KING's FUND CENTRE

# CRITICAL THINKING

## THE FUTURE OF UNDERGRADUATE MEDICAL EDUCATION

**A Study by the King's Fund Centre in collaboration with St Bartholomew's Hospital Medical College**

By

Angela Towle

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# EXECUTIVE SUMMARY

## Aims

This report summarises the findings of a study into the future of undergraduate medical education initiated by the King's Fund Centre in collaboration with St Bartholomew's Hospital Medical College in May 1990. The aim of the study was to help establish a climate of opinion for change and to develop a consensus view of the future development of undergraduate medical education. The study took the form of an enquiry, followed by a conference to endorse the findings and discuss the recommendations in order to identify key areas for future action.

## Agreement

The study found widespread agreement on the need for change in undergraduate medical education and the principles which should inform the curriculum of the future. In summary these are:

- Reduction in factual information.
- Active learning (enquiring doctor).
- Principles of medicine (core knowledge, skills, attitudes).
- Development of general competences (eg. critical thinking, problem solving, communication, management).
- Integration (vertical and horizontal).
- Early clinical contact.
- Balance between hospital/community; curative/preventive.
- Wider aspects of health care (eg. medico-legal/ethical issues, health economics, political aspects, medical audit).
- Interprofessional collaboration.
- Methods of learning/teaching to support aims of curriculum.
- Methods of assessment to support aims.

## Action

If major change is to occur in undergraduate medical education through the planning and implementation of curricula based on these principles, several key issues must be addressed in relation to curriculum design (1-4) and to implementation of change (5-8).

1. Definition of the core knowledge, skills and attitudes which undergraduates need to learn in relation to what a new graduate is expected to be able to do.

2. Integration of teaching, both horizontally between clinical disciplines and vertically between preclinical (basic, behavioural and population sciences) and clinical sciences.

3. Introduction of self-directed learning in order to encourage students to take responsibility for their own education as undergraduates and throughout their professional career.

4. Development of appropriate systems of assessment to support the aims of the curriculum.

5. Recognition for teaching so that it is perceived as an important activity, comparable in status to clinical, research and management activities.

6. Training for teachers/staff development so that curriculum development, teaching and assessment are done professionally and that all staff subscribe to the aims of the curriculum.

7. Definition of where students should learn in order to achieve the aims of the curriculum, and consideration of resource and logistical implications.

8. Management of change within medical schools to facilitate the introduction and continued development of new curricula.

# INTRODUCTION: OVERVIEW OF THE STUDY

## The Background

The enquiry arose out of the problems that many medical schools are currently experiencing in carrying out clinical teaching (traditionally centred around bedside teaching on the wards) in view of changes in medical practice (eg. new techniques which allow patients to be diagnosed and managed as outpatients) and in health service delivery (eg. shorter length of hospital stays). Some of these trends are in conflict with the requirements for teaching students who need time to talk to and examine patients, and therefore cause difficulties for those in the medical schools who are responsible for the education of undergraduates and those in the health service who provide the facilities for teaching. Further changes in health care delivery which will impact on medical education will result from technological advances, socio/economic factors and the influence of government policy on hospital care.

These practical difficulties are becoming more acute at a time when there are other pressures for change. The undergraduate curriculum is recognised to be grossly overcrowded with factual information, some of which is likely to be out of date before the student even begins to practise. It is more important for students to have the time and opportunity to develop the intellectual skills which are required in order to practise effectively in any branch of medicine and to continue their education throughout their professional lifetime. Too often, highly motivated and enquiring school leavers are turned into passive absorbers of facts required only to pass examinations. At the same time, questions are being asked about the appropriateness of teaching hospitals as the major place 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. It was against this background that the King's Fund Centre, in collaboration with St Bartholomew's Hospital Medical College and City & Hackney Health Authority decided to undertake a wide-ranging national enquiry into clinical teaching within the undergraduate curriculum, through a three-part consultation. Although the focus of the enquiry was on clinical teaching, issues relating to the entire curriculum, including integration of the basic and other sciences and extending into the pre-registration year were raised, since medical education needs to be planned as a continuum starting from day one of the undergraduate course through postgraduate education.

## The Enquiry

The aim of the enquiry was to establish creative yet critical guidelines for the design of future undergraduate 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; a few students and house officers were also contacted. The enquiry used a modification of the Delphi technique, a method used to arrive at a consensus through a participatory consultation process, comprising three rounds. In Round I participants were sent a series of propositions and questions on various aspects of the planning, conduct and evaluation of undergraduate medical education and invited to add any other issues which they thought the enquiry should address. As a result of the responses received the consultation document was amended and new propositions and questions were included. In Round II the participants were invited to comment on the enlarged set of issues by agreeing or disagreeing with the propositions (with reasons) and giving outline answers to the questions. The comments received were summarised in Round III so that participants could see the range of views which had been expressed, and the degree of consensus, and have an opportunity to make any additional comments or new suggestions that they wished.

The response to the enquiry was most encouraging in view of the fact that the issues raised were complex and much thought was required for answering. 213 (62%) of those invited to take part responded to Round I and 192 (56%) to Round II. Twenty-eight people provided additional comments in Round III. The responses showed a clear consensus of opinion for change and general agreement about the aims and philosophy of an hypothetical new undergraduate curriculum. Arising out of these aims a series of practical implications were identified and a number of recommendations were made.

## The Conference

Participants in the enquiry were invited to a conference at the King's Fund Centre on April 24th 1991 to review the main findings of the enquiry and to decide what action needed to be taken on the recommendations which it generated. The discussion document for the conference presented the consensus view about the aims of a possible new curriculum and the recommendations in relation to the following ten issues: aims of the curriculum; structure of the course; how students should learn; assessment; selection; the pre-registration period; where students should learn; the quality of teaching; curriculum planning; organisational requirements. The 86 participants at the conference endorsed the findings of the enquiry and considered, in small groups, the ten sets of recommendations. The major areas which were identified as requiring immediate action were discussed by a small working party on May 29th of key people from the various interest areas in medical education with a view to arriving at an action plan for implemention.

## The Report

This report is designed to provide a quick overview of the main principles of a possible new curriculum and the issues which need to be addressed if any substantial and sustainable change is to be implemented in the undergraduate curriculum. Since the enquiry addressed many more issues in greater detail than can be covered here, and provides a comprehensive resource for discussions on all aspects of undergraduate medical education, it is our intention to publish a project paper later in the year, setting out the full details of the enquiry in the context of the various pressures for change which are currently operating.

The report begins with a summary statement on the need for change and the management of change and raises the key issues which need to be addressed if change in undergraduate medical education is to be initiated and maintained. The main body of the report comprises the summary of the enquiry findings produced as the discussion document for the conference, supplemented by summaries of the relevant conference group discussions. It is in two sections. Section I summarises the consensus of opinions expressed in the enquiry and is in two parts: Part A sets out the aims of a possible new undergraduate curriculum and Part B outlines the consequences for achieving those aims. Section II comprises the recommendations and questions arising from the ten sets of issues identified in relation to implementation of this possible new undergraduate curriculum.

## The Need for Change

The enquiry and conference both indicated that large numbers of people want to see major change in the undergraduate curriculum. They also showed that there exists a consensus view of what that change should consist of in terms of the design of a curriculum for the future (given that the curriculum will never be fixed but will be in need of constant revision).

The dissemination of the findings of our study comes at a time when the Education Committee of the General Medical Council (GMC) is sending to all medical schools the conclusions of its own working party in the form of a Consultation Paper. Although the information for the GMC paper and the King's Fund study was collected in very different ways there is a striking concordance in the views expressed on the undergraduate curriculum.

There is widespread agreement that present curricula are grossly overcrowded with factual information which soon becomes out of date and inhibits students from developing into creative and critical thinkers and problem solvers. The comprehensive system of postgraduate education which now operates should free the undergraduate curriculum to concentrate on enabling students to develop the core knowledge, skills and attitudes which will last a professional lifetime, irrespective of the specialty subsequently chosen. The consensus view is that any new curriculum should be based on the following principles (for more details refer to the section on 'Aims of the curriculum' page 10).

- Reduction in factual information.
- Active learning (enquiring doctor).
- Principles of medicine (core knowledge, skills, attitudes).
- Development of general competences (eg. critical thinking, problem solving, communication, management).
- Integration (vertical and horizontal).
- Early clinical contact.
- Balance between hospital/community; curative/preventive.
- Wider aspects of health care (eg. medico-legal/ethical issues, health economics, political aspects, medical audit).
- Interprofessional collaboration.
- Methods of learning/teaching to support aims of curriculum.
- Methods of assessment to support aims.

The difficult issue is how to implement change. The previous GMC recommendations issued in 1980 contained many of the forward thinking

ideas which form the current consensus view, but little significant change has occurred in the last ten years. Recognising this fact, the GMC in its latest document has paid attention to some of the barriers to change. The King's Fund enquiry and conference also identified issues and recommendations relating to the implementation of curriculum change, some of which are discussed below.

## The Management of Change

Implementation requires consideration of the management of change: identification of forces acting to promote change, barriers to change and key groups of people who need to own the change and take responsibility for action.

***Forces for and against change***

Many reasons and excuses can be found for not changing, and the problems can seem so overwhelming that even the most motivated innovators can become disillusioned or paralysed. However, despite the difficulties there are a number of forces currently acting as a positive stimulus which are increasing the chances of accomplishing real change at this time. There is, for example, a genuine and widespread climate of opinion and momentum for change, as well as a general agreement about the nature of the change required, as this study has shown. The latest GMC consultation document should have a liberating effect on curriculum development and the plans of the Education Committee to play a more interactive and facilitative role will help medical schools to introduce new ideas.

The introduction of university contracts and NHS job plans will give Deans the opportunity to specify and monitor teaching commitments and to include requirements for teaching staff to take part in training activities. Similarly, the work of the academic audit unit recently set up by the Committee of Vice-Chancellors and Principals (CVCP) should promote improvements in the standard of university teaching. At the same time changes in the organisation of the NHS are providing a stimulus for change. Although there is uncertainty over the future of teaching hospitals, especially in London, and the implications of NHS Trust status, there is now an opportunity for Deans to have a much greater say in the way SIFTR money is allocated, with the potential for developing a wider network of teaching facilities.

On the other hand, there are powerful forces acting as barriers to change and which need to be acknowledged and addressed. These include the low status of teaching compared with clinical work and research, and the lack of professional training for medical teachers, both of which are discussed in more detail below. The way resources, particularly funding, are allocated to medical schools and distributed within them on a departmental basis prevents a more rational reallocation in line with the

needs of a new curriculum. The barriers between departments and between medical and basic science faculties will need to be broken down if innovative and integrated teaching is to be planned and implemented successfully. Wider still, the individuality and rivalry of medical schools might prevent concerted action being taken to overcome some of the obstacles.

Two further prospects need to be borne in mind, although it is not clear at this stage whether they will act for or against change. The first is the government's recent proposals for reform of the Higher Education system, which could result in medical schools becoming more isolated and vulnerable within the university system. The second is the implications of harmonisation within the EEC which will create new opportunities as well as difficulties.

***Key people involved***

*Deans* are accountable to universities, and to the GMC for the implementation of its recommendations. They need to take the lead in changing medical education both individually and through their collective body, The Conference of Deans. *The GMC* is the only statutory body for undergraduate medical education. Previously seen as an inhibitor of innovation or used as an excuse why change could not occur, it has an important permissive role in liberating the curriculum. *Universities* need to be aware of the proposed changes in medical education and their implications, through the representations of the Medical Advisory Committee of the CVCP, since the relationship between the university and medical school is a potential barrier to change. *The National Health Service* is the ultimate employer of medical school graduates and is concerned that students develop appropriate attitudes during this formative stage of their education. Large amounts of teaching are done by NHS employees who need to be included in the change process. The Department of Health has recently confirmed its interest in undergraduate medical education through the France Steering Group. Teachers include university and NHS employees and general practitioners. Many are aware of the need for change, but a critical mass is required in each medical school. Some are already planning or doing innovative things but need support to overcome isolation.

## Key Issues

1. *Definition of core knowledge, skills and attitudes*
   It is widely recognised that present curricula are grossly overcrowded with factual information rather than being based on the knowledge, skills and attitudes which undergraduates need in order to be able to fulfil their responsibilities as pre-registration house officers. The solution proposed by the GMC Education Committee is the core plus options approach, with each medical school defining the core and

offering options according to its own strengths and enthusiasms. Although the core, by definition, should be common to all medical schools, the way in which it is taught would vary. Further work needs to be done in defining core knowledge, skills and attitudes in relation to what a new graduate is expected to be able to do, while recognising that the aim is not to develop a standardised national curriculum which all medical schools would be expected to adopt. To avoid each medical school having to define the core independently, it would be useful to set up an advisory group to do further planning and act as a resource to the medical schools.

2. *Integration of preclinical and clinical teaching*
The curriculum should be planned as a continuum, and any changes should begin on day one of entry into medical school. Many problems of present curricula are due to the content and method of basic science teaching. Ways of integrating the teaching and ensuring the relevance of the basic sciences are needed. There are many practical difficulties in trying to integrate the curriculum which need to be addressed, including problems with attitudes, organisation and resources.

3. *Introduction of self-directed learning*
This is needed if students are to learn how to think, critically analyse and solve problems, and continue their own learning throughout their professional career (ie. students must be educated as well as trained). Students also need opportunities to study in depth, eg. through an intercalated degree. If these learning methods are not introduced, medical schools will be out of step with state school education and may find it difficult to attract students. The development, adoption and evaluation of new learning methods will require staff development programmes and liaison with medical education specialists.

4. *Development of appropriate assessment*
Assessment has been recognised to drive the curriculum since students concentrate on learning that which they need in order to pass examinations. An inappropriate assessment system will act as a barrier to implementing any new curriculum. New methods of assessment which test all knowledge, skills and attitudes deemed to be important will need to be developed, adopted and evaluated, and examiners (both internal and external) will need to be trained.

5. *Recognition for teaching*
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 any 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. Recognition for teaching may include:
- Specification in contracts;
- Audit of teaching;
- Career structure;
- Financial rewards.

6. *Training for teachers / staff development*
Few of those who teach medical students (academic clinicians, NHS consultants/junior doctors, general practitioners, basic scientists) have any training in curriculum design and management, teaching and learning methods or assessment. 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 all staff work together to help students achieve the objectives of the course rather than teach their own subject/specialty in isolation.

7. *Where should students learn in order to achieve the aims of the curriculum?*
Difficulties are currently being experienced by many medical schools in teaching students because of changes in the NHS and in the practice of medicine which have resulted in increasing hospital specialisation, shorter stay in hospital, more day case/outpatient work, etc. At the same time changes to the curriculum may require a different mix of learning opportunities than is currently provided, eg. more teaching in the community. Various questions arise:
- What is the role of the hospital (teaching hospitals and/or DGH)?
- Should more teaching be done in outpatient clinics and what are the resource implications?
- What is the role of general practice and what are the resource implications of more teaching in the community?
- What other places of learning should be developed (eg. skills laboratories)?

8. *Management of change within medical schools*
Analysis of experience in US medical schools shows that it is very difficult to introduce radically new curricula into existing medical schools, the most likely method of achieving successful change being to set up an innovative parallel track curriculum. Even less radical change needs to be managed rather than left to chance as has happened in the past. Structural change is needed to give educational activities a visible focus, a clear and appropriate management structure and a proper resource base. Departmental boundaries need to be broken down in order to promote integrated teaching and appropriate resource allocation. Possible ways forward might be:
- Training in leadership and the management of change for deans/curriculum 'managers'.

- Exchanging information between medical schools and individual innovators through the creation of a network and newsletter.
- Review of funding and its distribution.
- Research and development, carefully evaluated, to encourage innovation and develop new models for teaching.
- Use of student (and recent graduate) views as a stimulus for change.

## The Way Forward

Medical schools are at different stages along the journey. Changes are already occurring which are not necessarily known about because there is no forum for exchanging views and information. Such an exchange would help to develop a critical mass for change in each medical school, reduce the isolation of innovators, avoid duplication of mistakes and work in planning, and build up a body of expertise and examples of good practice.

Much has been achieved already in laying the foundation for change through the establishment of a climate of opinion and consensus view. Given the constraints and problems facing Higher Education in general and medical schools in particular, as well as the conservative British temperament, change is likely to be evolutionary rather than revolutionary. However, if the issues outlined above are widely debated and acted upon, there is no doubt that a significant improvement in the relevance, interest and quality of undergraduate medical education will result.

# SECTION I: AN UNDERGRADUATE CURRICULUM FOR THE 1990s

## PART A: AIMS OF THE CURRICULUM

### General education

1 The curriculum should aim to teach general principles and their application, as well as basic skills upon which postgraduate specialisation can build. The undergraduate curriculum should aim to create a motivated, critical and enquiring doctor, willing and able to continue learning throughout his/her professional career. While aiming to provide a general education, the undergraduate curriculum should provide opportunities for individual students to pursue specialist interests (eg. through in-depth study).

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

3 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. While the undergraduate course should aim to inform career choice, this should not be used as a justification for teaching a particular subject.

### General competences

4 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 competences will enable future doctors to cope with change and developments in clinical practice (by adapting to and participating in change) and with their wider responsibilities (eg. as team leader, manager of resources).

5 The general competences should be developed progressively and cumulatively during the undergraduate course by experiences and practice in real-life situations backed up by discussion between student and tutor, peer group discussion and reading.

## Clinical teaching

6 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.

7 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.

8 The curriculum should teach clinical care rather than medicine, gynaecology, surgery, etc. The main skills that need to be taught to undergraduates are skills of diagnosis (eliciting a history through the interview, physical examination, a few basic diagnostic tests), 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).

9 The level of the specific professional skills should be closely related to the responsibilities that the new graduate is expected to assume during early postgraduate training or supervised clinical practice. Theoretical aspects may range more widely.

10 The curriculum should emphasise the importance of the doctor-patient relationship and ensure students can 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.

11 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, rehabilitation and care of the disabled or terminally ill.

12 Students should constantly be presented with the goal of health rather than absence of disease. The maintenance of health and prevention of illness 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.

13 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 distribution of health and disease in society should be considered through the study of populations (public health as well as individual health).

14 The curriculum should give students a wider perspective of the practice of medicine and the role and responsibilities of the doctor in society. Students need to reflect on the ethical, moral, legal, social and economic implications in making clinical decisions and to be made aware of the interface between clinical practice, patients' needs and expectations, economics, politics and health policy. The teaching of such topics as health economics and policy, ethics, medico-legal issues and the role of other professionals involved in health care, should be fully integrated into the curriculum, being based around the clinical problems studied by students.

15 Undergraduates should learn to understand and respect the role, work and problems of other professionals involved in health care in order to practice teamwork (cooperation and collaboration).

## ◄ PART B: ACHIEVING THE AIMS OF THE CURRICULUM ►

### Structure of the course

16 The undergraduate curriculum should be planned to achieve a balance between scientific education, vocational training and the personal development of an individual student. These three strands should run throughout the course, closely intertwined and not sequential.

17 There should be a minimum core curriculum, concentrating on basic principles and methods underpinning the scientific basis of medical practice and illustrated by example. There should be some choice within the curriculum providing opportunities to pursue individual areas of interest, and opportunities and time for extracurricular activities within the broader university environment to allow for personal development and maturation.

18 There should be better integration between preclinical 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. There should also be integration between the different disciplines to ensure a balanced curriculum in which no single approach or attitude is unduly dominant.

19 Opportunities should be provided for students to carry out study in-depth and/or project work in order to develop key general competences (eg. in problem solving, critical thinking), foster intellectual curiosity and generate interest.

### How should students learn?

20 Students should not be overwhelmed by huge volumes of coursework but should have time for discussion and reflection; should be allowed to develop their own individual interests (eg. through project work); should be encouraged to seek out information by themselves (eg. by problem solving); should be inspired to continue learning after the undergraduate years.

21 Teaching methods need to reflect the aims and objectives of the curriculum and principles of adult learning. Learning should be based on the needs of the learner (student-centred not teacher-centred), ie. independent learning supported by a tutorial system.

22 Tutors should facilitate the exchange of experiences between students and guide students in further study, and help them to integrate basic sciences with clinical, social and population sciences.

## Student assessment

23 Informal (formative) assessment must 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.

24 Little progress will be made with the undergraduate curriculum until it is less examination-driven than it is at present. The examination system should facilitate rather than control learning and encourage self-learning. Formal (summative) assessment must therefore reflect the educational objectives of the curriculum and clearly be relevant and supportive of these. All skills, knowledge and attitudes deemed to be important should be assessed by appropriate methods.

## Student selection

25 It is important to select the right people for entry into medical school, taking into account the personal characteristics appropriate to a good practising doctor, and to ensure that selection criteria and methods are appropriate.

26 An increase in the number of mature age students could bring considerable benefit to those drawn straight from school. It should be possible for the school leaver and mature student to go through the same curriculum (if sufficiently flexible) and the undergraduate curriculum could benefit considerably from incorporation of the principles of adult learning.

## The Pre-registration period

27 Many aspects of the undergraduate curriculum will need to be developed further in the postgraduate years, building on the foundations laid in the undergraduate course. In particular, the pre-registration period needs to be planned as an appropriate second step in the continuum of medical education in relation to the aims of the undergraduate course.

## Where should students learn?

28 Students require wide clinical exposure in order to get individual experience of a wide variety of patients, common conditions and circumstances of illness. A broader view of medical practice beyond the confines of a large teaching hospital is required: increased use of outpatients and general practice for teaching is essential to reflect the true spectrum of health and disease in the community. Teaching needs to be integrated across the hospital/general practice/community interface.

## Quality of teaching

29 Teaching is currently conducted by individuals with commitments to clinical practice, research and administration/management, as well as teaching. Until teaching is perceived and recognised to be of equal importance to research and clinical work, academic staff will have little incentive to devote time and effort to the planning and implementation of new curricula or new ways of clinical teaching, or to acquiring professional expertise in medical education.

## Curriculum planning and organisational requirements

30 To achieve the overall aims, the curriculum needs to be planned as a whole, not as isolated years or subjects. Specific opportunities for the development of the key competences need to be planned, and not just hoped for or expected. The different clinical disciplines should work together to ensure that general and specific competences are acquired progressively and cumulatively, avoiding unnecessary and unplanned repetition. This will require careful curriculum planning, coordination of teaching within and between departments and commitment to the curriculum.

31 Planning needs to be heavily led by the medical school corporately and departmental plans fitted within the overall framework. Individual departments and departmental heads should no longer have the final decision on which elements of their discipline should be taught to all students.

32 Changes are difficult even in a school which prides itself on an interest in education. Key people need to be identified and to develop a consensus about a new system which can then be negotiated with the others involved.

# SECTION II: RECOMMENDATIONS FOR FUTURE ACTION

## A. AIMS OF THE CURRICULUM (CONTENT)

### Recommendations from the enquiry

A.1 The amount of factual information in the undergraduate course needs to be reduced in order to ensure time for personal development, critical thinking and reflection.

A.2 The core knowledge, skills (general competences and clinical skills) and attitudes which constitute a general medical education and which graduates need to acquire in order to be able to deal with common clinical problems, to undertake their responsibilities as pre-registration house officers and to continue their own education, must be defined and translated into operational objectives. (How and by whom?)

A.3 The level of attainment of the general and specific professional competences expected by the time of graduation should be defined, and methods of teaching/learning and assessment which foster these competences must be developed. Provision should be made for the further development of these competences in postgraduate training through specified curriculum and assessment. (How and by whom?)

A.4 Ways in which the wider issues of health care can be integrated into the curriculum so that they are learnt in a clinical context, and are taught and assessed appropriately need to be addressed. (How and by whom?)

A.5 More prominence should be given in the undergraduate course to preventive medicine and health maintenance. These issues should be integrated into all clinical teaching and not regarded as a separate specialty. Clinical teachers need to be convinced of the importance of health promotion and disease prevention. (How can the quality of teaching of preventive medicine be improved?)

A.6 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. (How can the teaching of medicine in the community be more integrated with clinical specialty teaching? To what extent should undergraduate students get involved with groups in addition to individual patients? If this is believed to be more appropriate for postgraduates, can this in fact be catered for in current postgraduate training?)

A.7 Undergraduates should be given opportunities to understand and respect the contribution of other caring professions, practise holistic principles and experience teamwork. (To what extent can/should these issues be addressed explicitly in the undergraduate curriculum? Are they better learnt during postgraduate training? Can they be taught?)

**Summary of the conference discussion**

The key issue was seen to be the overloaded curriculum. Content should be determined by what needs to be learned for use in practice rather than theoretical concepts. Goals must be clearly stated, and differentiated from objectives (more precise).

The group focused on the need to state objectives, which some members felt should relate to each year of the undergraduate course, against which students' attainments should be assessed.

A.1 and A.2 were agreed, but competences should be defined. Translation into operational objectives requires the involvement of the whole medical faculty. A.3 was agreed, with 'how' and 'by whom' specified by the faculty. A.4/5/6 should be modified and regarded as a sub-set of A.1 and A.2; their importance was agreed, but they should be learned within the wider context of health care. A.7 was agreed, and should be addressed explicitly in the undergraduate curriculum, in addition to during postgraduate training.

## B. STRUCTURE OF THE COURSE

### Recommendations from the enquiry

B.1 Medical schools need an effective policy board: to determine the balance between scientific education and vocational training; to define the philosophy of its medical education; to ensure faculty commitment to the policy and philosophy.

B.2 Ways to achieve a greater degree of integration between the sciences (biological, clinical, population and social sciences) should be sought (how much integration is desirable and practical?) and practical problems which act as obstacles to integration must be addressed.

B.3 Ways in which the different disciplines can contribute to a general education and holistic thinking need to be established and appropriate ways found to include minor specialties in the curriculum.

B.4 Although the undergraduate course should provide a general education for all students, opportunities for the most able students to achieve academic excellence should be provided.

B.5 Time should be set aside in the curriculum to allow students to exercise choice and develop or pursue a specialist interest through study in depth, project work, research, electives, etc. These opportunities should support the aims of the curriculum (eg. through broad objectives related to the acquisition of the general competences such as critical thinking and problem solving) and be assessed appropriately.

B.6 The possibility that not all medical schools should offer the same type of course should be considered and innovation in curriculum design encouraged.

### Summary of the conference discussion

In relation to the setting up of an effective policy board within each medical school (B.1), it was agreed that two types of committees were needed. One should be a small group to determine long-term goals, underlying philosophy and the broad structure of the curriculum. The other should be a larger implementation committee comprising people with a genuine interest in medical education, not constituency based, and including student representation. It should call on expert working parties and individuals to produce recommendations for the fine detail of the course as required. The implementation group, not heads of departments, should be responsible for what is taught.

The philosophy and implementation groups should define the curriculum through specification of objectives for each part of the course. Clear objectives are essential for each specialty.

Integration (B.2) was agreed to be desirable, though presenting many difficulties. Horizontal integration between clinical departments is relatively easy, but vertical integration between preclinical and clinical subjects is more difficult and needs to be dealt with by the implementation group. Joint leadership by clinicians and scientists of small working groups may be useful.

In relation to B.3 and B.5, all agreed that a core curriculum (Possibly for about 50% of the time) was highly desirable, with the rest of the time being devoted to options, allowing students some degree of choice. The role of the GMC was seen as being constrictive in requiring all students to go through the same specialties. The objectives of core and options must be absolutely clear. The core should aim to teach principles of clinical skills, pathophysiology, disease patterns and clinical management, illustrated by linked examples. Timetabling constraints should not drive the curriculum.

In relation to B.4, it was felt that more students should have an opportunity to take an intercalated BSc, in either basic or clinical sciences. Perhaps the basic course should be six years (including BSc), with an option of five years.

## C. HOW SHOULD STUDENTS LEARN?

### Recommendations from the enquiry

C.1 The design of the undergraduate curriculum and methods of clinical teaching should take account of known principles of effective and efficient learning, and the educational and personal needs of students. All medical teachers should understand and apply the principles of learning and recognise the needs of students.

C.2 Teaching should be student-centred rather than teacher centred, with more emphasis on guided self-directed learning, small group tutorials, problem-based learning and project work, and fewer lectures/formal teaching sessions. (How can these principles be incorporated into clinical teaching?)

C.3 Students should be involved in planning and directing their own learning. They should be given clearly stated written objectives so that they know what is expected of them, and assisted to direct their own studies towards achieving these objectives.

C.4 A system of appropriately trained tutors to provide academic and personal support should be developed. Personal support should help students to come to terms with illness, the uncertainties of medicine, etc. so that they do not develop inappropriate attitudes/defensive behaviour. Career counselling should also be provided.

C.5 The need to create a more flexible timetable (to accomodate self-directed learning and the dispersal of students among a wide variety of clinical settings) should be addressed and teaching methods appropriate to individual and small group learning should be developed.

C.6 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.

C.7 Clinical attachments should have clear objectives which contribute to the attainment of the overall aims of the curriculum. Students should be provided with a wide range of clinical experiences which they should be encouraged (by teachers/peers) to use as a basis for learning. Time-wasting activities of little educational value should be minimised.

C.8 The desirablility/necessity for students to learn only about ill people in hospital/general practice should be critically analysed (eg. in view of the distorted view this may present of sickness and health; fewer opportunities for students to clerk and examine patients at length).

Appropriate alternative methods should be identified (eg. simulated patients, video recorded material, practice on peers and healthy volunteers).

C.9 The implications for a shift towards more appropriate teaching methods (self-directed learning, small group teaching, tutorial system) on staffing levels, facilities and resources must be addressed.

### Summary of the conference discussion

The group discussed two broad themes: the desirability of clearly expressed objectives and how to make teaching more effective.

Although it was felt to be important to have a clear idea about the objectives, these should not be so detailed as to prevent flexibility. It would be better to have a job description for students, enabling both students and teachers to share a clear idea of what is expected.

In relation to making teaching more effective, it was noted that there is a wide range of teachers: NHS consultants, junior doctors, academic staff, etc. It is important that all teachers should do their teaching professionally, through being trained appropriately. From the knowledge of the group there is only one medical school which is currently providing courses for teachers.

It was noted that time for teaching is the first thing to be sacrificed when in conflict with research and clinical work. Teaching should be put into consultant contracts and the quality of all teaching should be audited. The most radical suggestion was that teaching should be linked with the system of merit awards for consultants.

## D. STUDENT ASSESSMENT

### Recommendations from the enquiry

D.1 Assessments should be relevant and fair, and test whether objectives/goals (knowledge, skills and attitudes) have been met. Assessors must examine objectively and uniformly, according to standardised criteria.

D.2 Formative assessment should assist learning (by providing encouragement and feedback on progress) without being stressful (by being too frequent, too formal, pejorative) or overly time consuming (for staff and students). (How can this be done effectively and efficiently, eg. through self-assessment, peer group assessment, feedback from personal tutors?)

D.3 The advantages and disadvantages of introducing a formal system of progressive continuous assessment should be considered further.

D.4 The role of the final examination should be re-evaluated. (Is it necessary? Is its importance over-rated? What is the role of external examiners? Should course work assessment form a part of the final assessment?)

D.5 New methods of assessment are required which test more appropriately all the aims and objectives of the curriculum (eg. assessment of general skills such as problem-solving, communication, critical thinking; integrated examinations to reflect more integrated teaching). (How can research into assessment be encouraged and the results implemented and evaluated?)

D.6 Clinical teachers and curriculum planners need to become better informed about assessment and convinced of its educational importance.

D.7 Reform of the assessment system at undergraduate level will require a re-evaluation of the postgraduate examination system and the system of accreditation of professional competence.

### Summary of the conference discussion

The group talked at length about objectives and their link with assessment (D.1) and recognised that we were bad at defining them. Objectives should be defined in terms of desirable outcomes. Most of the group had experience of the OSCE (objective structured clinical examination) and this was felt to be best used early in the course when there was a need to test specific skills; it was less suitable for the wider assessment of integrated skills.

In a discussion on appraisal versus continuous assessment (D.2 & D.3) it was concluded that continuous summative assessment could have a deleterious effect, especially if a student is doing badly and there is no safety net for those in trouble. With appraisal there is the problem of the unreliable and unsatisfactory nature of the assessment.

Final examinations (D.4) were discussed in some detail. They were felt to be a lot of effort for a very focussed task: that of identifying a small group of unsatisfactory students. There is a problem with the unreliability of final examinations. External examiners might be better employed as 'super visitors' looking at the overall conduct of examinations and training of examiners.

Although there was relatively little discussion on D.5, it was recognised that projects help to.develop the skills needed for life as a doctor, eg. independent learning, but that the weight given to them in assessment needs to be agreed. It is important to develop in students the attitude that prepares them for continuous learning and assessment throughout their career, ideally through self-asssessment.

## E. STUDENT SELECTION

### Recommendations from the enquiry

E.1 The criteria and methods of selection for entry into medical schools should be re-examined to take account of personal qualities and motivation rather than just 'A' level grades.

E.2 The current 'A' level entry requirements should be reviewed. (Do they need to be as high as at present? What 'A' levels are appropriate – should there be greater flexibility, and if so, how can the undergraduate course accomodate such differences in the knowledge base of entrants?)

E.3 The current policy of normally selecting entrants to medical school from among school leavers should be reconsidered. (Do we admit medical students at too young an age? Should school leavers be encouraged to take a year off before entry into medicine?) Information on the comparative perfomance (in general terms) and career progress of mature students should be obtained.

E.4 The possibility that medicine should become a postgraduate subject should be considered.

E.5 The effect of admitting medical students at a later age on the current system of postgraduate training/career structure should be investigated. (Does it need to take so long to produce a specialist?)

E.6 In view of the influence of the peer group on learning and attitudes, diversity (social, ethnic, age) in the student group should be encouraged. (How may this be achieved?)

E.7 The effect that the new fee structure may have on the numbers of school leavers and mature students wishing to study medicine should be studied.

### Summary of the conference discusssion

The group was of the opinion that most, if not all, medical schools already took account of the personal qualities and motivation of candidates (E.1). Selection policies were commonly stipulated in prospectuses, but generally students offered the 'normal range' of subjects at 'A' level; greater variability in approach was not possible unless all schools were prepared to adopt this. In relation to E.2, the group recognised the need for a basic level of intelligence and attainment, commitment and capacity to learn, as might be attested by 'A' level passes at grade C or above, but did not feel that 'A' level requirements need to be as high as commonly supposed. Other qualities were important, such as stamina, leadership qualities, the ability to work as part of a team and human empathy. It is important that entrants have a clear idea of what is entailed through good career advice.

The group as a whole favoured students having a year out before medical school and also the leavening influence of mature students (E.3). It was concluded that not only should there be more routes into medicine but more routes out for people who did not fit, eg. through an intercalated BSc.

There was some discussion of the innovative developments in countries where the study of medicine is a postgraduate activity (E.4), in particular Harvard and McMaster, but no serious attempt was made to relate this to the UK situation.

It was recognised that entrants to medicine do not reflect the make-up of society as a whole (E.6) and the group discussed various schemes to attract ethnic minorities (eg. school visits, open days, involvement of careers teachers). A pilot study of disadvantaged entrants to compare subsequent performance could be useful.

On E.7 the group felt that it was a little early to offer an informed opinion, although they strongly suspected that there would be an adverse effect on mature students in due course.

## F. THE PRE-REGISTRATION PERIOD

### Recommendations from the enquiry

F.1 The relationship between the undergraduate course and the pre-registration period needs to be defined and the pre-registration period planned as an extension to the undergraduate curriculum.

F.2 The pre-registration period needs a specified curriculum, clearly defined educational objectives, proper time for learning, good supervision, appropriate teaching methods and suitable assessment.

F.3 The duties and hours of work should be clearly defined so that study and leisure time are protected. Clinical responsibilities need to be reviewed to ensure they are appropriate and standardised across all hospitals.

F.4 The educational component of training posts should be carefully monitored. Teachers must have protected time for teaching and receive recognition and training.

F.5 The pre-registration period needs to be reviewed with respect to overall length (one or two years?) and length and nature of individual attachments (eg. is a 6-month surgical attachment appropriate, should general practice be included, would 3 x 4-month attachments be better?)

### Summary of the conference discussion

Most of the discussion focussed on F.1 and the need for a much closer relationship with the undergraduate course. The undergraduate curriculum committee should inform what goes on in the pre-registration year; pre-registration house officers should sit on the curriculum committee. Closer links between undergraduate and postgraduate deans are needed.

In relation to F.2 the group discussed the use of log books and decided more evidence of their value was required.

Protected learning time (F.3) was important and an increase in the numbers of house officers was needed to make better use of their time. Audit was felt to be an important aspect of the pre-registration house officer's work and should be compulsory.

On F.4, it was agreed that educational supervisors should receive training, especially in career counselling. Teachers should have protected time, and the role of SIFTR should be studied. The case for three 4-month attachments (F.5) was discussed.

## G. WHERE SHOULD STUDENTS LEARN?

### Recommendations from the enquiry

G.1 Clinical teaching should take place in settings appropriate to the aims and objectives of the course (the acquisition of general and specific competences), taking into account the most effective and efficient place to learn each skill.

G.2 Each stage of medical education should be characterised by a range of experiences at different levels involving both sick and well people. Professional skills should be developed from the beginning of the undergraduate course.

G.3 The three main settings for the acquisition of general and specific professional competences are wards, outpatient clinics and general practice, including the patient's home.

G.4 Teaching should be decentralised: clinical teaching should occur increasingly away from the base teaching hospital with more exposure to community and district general hospital, moving towards the concept of a teaching district rather than teaching hospital. (What organisational framework would be required to integrate the base teaching hospital, other district general hospitals, community clinics, etc. taking into account the new structure of the NHS, and to ensure adequate standards of teaching and supervision?)

G.5 In view of the increasing specialisation of teaching hospitals, the role of the teaching hospital in providing a general education for undergraduates needs to be defined. (Is it more appropriate for most hospital-based teaching to occur at the district general hospital? What would be required to facilitate this?)

G.6 In view of the fact that the majority of the patients are seen and treated in general practice or outpatient clinics, the role of inpatient teaching (bedside teaching) should be re-evaluated.

G.7 As outpatient teaching is going to increase at the expense of inpatient teaching, the requirements for implementation of effective and efficient outpatient teaching need to be identified. (For example, resources for special teaching clinics, facilities, staff development, outpatient teaching methods).

G.8 A shift of teaching into the community would place greater emphasis on teaching in general practice. The requirements needed to facilitate this, to create an appropriate environment for learning, and to ensure that high standards of clinical teaching are maintained, need to be identified. (For example, strengthening of university

departments of general practice, training in teaching methods, links between hospital clinical departments and general practice, resources and facilities for teaching and organisation).

G.9 The requirements needed to ensure that students experience the full spectrum of medical care need to be identified. (For example, visits to different institutions arranged through general practice attachments, problem-solving exercises, opportunities for students to follow patients through the process of care).

**Summary of the conference discussion**

The group focussed on teaching in general practice, but three other areas were briefly touched on: the use of a clinical skills laboratory on the Maastricht model (which provides a controlled environment in which to develop skills and makes the contact students have with patients less frightening and more productive); missed opportunities for teaching on patients in teaching hospitals (certain specialties provide educational opportunities for teaching the general principles of medicine which are not currently being exploited); increased teaching in outpatient clinics and implications for the organisation of clinics.

The group discussed at length the role of general practice in the undergraduate curriculum. General practice was identified as a large underused resource outside the hospital, but it is important that the move to more teaching in the practice is not perceived as a takeover bid by general practitioners for more curriculum time to teach general practice as a specialty, or as a criticism of hospital teaching. Rather, it should be seen as an important supplement to hospital-based teaching of the principles of medicine in view of the fact that students can learn certain key knowledge, skills and attitudes more effectively and efficiently in a practice setting. It would be better to increase the amount of time students spend in general practice through attachments spread over the whole course (eg. one or two days per week) rather than a longer block attachment. Problems identified included funding, logistics, difficulties of the commuting student, selection of practices and training for tutors, and attitudes of hospital-based academic staff.

## H. QUALITY OF TEACHING

### Recommendations from the enquiry

H.1 Government (UFC) and the Health Service must define and agree on patterns of service delivery and budgets for teaching in medical schools, allied hospitals and the community to ensure that the needs and demands of clinical teaching are met. Faculties need to give more explicit recognition to the specific nature of medical education and to develop within the faculty structure a group of academic staff who can build up the necessary professional expertise in curriculum development, teaching methods and assessment.

H.2 Evidence of ability and commitment to teach should be required for selection to an academic appointment.

H.3 All clinical teachers should have a clear job description. Duties should include a defined proportion of time for teaching (including planning, preparation, contact time, assessment) to be timetabled. Academic staff with major teaching responsibilities should have reduced clinical, research and/or managerial commitments.

H.4 A system of recognition for the amount and quality of clinical teaching is required in order to preserve teaching against the demands of research and clinical work (which unlike teaching bring reward and career advancement).

H.5 All academic staff should undergo recognised training on a regular basis in curriculum development and effective teaching and assessment.

H.6 Audit of clinical teaching should be undertaken.

### Summary of the conference discussion

In relation to H.1 and H.3 it was agreed important that medical schools retain their say in the distribution of SIFTR money. There was general agreement that clinical academic staff do too much clinical work for the good of their teaching and research, and while this should be acknowledged it should not be pushed to the point of completely unravelling the 'knock for knock' arrangement. NHS managers should be made to understand that education at all levels, starting with undergraduate, is their investment in research and development.

The group discussed the range of educational activities which should be recognised and the need for departments to have enough people to fulfil all the roles. Teaching-orientated jobs (as distinct from research-orientated posts) should include provision not just for direct student contact, but also protected time for examination design and organisation, and curriculum development for both the short- and long-term future.

The discussion on appraisal of teaching hung on the definition of quality, as a criterion for both appointment (H.2) and reward (H.4) and the sort of evidence required to establish quality. Essentially quality was seen as effectiveness - the extent to which a teacher enabled students to achieve the objectives (although this raised various problems concerning the definition of objectives), but should also include organisational skills (managers of learning). Student feedback could be a useful way of evaluating teaching. Peer group assessment within departments should begin with the strengths of the teachers not their weaknesses.

All teaching should be subject to audit (H.6).

## J. CURRICULUM PLANNING

### Recommendations from the enquiry

J.1 An independent group should be set up to plan a curriculum for the 21st century, as it takes a decade to pilot and introduce innovations.

J.2 All those with a responsibility for undergraduate medical education (eg. government, GMC, universities) should commit resources (time, money, skills) to a total redevelopment of the curriculum, definition of aims, methods and activities with regard to scientific content and vocational training, and a new examination system.

J.3 The resource implications of professional curriculum planning and management in terms of staff time and skills, departmental funding, etc. need to be addressed.

J.4 The curriculum should be planned to ensure cumulative progression towards the acquisition of defined professional competences (general and specific), starting with the general and basic, and working towards the more advanced and specific.

J.5 There should be more overt acknowledgement of the adult status and maturation of students in programme planning, eg. with respect to responsibility, coping strategies, interpersonal skills.

J.6 All the different disciplines involved in teaching undergraduates should agree on the overall objectives (for the entire curriculum) and at the end of each period of the course (calendar period not attachment), and on methods of achieving and assessing them.

J.7 Individual disciplines should gear their teaching to a student's level of development, which should be progressively assessed. All teachers should be provided with the stated (published) objectives so that they will know what the students have already achieved and what needs to be learnt during the next stage of the course for which they are responsible (irrespective of the particular attachment) and can help the student to learn appropriately.

### Summary of the conference discussion

The group supported the idea of an independent planning group (J.1), set up separately from the GMC. Its purpose would not be to standardise the curriculum nationally but to try to identify a core curriculum by combining the resources of all the medical schools. Other briefs would be to be responsive to patterns of change in care and to inputs from other groups relating to health care, and to feed this back to medical schools. Linked to the group would be a consultative role to medical schools that had particular questions.

There was no support for J.2: total redevelopment was not acceptable. It would be better to change slowly and responsibly according to the pressures. There is a need to define ways in which each curriculum could be responsive.

If changes are on-going there is a need to define the resources available (J.3) and there should be a commitment to lobby for funding. The use of research capability as the criterion for distributing UFC monies was questioned. One function of the independent planning group could be to define quality assurance measures to be used by the UFC for allocating funds.

There was a debate about the ways in which universities manage SIFTR. Among the group there was a wide spectrum in the way this was done: at one extreme SIFTR is openly handed over to the medical school, at the other is a situation where it is impossible to identify how SIFTR is spent.

The need to defend academic time for curriculum planning and development was agreed. It was acknowledged that many teachers are NHS colleagues; universities must define teaching appointments in the new NHS trust hospitals.

The sentiments expressed in J.4 – J.7 were agreed and it was noted that the current style of the curriculum delays student maturation; students developed in maturity after doing electives or an intercalated BSc. GMC recommendations restrict the ability of students to do locum work.

## K. ORGANISATIONAL REQUIREMENTS

### Recommendations from the enquiry

K.1 Each medical school should establish an education/curriculum committee or planning group. The membership of such a committee should be such that it does not just maintain the status quo (especially with regard to resource allocation). For example, it should include those with a real interest in medical education and a broad vision, and be multidisciplinary (including representatives from students, junior doctors, GPs and other health professionals).

K.2 The function of the curriculum committee/planning group should be to develop an educational policy and strategy for the entire curriculum, draw up integrated horizontal and vertical programmes with explicit aims and objectives in relation to this strategy, and develop teaching and assessment methods to support the aims and strategy.

K.3 A small executive body is required to act in parallel to assess the feasibility of the policies and to put them into practice. It should enable teachers in both non-clinical and clinical disciplines to cooperate with each other.

K.4 All involved in teaching must feel that they have contributed to overall discussion/debate and be prepared to work towards the fulfilment of agreed objectives. Staff may require regular joint seminars, discussion groups, planning sessions and teaching courses if they are to subscribe to and promote the general objectives of the medical school rather than the more immediate ones of their own discipline.

K.5 Control should be vested in groups or course units, not in departments. Programme or course directors should be appointed for topics which cut across departmental boundaries, and with sufficient powers and resources to be effective.

K.6 The planning mechanism may need a fulltime 'school principal' on a career basis rather than being led by a part-time, mainly administrative, Dean.

K.7 A separate monitoring group should be established to be responsible for evaluating outcome, including student feedback.

K.8 Standing committees should be established to keep the curriculum under constant review and revision.

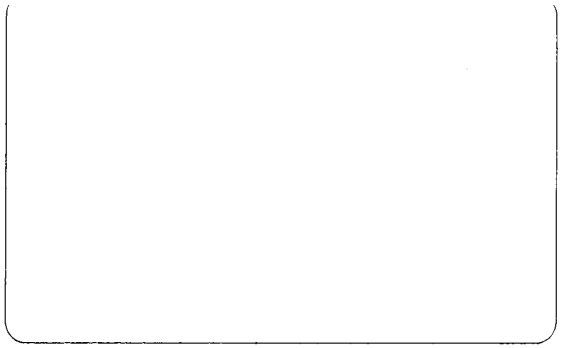
### Summary of the conference discussion

The group registered the enormous diversity between institutions. The need for a planning and review group (K.1) was agreed. It should be small and non-representational, comprising members with a real interest and broad vision. Their remit (K.2) should be to challenge the status quo. There should be good evaluation of any changes.

The executive committee (K.3) should be a larger committee than the planning and review group. They also need to consult with those who are going to have to teach so that they have a chance to comment on content and feasibility.

There was no great support for the idea of a principal or director of education (K.6), but leadership should come from within the school and for a defined period of time.

In relation to resources, it was recognised that any major change requires pump priming. Existing funding of departments is a powerful inhibitor of change. Any changes need to be mounted within existing resources. Educational expectations should not be aroused if the resources cannot be found.



JRP

This book draws together the conclusions from a major national enquiry, a conference and a working party on the future of undergraduate medical education in the UK. It sets out the consensus view on the aims of a curriculum for the future and the practical implications, and makes recommendations for the implementation of change.

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