical schools and their teaching hospitals. The problems of cross-boundary patient flow, although not confined to the capital, are worst in London. In its report, the UFC Medical Committee (1991) concluded:

> *The situation of the main teaching hospitals associated with some of the medical schools in inner London is sufficiently serious as to raise doubts about their future ability to deliver a viable educational programme, unless corrective action is taken. The problems are of such magnitude that it is doubtful whether they can be solved locally.*

The parlous state of the London teaching hospitals is currently making the medical schools very nervous. There is a genuine fear that one or more of the medical schools is facing extinction on account of the vulnerability of its main teaching hospital, so inextricably are they linked at present.

CHAPTER 3

Future aims of undergraduate medical education

The King's Fund Centre study

It was against the background of the pressures for change described in Chapter 2 that the King's Fund Centre, in collaboration with St Bartholomew's Hospital Medical College, decided in 1990 to undertake a wide-ranging national enquiry into clinical teaching within the undergraduate curriculum, through a three-part consultation. The aim of the enquiry was to establish guidelines for the design of future curricula in which clinical teaching is adapted to the changing needs and circumstances of health care. Invitations to participate were sent to the deans and heads of major clinical departments in all the UK medical schools, plus representatives from the Royal colleges. The consultation process revealed a clear consensus of opinion for change and general agreement about the principles upon which undergraduate curricula of the future should be founded (Towle, 1991). These principles are outlined in the rest of this chapter since they indicate the likely direction in which medical education will be moving in the coming years. However, it should be emphasised that the momentum for curriculum change described in this chapter has been reinforced by the GMC Education Committee, which circulated to all medical schools their latest consultation document on undergraduate medical education at about the same time as the findings of the King's Fund Centre study were being disseminated.

The GMC consultation document

The GMC Education Committee, which updates its Recommendations on Basic Medical Education approximately every ten years, has on this occasion departed from tradition by issuing an interim consultation document as a means of introducing the reforms it proposes and exploring their feasibility with the medical schools. The Committee acknowledges that the main criticism levelled at the undergraduate course today is the same as that when its previous recommendations were issued in 1980 – it is still grossly overburdened with factual information. They believe that, if the load on the curriculum were to be reduced, the proposals for change would be likely to be radical and it would therefore be unreasonable to expect their rapid adoption. It is recognised too that if change were to be achieved there would be a necessity for dialogue with medical schools rather than simply the prescription of a new set of recommendations. However, despite this note of caution, the consultation document has been generally well

received by medical schools as providing an acceptable framework for future curriculum planning. In fact, it is clear that, although the information for the GMC document and the Centre's study was collected in very different ways, there is a striking agreement in their conclusions about the nature of the change that is required. It is therefore certain that the next few years will see a great deal of attention being paid to curriculum reform along the lines described in this chapter.

The undifferentiated doctor

Against the background of an overcrowded curriculum, rapid advances in knowledge, and a formal system of postgraduate education, it is widely agreed that undergraduate medical education should provide a general education resulting in a graduate who is an "undifferentiated doctor", able to pursue his or her postgraduate education for subsequent practise in any branch of medicine. Medical education should be planned as a continuum: as the first phase, undergraduate education should prepare graduates not only for their responsibilities in the pre-registration period but also for postgraduate and continuing education.

The undifferentiated doctor concept acknowledges that the number and breadth of present-day specialties are so great that the individual cannnot become competent in all. Moreover, medicine is changing rapidly and information learned by graduates may become out-of-date before they actually begin to practise. Our understanding of health and disease is constantly being enlarged and adapted but no-one is able to predict what knowledge will withstand the test of time and what will be superseded, or how quickly. We also need to be able to prepare our future doctors for jobs which have not even been thought of.

Since there is not enough time in the undergraduate course for detailed specialist training, the curriculum should aim to teach general principles and their application, and basic skills upon which postgraduate specialisation can build. This approach allows for the development of the individual student as a whole and the acquisition of skills and concepts which will form the basis for specialist training and clinical practice. It should also enable students to learn about the broader issues that cut across all branches of medicine and foster holistic thinking, such as communication, ethical issues, care of the terminally ill, and integration between hospital and community care.

Such an approach is viewed by some as carrying the risk of producing a standard product reduced to the lowest common denominator. To avoid this, medical schools should be flexible enough to produce the undifferentiated doctor (e.g. a future GP) and the differentiated doctor (a scientifically trained medical graduate). While aiming to provide a general education, opportunities should also be made readily available for an individual student to preserve a specialist interest (by project, research study, elective, etc.) and there should also be opportunities to encourage excellence in the most academically able students, possibly through an MD/PhD programme.

The enquiring doctor

As a consequence of the undifferentiated doctor concept, it is clear that the undergraduate curriculum must aim to create motivated, critical and enquiring doctors, willing and able to continue learning throughout their professional career. The curriculum should foster the ability of students to think rather than to memorise facts. It should encourage intellectual enquiry, the integration of theory and practice, problem solving and critical reasoning. The acquisition of such skills is more important than attempting to cover all the specialties in some depth.

The ability and motivation to continue learning can only be achieved by ensuring that the undergraduate course is planned and taught according to the principles of adult learning. This will require a shift away from teacher-centred, passive learning towards student-centred, active learning.

Effective and efficient learning by adults rests on a number of conditions:

- full understanding by the students of what they are expected to achieve;
- acceptance by the students that these goals are relevant to their personal goals;
- learning in the context in which it is subsequently to be applied in practice;
- opportunities to ask their own questions and seek their own answers;
- opportunities to reflect with others on what has been learned and to check its value, accuracy and comprehensiveness by obtaining feedback;
- opportunities to apply what has been learned;
- opportunities to practise under supervision, for immediate feedback on performance;
- learning cumulatively, that is building progressively on earlier learning and previous experiences.

It is particularly important to ensure that students are not overwhelmed by huge volumes of course work: ensuring time for reflection, discussion and personal development is the challenge in a curriculum that is inevitably full and at present characterised by information overload. Students must be encouraged to seek information by themselves, with more emphasis on guided, self-directed learning, small-group tutorials, problem-based learning and project work, and fewer lectures or other formal teaching sessions. A spirit of enquiry will also be developed through study in depth of an area of interest, project work, research opportunities and suitable electives.

Education, training, and personal development

The undergraduate years are a time of scientific education, vocational

training, and personal development into a young adult professional. Whereas training is directed towards learning to perform specific tasks, education prepares students for the unexpected and unknown. Both education and training are required to enable new graduates to perform their immediate duties as pre-registration house officers, and to cope with the many changes which they will experience throughout a professional lifetime of more than forty years. In order to achieve the appropriate balance, education, training, and personal development should be viewed as three strands running throughout the undergraduate curriculum, closely intertwined, not sequential. The main practical requirements necessary to achieve a balance are as follows:

- better integration between pre-clinical and clinical teaching throughout the course, so that scientific education is presented in a context which is relevant to the practice of medicine, and there is early patient contact;
- integration between the different disciplines to ensure a balanced curriculum in which no single approach or attitude is unduly dominant;
- minimum core curriculum, concentrating on basic principles and methods underpinning the scientific basis of medical practice, and illustrated by examples;
- more unstructured time in the curriculum for individual self-directed study, discussion and reflection to foster independent learning and personal development;
- some choice within the curriculum, providing opportunities to pursue individual areas of interest through project work, supervised research, and study in depth;
- wide clinical exposure to allow students individual experience of a wide variety of patients and a broader view of medical practice beyond the confines of a large teaching hospital (i.e. less emphasis on hospital wards and more teaching in the community);
- opportunities and time for extra-curricular activities within the broader university environment to allow full development of the individual student;
- establishment of a tutorial system, with personal tutors for students, to allow discussion of difficult moral and ethical issues and help students to cope with stress, uncertainty, etc.;
- continuous academic and personal feedback from teachers through an appropriate system of formative assessment;
- good role models – successful in clinical practice with an intelligent understanding of science and appropriate attitudes – whose opinions and advice are made available to students;
- creative and competent teachers, committed to the goals of undergraduate education and student-centred learning, and given sufficient and specific time for teaching activities.

Basic competences

As an essential major aim of general medical education, a number of key competences should be developed by the time of graduation. These general competences will be essential for the entire period of professional life, irrespective of the specialty in which the graduate eventually practises. These competences will include:

- basic clinical skills (interviewing, physical examination);
- communication skills;
- applying the scientific method and critical thinking;
- problem-solving, including dealing with probability, ambiguity and uncertainty;
- information gathering, manipulation and storage;
- management of self and others, including proper use of resources and working within an organisation;
- working with others as a team;
- interpersonal relationships;
- independent learning;
- adaptation to change and participation in change.

These are the basic competences which can serve a doctor for a professional lifetime and upon which specific skills and knowledge can be built during training. Such competences would place any medical graduate in a position to continue learning, solve problems and contribute to individuals and society in general. They are fundamental if future doctors are to be able to cope with a) change and development in clinical practice and b) multiprofessional aspects of health care in which the doctor will be a team leader, effectively managing resources and making the best use of services within financial constraints. The ability to accept and initiate change will be crucial.

Medical education must provide appropriate opportunities for the achievement of these general competences by explicit consideration of their importance and relevance during clinical training. They should be developed progressively and cumulatively during the undergraduate course by experience and practise in real-life situations through the study of individual patients, groups of patients, and healthy members of the community, as well as study in the university context (for the development of intellectual skills). Study and practise will need to be backed up by discussion between students and tutors, peer group discussion and reading.

Professional knowledge, skills, and attitudes

The curriculum should emphasise the understanding and application of concepts, concentrating on the principles of medicine and the application of the scientific approach to clinical problems. The

principles of problem solving, constructing a differential diagnosis, planning investigations, and management of the patient should be covered including an analysis of how decisions are made, the process of problem solving, and the difficulties and uncertainties of medicine.

Basic science teaching should concentrate on broad principles, identifying areas of controversy and current developments, and on teaching the scientific method and critical thinking. Sufficient time and opportunities should be provided to allow undergraduates to relate basic biological sciences to clinical problems.

The curriculum should teach clinical care rather than medicine, gynaecology, surgery, and so on. The main skills that need to be taught to undergraduates are the skills of diagnosis (eliciting a history through the interview, physical examination, a few basic diagnostic tests), the basic principles of patient management (especially the principles of first aid, resuscitation and acute care), communication skills, interpersonal skills and managing one's own time, and learning. Learning should be by instruction, example and practical experience (supervised practice). The level of specific professional skills to be acquired by the time of graduation should be closely related to the responsibilities that the new graduate is expected to assume during early postgraduate training or supervised clinical practice.

The curriculum should emphasise the importance of the doctor–patient relationship and ensure that students are able to establish good relationships with patients, their families, and the professionals involved in health care, through the development of appropriate attitudes and good communication. Time should be allowed to ensure that these essential qualities are developed. The curriculum should also assist students to understand and respect the role, work and problems of other professionals involved in health care and the role of the doctor as leader of the health team.

Holistic thinking

The curriculum should emphasise the holistic approach to the individual patient, so that the psychological and sociological aspects are given as much consideration as the physical when making decisions, for example about diagnosis, prognosis and management of a patient's problems, and rehabilitation and care of the disabled or terminally ill.

Progressive, cumulative learning during the undergraduate course should therefore foster:

- intellectual enquiry;
- integration of theory and practice in relation to study of the causes, natural history, diagnosis, treatment and prevention of disease, and the promotion of health;
- selection of appropriate health care according to the changing needs, wishes and expectations of patients or groups of patients (e.g. in general practice, day care, district hospital, tertiary hospital);
- ability to give appropriate advice to individuals and organisations

with respect to the prevention of disease and promotion of health;

- consideration of the patient's family, cultural and social background, and economic circumstances when making decisions about the diagnosis, prognosis, and management of the patient's problems; the problems of rehabilitation and the re-integration of disabled patients into society/work; the care of the terminally ill;
- consideration of illness behaviour and the psychosomatic aspects of medical diseases when making decisions about diagnosis and treatment;
- communication with patients and their carers (family and professional), professional colleagues and other health professionals on health and illness matters;
- consideration of the ethical, moral, legal, social, and economic implications in making clinical decisions;
- critical evaluation of clinical practice and quality of care by self and peers.

These statements summarise modern attitudes towards continued learning, critical self-assessment, and an appreciation of the complex interaction of doctor, patient, and society. They stress many of the non-technological aspects of medical practice which are inadequately taught at present, although lip-service is frequently paid to them. They are, however, only a starting point and will need translating into operational objectives with defined aspects of required behaviour under specified conditions and with adequate standards of performance specified.

While it will be impossible for any student to develop all these aspects within the short undergraduate period, unless the basis is laid at this formative period vital gaps will be perpetuated. These aspects should all evolve and develop further in the postgraduate years, providing that the right attitudes and basic knowledge and skills have been instilled in the undergraduate years.

Health and illness

The artificial division between someone who is a "patient" and someone who is "healthy" should be broken down. In line with current government thinking, the prevention of illness and maintenance of health should be central concepts in the undergraduate curriculum, fully integrated into clinical teaching. Students should be encouraged to develop a critical approach to what is known in this field.

The curriculum should give students an awareness of the need to think in terms of populations as well as individuals, and the potential conflicts between the claims of both. It is essential for students to have exposure to healthy people and communities to learn about the distribution of health and illness in society.

The curriculum should place greater emphasis on health

problems in the community and in particular the local community in which the medical school is based.

The wider context

In order for graduates to be able to adapt to change and participate in change, clinical experience should be balanced by reflection on the practice of medicine in its wider context within society. For example:

- ethical and medico-legal issues;
- the economics of health care and the place of medicine in claims on priorities for funding;
- the political dimension of health care;
- society and its perception of doctors;
- changes in society and their impact on health care.

These factors are increasingly important in a time of great change: the interface between clinical practice, patients' needs and expectations, economics, politics, and health policy is a rapidly growing area of which students need to be aware if future doctors are not to become cut off from the real issues of the world and society in which they live and practise.

However, care needs to be taken in how these issues are introduced to students so that they are taught and examined in an appropriate context. They should be incorporated into the curriculum in such a way that students learn about them during their everyday clinical experience (i.e. in relation to their own patients) rather than as formal lectures from outside experts.

Summary

The undergraduate curriculum should aim to produce an undifferentiated doctor, able to pursue postgraduate education for subsequent practice in any branch of medicine.

The undergraduate curriculum should aim to create a motivated, critical, and enquiring doctor, willing and able to continue learning throughout his or her professional career.

The undergraduate curriculum should be planned as the first phase in the continuum of medical education, preparing the graduate for responsibilities in the pre-registration period and providing the foundation for postgraduate and continuing education.

The undergraduate curriculum should be planned to achieve a balance between scientific education, vocational training, and the personal development of an individual student.

There should be some choice within the curriculum, providing opportunities for students to pursue individual areas of interest (e.g. through study in depth and/or project work) and time for extra-curricular activities within the broader university environment to allow for personal development.

Undergraduate education should provide appropriate settings and opportunities for the acquisition of a number of key general competences which will be required throughout a professional lifetime irrespective of which specialty is practised.

The curriculum should emphasise the understanding and application of concepts, concentrating on the principles of medicine and the application of the scientific approach to clinical problems. It should teach the basic clinical skills, including establishing good doctor–patient relationships.

The curriculum should emphasise the holistic approach to the individual patient. Students should constantly be presented with the goal of health rather than absence of disease. The curriculum should give students an awareness of the need to think in terms of populations as well as individuals, and the potential conflicts between the claims of both.

The curriculum should give students a wider perspective of the practice of medicine and the role and responsibilities of the doctor in society.

CHAPTER 4

Implications for the future

The new directions in undergraduate medical education outlined in Chapter 3 have wide-ranging implications for all medical schools and these are considered in the first part of this chapter. They include curriculum design and, most importantly for the work of the London Commission, where students should learn, since this is the facet of medical education which impinges most directly on health service provision in London. The chapter concludes by drawing together these main themes in relation to the development of undergraduate medical education in London.

Curriculum design

The latest GMC consultation document, the King's Fund Centre study, and the widespread concern about the overcrowded curriculum all point to the need for a minimum core curriculum which concentrates on the basic knowledge, skills, and attitudes which undergraduates need to learn in order to fulfil their duties as pre-registration house officers. The GMC is suggesting for the first time the concept of a core plus options curriculum, a new departure for medical education in the UK. This approach would allow each medical school to define a core curriculum and to offer options according to its own strengths and enthusiasms. However, it begs the questions of what should be in a core curriculum, what should be left out, and who should decide. At present the criteria for deciding what should be part of the core curriculum and what should be optional have not been developed, although over the coming months medical schools will be required to address this "thorny" issue as they develop their plans for a core curriculum in line with the GMC recommendations. Although the development of a core plus options curriculum will take some time, it should provide opportunities for flexibility and innovation which have hitherto not existed, and will probably lead to much more variation between medical schools.

A second major implication for curriculum design is the need for better integration between pre-clinical and clinical teaching throughout the course, so that the scientific basis of medicine is presented in a context which is relevant to the practice of medicine, and there is early patient contact. Although integration between the biological, clinical, population, and social sciences is generally accepted as being desirable in order to ensure effective and efficient learning and to maintain student motivation, there are formidable practical difficulties. These include problems with attitudes (resistance to change), organisation,

and resources. It is worth noting in the context of this report that the geographical separation of basic science and clinical sites and shared teaching with science students in multifaculty institutions are two barriers of particular relevance to London medical schools. If integrated teaching is to continue throughout the curriculum, this poses logistical problems in ensuring access to both science and clinical facilities for five years rather than the current split of approximately two years based in science faculties/pre-clinical departments, and three in clinical settings.

A third major area in curriculum development is the need to promote student-centred learning in order to develop enquiring doctors and meet the needs of effective and efficient learning. Hence there should be more emphasis on self-directed learning, small-group tutorials, problem-based learning and project work, and fewer lectures/formal teaching sessions. Ways in which students may be given increasing clinical responsibility and opportunities to apply what has been learned in practice, under supervision, should be considered. Self-directed learning will require clearly stated aims and objectives for the overall curriculum and its individual components, so that students are clear about what is expected of them. It will also require a system of appropriately trained tutors to provide academic and personal support. It will lead to logistical problems in trying to develop a timetable which is sufficiently flexible to accommodate self-directed learning and the dispersal of students among a wide variety of educational settings. It will have implications for staffing levels, facilities, and resources, at a time when there are pressures to teach large numbers of students as cheaply as possible.

Little progress will be made with the undergraduate curriculum until it is less examination driven than at present. There is an urgent need to develop more appropriate methods of assessing students so that learning is facilitated rather than controlled. A system of informal assessment should be introduced to provide direction and a positive approach to encourage learning through helpful and frequent feedback to students. It should be an educational review of progress with appropriate remedial action by student or tutor. Formal assessment must reflect the educational aims of the curriculum and clearly be relevant and supportive of these. All knowledge, skills and attitudes deemed to be important should be assessed and new methods of assessment will be required so that skills such as problem solving, communication, and critical thinking are examined. Integrated teaching will require integrated examinations.

The development of new curricula encompassing integrated teaching, self-directed learning, and appropriate new assessment systems will also require two other important changes to occur alongside: recognition for teaching and staff development. Until teaching is recognised to be an important professional activity comparable in status to clinical service, research, and management, it is unrealistic to expect those involved in teaching to devote the necessary time and effort to planning and implementing a new curriculum. Teaching activities involve more than student contact time, and the range of tasks needs to be defined and time set aside for their fulfilment. Staff development

programmes are needed, not only to make teaching a more professional activity, but to help in developing a shared view of the philosophy of the medical school and to ensure that all staff work together to help students to achieve the objectives of the course rather than teach their own subject in isolation.

Where students should learn

Any discussion of where students should learn should take into account the following basic principles arising out of the aims of a future undergraduate curriculum:

- Students need to be educated as well as trained (that is, they need to learn in a university as well as in a health service environment).
- Clinical teaching should extend throughout the curriculum.
- Clinical teaching should take place in settings appropriate to the aims and objectives of the course, taking into account the most effective and efficient place to learn each skill.
- Each stage of medical education should be characterised by a range of experiences at different levels, involving both sick and well people, so that students can a) integrate the physical, social, and psychological aspects of clinical practice; b) study the distribution of health and disease in the population; c) learn about cure, prevention, and health promotion.

Currently students are taught in three main clinical settings: the wards, outpatient clinics, and general practice. Most teaching takes place in the teaching hospital and is traditionally ward-based, with an increasing amount of outpatient teaching in response to trends in medical practice. The amount of teaching carried out in general practice is variable, but usually comprises a block attachment of a few weeks during the clinical course.

Students need wide clinical exposure in order to gain individual experience of a wide variety of patients, common conditions, and circumstances of illness. There is a widespread recognition, in line with the consensus view of the aims of a future curriculum, that a broader view of medicine beyond the confines of a large teaching hospital is required. More exposure to general practice and to the environment of a district general hospital would shift the educational base from teaching hospital to teaching district. In view of the increasing specialisation of teaching hospitals, their role in providing a general education for undergraduates is being questioned; in view of the fact that the majority of patients are seen and treated in general practice or outpatient clinics, the role of inpatient teaching is being questioned. Any shift in the current patterns of clinical teaching will have resource and organisational implications for both the medical schools and the health service.

The role of each of the clinical settings needs to be re-evaluated and defined in relation to the aims of the curriculum before an attempt

can be made to relate the requirements of undergraduate medical education to the health care needs of London. Up to now the only unit which has been used in planning requirements for clinical teaching has been "the bed". In 1985, the University of London published estimates of the numbers of beds required in general medicine, general surgery, and in each of the specialties, per one hundred students: "Day admissions and day wards are largely excluded for teaching purposes because of the high level of activity and turnover." Six years on, these recommendations seem wildly anachronistic. Requirements for teaching will in future need to be based on a more realistic unit than number of beds: the students need the patients, not the beds.

The following discussion briefly sets out the main opportunities and problems associated with the different settings where patients may currently be found, and where students may gain the clinical experience they require. If new types of health care facilities were to be developed in the future, there is no reason why a similar approach could not be used to define their role in providing clinical experience for undergraduates. It should, however, be remembered that clinical experience is only one part of the undergraduate curriculum. Students also need to learn in the university environment in order to gain an education as well as clinical training.

Teaching hospitals and their problems

Traditionally the teaching hospital has been the dominant teaching and learning environment for basic medical education. From the early nineteenth century until recently it has seemed obvious that medical students should receive their clinical education in teaching hospitals which offer a concentration of both medical expertise and patients with serious illnesses. The *Requirements for Undergraduate Clinical Teaching in Medicine and Dentistry in the University of London* (1985) state:

> *The university considers a minimum of twenty-four months in university hospitals with academic departments to be essential and that it is unreasonable as well as inefficient to subject undergraduates to extended periods away from academic centres ... University teaching hospitals are economical and essential elements in the totality of health care and education.*

In the 1990s this system is becoming increasingly difficult to justify on educational or financial grounds.

In general, hospitals are probably the best environment in which to introduce students to inductive history taking and comprehensive physical examination. Students can be given multiple opportunities, especially on the wards, to learn the range of questions which they may need to ask patients and to develop skills in eliciting abnormal physical signs. They can also learn how to recognise and manage serious and acute medical conditions, which will often entail using high technology equipment. Hospitals are the places where specialist expertise is concentrated, where students can experience the cutting edge of medicine, and be enthused.

On the other hand, hospital-based teaching means that students

are exposed to highly selected patient populations with the rarest and most serious diseases, or, at best, atypical examples or presentations of the commoner ones, giving a highly misleading picture of the real nature and extent of health and disease in society. Hospital-based teaching has also tended to focus on the biomedical model of disease and has not been good at integrating the physical, psychological and social aspects of clinical practice.

The traditional drawbacks of hospitals as the predominant bases for undergraduate teaching have been compounded by recent changes in the pattern of health care delivery. Increased throughput of patients, shorter hospital stays, and super-specialisation have all affected the ability of teaching hospitals to provide a suitable context for undergraduate education. It is harder to teach medical students on a service where the objective is to move patients as rapidly as possible through the system. There is little time for contemplative thought, for questioning, study, and practice, all of which are necessary for medical students, especially at the beginning of their clinical experience. The combination of dwindling local populations and the concentration of tertiary care facilities in teaching centres has seriously unbalanced an already highly selective case mix.

At the same time there has been a gradual loss of general physicians and general surgeons from the staff of teaching hospitals. The modern general practitioner is increasingly occupying the clinical role traditionally filled by the hospital physician. Hospital teaching is therefore based on both a more specialised content and a greater element of chance. The referral of cases to specialists is skewed by their known interests and it is inevitable that students attached to particular firms experience this as a bias to the teaching they receive: variations in firm teaching are based on chance not curriculum planning. The effect of the latest NHS reforms on referral patterns may exacerbate the variability of clinical experience. Students are becoming increasingly dissatisfied.

Although these concerns are only just beginning to surface in the UK, they have been the subject of considerable discussion in the USA for some time. Many medical educators have observed that the shorter stays of hospitalised patients have made the inpatient setting less suitable for teaching fundamentals to students. They note that the inpatient population currently available for medical teaching purposes has changed in recent years: "the patients admitted to hospital tend to be sicker, to have complicated illnesses, or to be terminally ill, elderly, demented or in need of specific procedures" (Rosevear and Gary, 1989). However, they have also identified other reasons why the "educational value" of patients in teaching hospitals may be decreasing, including increased investigation and decision making in the ambulatory setting and increased admission for specific procedures (Davidson, 1989). In the UK, most patients now reach the wards and, to a lesser extent, outpatient clinics having already had their condition diagnosed by their GP or through a routine work-up, thus denying students sufficient practise in diagnostic reasoning.

Financial as well as educational concerns are also affecting the viability of teaching hospitals, and the NHS reforms are likely to create

further problems in securing an appropriate base for undergraduate teaching, as discussed in Chapter 2. It is a well known fact that the average cost of treating a patient in a teaching hospital is significantly greater than in a non-teaching hospital. When the emphasis in health care is increasingly on containing costs, it is only a matter of time before cost-conscious buyers of hospital care may choose more economical alternatives, with a resultant decrease in patient populations. In view of the educational concerns outlined earlier, it will become increasingly difficult to use the clinical requirements of undergraduates to justify protecting teaching hospitals from market forces and allocating SIFTR money solely to hospitals.

Inpatients and outpatients

If medical education evolved in parallel with changes in clinical practice, outpatient teaching in the clinical curriculum would now be very important since the emphasis of hospital practice has shifted from inpatient care to day care, short stay, and outpatient management. There has been no equivalent shift in the emphasis of undergraduate teaching in the UK, although this has been the subject of much debate and research in the USA where there has been a resurgence of general interest in teaching clinical medicine in ambulatory care settings. Federman (1989) describes a recent conference which:

> *dealt with this question in some detail and left no doubt that the clinician of tomorrow will be called on to exhibit skills and judgement that can only be learned in outpatient settings. They involve, at the least, preventive medicine, longitudinal responsibility for patients, chronic disease and genetics, the decision to hospitalise patients, episodes of acute illness, the care of patients discharged still sick from the hospital, ambulatory surgery and health promotion. There are whole topics of medicine, diseases, observations, actions and decisions that are just not encountered in the care of hospitalised patients any longer.*

Inpatient and outpatient teaching is of a very different order and fulfils different educational goals. From the student perspective (Macdonald, 1991), the traditional advantage of inpatient teaching is that the patients are there and available for the long periods of time (over an hour) which are required in the early stages of clerking. In addition, students can return to patients for omissions in histories. The same applies to clinical examinations and basic skill development which take time and concentration. Although ward patients are sick, they often enjoy helping students, so that "talking and listening to patients" is possible in a reasonably relaxed manner. There are also plenty of staff available to advise and correct, although minor mistakes may go unnoticed. The wards offer distinct routines and co-operation with nursing staff which must be assimilated. From the teachers' point of view, ward teaching is a group process with a certain schedule and time set aside from patient care needs. Shorter stays, increasing specialisation, and sicker patients are putting inpatient teaching at increasing risk.

For staff and students accustomed to teaching in the inpatient setting, outpatient teaching presents some problems as well as

opportunities. The main conflict is between trying to teach during a busy clinic, while at the same time accommodating the needs of patients and students. Students find learning in the outpatient setting most satisfying when they are able to clerk and examine the patient first, present their findings to the consultant, and get immediate feedback on their performance. This gives them an opportunity to practise their clinical skills and diagnostic reasoning in a defined period of time as well as being able to see a wide variety of patients. However, because of pressures of time, students are often merely passive observers of the consultant at work: the educational value of the outpatient clinic is largely lost and students become bored and frustrated.

The realisation of the full potential of outpatient teaching will require the development of special clinics with a limited number of patients (both new and old) seen both by their consultant and by students. At present the outpatient equivalent of ward-based teaching, with time specifically set aside from service work, does not exist, but the increasing emphasis away from inpatient care will be an imperative to seek solutions. A shift towards more teaching in outpatient clinics will have implications for resource and manpower allocation, clinic organisation, and the way students learn which will entail dialogue between medical teachers, students, and health service managers.

Teaching in general practice

It is clear that teaching hospitals are already facing major difficulties in fulfilling their educational role, and that these seem likely to worsen. All the factors argue for a much greater emphasis on community-based teaching. In 1984, the potential contribution of general practice to undergraduate education was examined by the Association of University Teachers of General Practice (AUTGP), with special reference to the GMC recommendations of 1980. The subsequent report (AUTGP, 1984) stated that sixteen of the twenty recommendations could not be achieved at any reasonable level by students without using the educational resources of general practice. These include:

- knowledge of common illnesses;
- principles of prevention and health education;
- human relationships and interaction with physical, biological, and social environment;
- organisation of health care in the community;
- effective communication with patients and relatives;
- effective communication with colleagues;
- effective and economic use of investigations;
- recognition of blend of science and humanity in medicine;
- concern for interests of patients;
- appreciation of limitations of personal knowledge;
- effective working relationships with colleagues.

Table 4.1

Contrasts between general and hospital-based practice in Britain

General practice	Hospital-based practice
1 Contact In 50 per cent or more of consultations, contact is initiated by the patient.	*1 Contact* Contact is usually initiated by referral from another doctor.
2 Accessibility Patients, relatives and doctor are readily accessible to each other, often over many years. This provides for:	*2 Accessibility* Accessibility is often restricted resulting in:
a) extended observation – allowing the compilation of data over a period of time;	a) the need to elicit maximal data in as few consultations as possible;
b) extended diagnosis, incorporating relevant psychological and social data;	b) a principal concern with either physical or psychological diagnosis;
c) comprehensive care – allowing consideration of the psychological and social, as well as physical, needs of both patient and family;	c) care reflecting the specialist interests of the doctor, other aspects of care being usually referred to other agencies;
d) continuing care which can be initiated by the patient and flexibly adapted to unforeseen as well as foreseen needs;	d) continuing care being largely at the doctor's initiative and restricted to foreseen needs;
e) preventive care at all stages of the problem, and of family members as well as of the patient.	e) diminished opportunities for preventive care.
3 Presenting problems are often:	*3 Presenting problems* are often:
a) "undifferentiated", i.e. have not been seen or sifted by another physician. The doctor must therefore start with few presuppositions about their nature and requires a knowledge of the functions of many other disciplines;	a) selected. Presuppositions can often be made about the patient's problem;
b) at an early stage of development so that there may be little prior data. Symptoms predominate and signs may be few. Selective history-taking based on appropriate hypotheses is therefore supremely important;	b) deferred in presentation. Confirmatory signs are often available. Probabilities of spontaneous remission are reduced;
c) not a major threat to life or function. The selective use of resources is therefore important.	c) a major threat to life or function requiring elaborate technology in assessment or management.
4 Management often involves:	*4 Management* often involves:
a) the care of a small, definable population which is relatively static;	a) the care of large, indefinable populations;
b) patient's retention of autonomy with potential problems of compliance;	b) patient's temporary surrender of autonomy, with fewer problems of compliance;
c) considered control over the spending of large sums of money by prescribing and use of specialist services.	c) a predetermined level of resource spending.

Source: Adapted from AUTGP Report, 1984

The distinctive characteristics of general practice relevant to undergraduate teaching in Britain identified in the report are summarised in Table 4.1.

A later study provided detailed information on the ways in which academic general practice prepares itself for teaching, and disclosed the core content and thrust of teaching in general practice (Fraser and Preston-Whyte, 1988). Undergraduate teaching was seen as the highest priority activity by virtually all academic departments of general practice. Almost all departments produce detailed aims and objectives and provide course books so that both teachers and students have a common understanding of what is required of them. Furthermore, virtually all departments provide some form of training in teaching methods, both for their academic staff and clinical teachers. Many departments make frequent use of a wide variety of modern teaching methods and techniques such as video recordings of consultations with both simulated and real patients to teach interviewing, communication, and problem-solving skills. Almost all prefer a small-group format for departmental teaching, and practice-based teaching is usually conducted on a one-to-one basis. Many courses also include individual and group project work in order to introduce students to self-education, reflection, and conceptual and critical thinking.

In addition to the more traditional content of general practice teaching, namely, community morbidity, long-term and continuing care, and the effects of social and psychological factors in illness and disease, most departments seek to develop students' clinical problem-solving skills. General practice is an ideal setting in which to develop such skills, as patients commonly present early with undifferentiated problems and students can make few diagnostic assumptions. Also, most patients' problems are diagnosed and managed entirely within general practice without recourse to laboratory investigation and referral. This provides students with repeated opportunities to integrate and apply knowledge and skills learnt from the basic, behavioural, and clinical sciences in a discriminating way (Fraser, 1991).

Although it would be wrong to expect that all teaching could be done in general practice, these considerations have led some forward-thinking academic GPs to propose a co-ordinated programme between hospital and general practice with far more interchange between them, founded on the idea of following patients from general practice into the hospital (as inpatients or outpatients) and back again (Oswald, 1989). Instead of working in teaching hospitals and rotating through departments, students would be based in selected general practices. By physically accompanying patients who are admitted or referred, students would experience acute illness from early symptom to complete resolution; would also become involved in chronic illness in its specialist hospital aspects as well as socially and emotionally; and would experience those aspects of medical training that only hospitals can provide. Trends towards larger general practices which provide a wide range of services, including minor surgery, would enhance the richness of learning opportunities which the general practice has to offer undergraduates.

Whether students are based in hospitals but spend a higher

proportion of their time learning in general practice, or whether they are based in general practice and follow patients in and out of hospital, attention will need to be paid to the flow of patients across the hospital/community interface. If these links can be established it will make the movement of students simpler to organise, although there would inevitably be more administrative and organisational work involved if students are more dispersed and mobile. There would also be the potential problem of the commuting student who wastes a lot of time in travelling and misses out on a normal university student life. This may be a less serious problem in London where there would be a good supply of local health facilities and where public transport is well developed.

Any increase in the amount of teaching in general practice will require a review of current funding arrangements since teaching in general practice is not covered by SIFTR. Almost all academic departments of general practice lack an adequate financial base. The problems of time and finance posed by the new GP contracts have been recognised to the extent that GPs who teach attached students receive a small sessional payment. Although a move in the right direction, it is unlikely to be sufficient recompense for the commitment to teaching which is likely to be required in the future.

Clinical skills laboratories

A different type of environment in which students can learn clinical skills without involving patients was developed in 1975 at the University of Limburg in Maastricht, in The Netherlands. The model which it provides may help to solve some of the problems caused by a shortage of patients in beds, with time on their hands, who are willing to act as guinea-pigs for inexperienced students. The clinical skills laboratory or "Skillslab" concept arose from the belief that patients should not be seen merely as teaching aids and that students' practical training should not depend totally on the available hospital population. In the Skillslab, students can learn practical skills throughout their course in a "protected" environment, so that they are not so anxious when called upon to practise their skills on "real" patients and can make maximum use of their patient contact.

In Maastricht, the following advantages of the Skillslab have been noted (van Dalen, 1989):

- Complex practical situations that present themselves in health care can be unravelled as simple, teachable skills. The complexity of the learning situation can thus be controlled.
- Skills can be repeated as often as is necessary to master the skill; this would be intolerable with patients.
- Mistakes are allowed.
- Direct feedback is possible.
- Students are not dependent on the patients that happen to be present.

- Patient problems that in reality last over years can be acted out in a short period.
- Teaching of skills in a laboratory situation is a considerable motivating factor in the acquisition of both knowledge and skills.
- Teaching of skills in a laboratory requires the standardisation of the practical procedures. This will lead to better communication between health care professionals, and so to an improvement in health care.

In a Skillslab, students are able to learn physical examination, therapeutic skills such as suturing, laboratory skills (including interpretation of results and practical techniques), and communication skills (including interviewing, breaking bad news, and counselling). Facilities are provided for students to practise a skill until they have mastered it. Physical examinations are carried out on mannequins first and then the students practise on each other. Communication and diagnostic skills are learnt on "simulated" patients – volunteers specially trained to mimic the features of a clinical problem – with the simulated consultation being recorded on videotape and discussed later. In addition, the Skillslab can allow training in information techology skills and statistical analysis, and provide resources for self-directed learning such as interactive computer-based learning systems.

The Skillslab idea has now been taken up by universities in many other countries and is beginning to attract the attention of medical schools in the UK. It would seem to be an ideal solution to some of the current difficulties in clinical training as well as creating opportunities for innovation in the curriculum.

Implications for London

This is not a vision for medical education in London but an attempt to highlight various potential developments which need to be considered in relation to health service planning for the capital.

The undergraduate curriculum of the future is likely to be on the core plus options model rather than all students being required to rotate through all the specialties. Each medical school would teach a basic curriculum comprising core knowledge, skills, and attitudes (though not necessarily in the same way) and offer a series of optional courses according to its own strengths and values. Such an approach would allow a greater flexibility in curriculum development and encourage diversity. It could lead to courses being shared across the university, so that students could take options in different medical schools. Such arrangements might allow a more rational use of resources and clinical facilities, as well as a more flexible response to changes in London's health service provision.

The future curriculum should also have a greater degree of integration between basic, behavioural, population, and clinical sciences. This means that students will require access to a university environment (for theoretical learning) and a clinical environment (for

practical experience) simultaneously throughout the five years of the course, although the balance of time spent at each may vary as students progress through the course. This may create logistical problems if students are no longer based in the main teaching hospital alongside the medical college. As noted previously, there are already barriers to integrated teaching on account of the geographical separation of basic science and clinical sites in the multifaculty colleges.

There may currently be an over-supply of hospital beds but there are still plenty of patients and students must go wherever they are. At present, this points to a more extensive use of outpatient clinics and general practices. However, if the requirements for teaching are based on patients rather than hospital beds, then undergraduate clinical teaching can adapt to new developments in health services, such as local secondary care centres. These may indeed prove to be ideal places in which students can learn.

Medical schools need to move away from their reliance on the main teaching hospitals which are becoming increasingly unsatisfactory for undergraduate teaching even though they may be necessary for specialist postgraduate training. More teaching could be done in the district hospitals, but although they offer a better learning environment for undergraduates, there may be logistical problems if students have to commute between the district hospitals and their academic base over long periods of time. It might be better to concentrate hospital experience of this type in the final year of the course when, through student locums or shadow house jobs, students could be given increasing responsibility for patient care.

Some of the difficulties experienced in clinical teaching now and in the future could be lessened by reducing the reliance on patients. Clinical skills could be learnt and practised in a clinical skills laboratory on mannequins, fellow students, and simulated patients. Advances in information technology are allowing the development of computer simulations for skills training (e.g. flight simulators for training pilots) and developments such as these have enormous potential for the clinical training of undergraduate and postgraduate medical students. Rather than being used as guinea-pigs or "clinical material", patients could become more actively involved in teaching by sharing their experiences of illness or disability with students.

London has unique opportunities to offer for undergraduate teaching in relation to its interesting and accessible local populations. The health problems associated with inner-city deprivation and different ethnic and social groups are excellent starting points for student learning, especially among students who, as a group, tend to come from a very different social background and have little personal experience of these problems. Closer links between the medical school and the local community, moving towards a community-based school, could be of mutual benefit in terms of providing improved health care for the population through service and research (in which students could take an active and responsible role) and improving teaching for undergraduates through their involvement in the health problems of the local people.

Changes in undergraduate education along the lines highlighted in this paper will be evolutionary rather than revolutionary, but the need for, and direction of, the change are clear. Mechanisms are needed to ensure that medical schools continually review their mission, philosophy, and aims, and that curriculum development is responsive to continuing changes in the pattern of health care. A mechanism for facilitating dialogue between medical schools, health service planners and managers, and other key groups is required so that ideas can be exchanged across the health service/medical education interface.

References

Association of University Teachers of General Practice (1984), *Undergraduate medical education in general practice*, Royal College of General Practitioners, London, (Occasional Paper 28).

B. G. Charlton (1991), "Practical reform of preclinical education: core curriculum and science projects", *Medical Teacher*, 13:21-28.

Clark Report (1989), *The Best Medicine for London*, Report of a Joint Planning Committee Working Party on an Academic Strategy for Medicine, University of London.

R. A. Davidson (1989), "Changes in the educational value of inpatients at a major teaching hospital: implications for medical education", *Academic Medicine*, 64:258-261.

D. D. Federman (1989), "Medical education in outpatient settings", *New England Journal of Medicine*, 320:1556-7.

Flowers Report (1980), *London Medical Education – a new framework*, Report of a Working Party on Medical and Dental Teaching Resources, University of London.

R. C. Fraser (1991), "Undergraduate medical education: present state and future needs", *British Medical Journal*, 303:41-43.

R. C. Fraser and M. E. Preston-Whyte (1988), *The contribution of academic general practice to undergraduate medical education*, Royal College of General Practitioners, London, (Occasional Paper 42).

Goodenough Report (1944), *Report of the Inter-departmental Committee on Medical Schools*, HMSO, London.

L. P. Le Quesne (1987), "Undergraduate medical education in London: the last 40 years", *Journal of the Royal Society of Medicine*, 80:606-610.

London Health Planning Consortium (1980), *Towards a balance: a framework for acute hospital services in London reconciling service with teaching needs*, A discussion document issued by the London Health Planning Consortium.

M. M. Macdonald (1991), "Observations at medical outpatient clinics, Spring 1991", Unpublished report, University of Edinburgh.

N. Oswald (1989), "Why not base clinical education in general practice?", *The Lancet*, ii:148-149.

P. Richards (1988), "Departmental divisions and the crisis in undergraduate medical education", *British Medical Journal*, 296:1278-9.

P. Richards (1990), "University hospitals and the NHS review", *British Medical Journal*, 300:138-9.

G. C. Rosevear and N. E. Gary (1989), "Changes in admissions, lengths of stay, and discharge diagnoses at a major university-affiliated teaching hospital: implications for medical education", *Academic Medicine*, 64:253-258.

Todd Report (1968), *Report of the Royal Commission on Medical Education*, Cmnd 3569, HMSO, London.

A. Towle (1991), *Critical thinking: The future of undergraduate medical education*, King's Fund Centre, London.

Universities Funding Council Medical Committee (1991), *First Report on the effects of the NHS reforms on medical and dental education and research.*

University of London (1985), *Requirements for Undergraduate Clinical Teaching in Medicine and Dentistry in the University of London.*

J. van Dalen (1989), *Skillslab: Centre for Training of Skills*, University of Limburg, Netherlands.


2 020000 048572 0

King's Fund London Initiative

Working Paper No. 9

Undergraduate Medical Education: London and the future was prepared to inform the work of the King's Fund Commission on the Future of Acute Services in London. It is being published in advance of the Commission's strategy for London in order to inform debate about the future of health care in the capital. This paper should not, however, be interpreted as in any way anticipating the recommendations of the Commission's final report.

The King's Fund Commission on the Future of London's Acute Health Services' terms of reference require it to "develop a broad vision of the pattern of acute services that would make sense for London in the coming decade and the early years of the next century". With this in mind, the Fund's London Acute Services Initiative has undertaken a wide-ranging programme of research and information gathering on the Commission's behalf, of which this working paper represents one part.

£7.00
ISBN 0 9518893 2 X