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DEVELOPING METHODS OF EVALUATION
APPROPRIATE TO UNDERGRADUATE TEACHING
IN GENERAL PRACTICE
AT GLASGOW UNIVERSITY

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SUMMARY

The teaching of general practice in the undergraduate medical curriculum now takes place in all medical schools in the United Kingdom. The main expansion has taken place after the Report of the Royal Commission on Medical Education in 1968.

The teaching in general practice was introduced into already crowded curricula and it has therefore been important to justify this teaching. The developments at each University have been dependent on the local circumstances and this has led to a variety of teaching methods.

The need for general practice teaching is discussed and this is followed by a description of the present teaching at all the Universities in the United Kingdom.

Methods of evaluation have undergone recent changes and the methods used in this thesis are those that are accepted by educationalists.

The undergraduate teaching of general practice presents difficulties in an evaluation. Firstly with the teaching being new, the literature is sparse on the subject and guide-lines are difficult to find. Secondly, almost all the teaching is carried out by full-time general practitioners; the students are in groups of two or four and observational data is impossible to obtain without a large team of evaluators. Thirdly, the teaching of general practice at present is not subjected to traditional examination techniques and therefore data cannot be compiled from that source.

Traditional evaluation depended on measurable data and it is this which has had most criticism because it is too restrictive and misses the complexity of the teaching/learning situation. The current approaches give a more global view of the teaching but all evaluation procedures have advantages and disadvantages. In the present study a number of approaches have been used, utilising the advantages of the different methods and recognising some of the disadvantages.

The teaching of general practice in Glasgow was expanding during the time of study; some parts were developing while others were an established part of the teaching and these factors had to be taken in account when choosing methods of evaluation.

The teaching in third year, when the student is present at a patient's initial consultation in a new illness, was introduced at the beginning of the present study. A pilot study was carried out to determine the feasibility and desirability of this teaching. As a result of this the teaching was given in the following academic year to the majority of students in the year. Further evaluation was carried out and as a result this teaching is now an accepted part of the curriculum. Any innovation in general practice teaching in Glasgow will continue to be assessed in this way and will not be introduced into the curriculum unless it adds a further dimension to the hospital teaching. The opinions of both students and tutors are sought early and any alterations can be introduced at an early stage.

The teaching in fourth year, the long-term care of the chronic sick, is an accepted part of the curriculum and the introduction of recording booklets allowed the teaching to be standardised and both the teaching and the students to be evaluated.

The teaching in fifth year was at an early stage at the beginning of the present study and the methods chosen for evaluation were similar to those used in third year.

The Department of General Practice in Glasgow introduced to the teaching of medical students the technology of a computer. This study was part of a National Programme and was an innovation in a British medical school. This new teaching method was evaluated and the print-outs of the students' performance which the computer could provide gave an additional method of evaluation.

Computer-assisted learning is now being used in other Departments in the medical school and the teaching material and methods are being transferred to other Universities. This teaching method has considerable

application in medicine and further development will continue. Any teaching method using high technology can be difficult to justify on an economic basis but in medicine with the high cost of training a doctor, this teaching can be cost-effective.

The collaborative teaching with the hospital departments is at an early stage and seems to form a useful addition to the hospital teaching. This will expand and probably involve other disciplines.

The senior elective as a formal part of the course was introduced for the first time during the period of evaluation. Although the number of students was limited, the format and the variety of practices have been appreciated.

The tutor force continued to grow throughout the period of the study and a significant number of the general practitioners in the Glasgow area are now involved in this teaching. This large number of tutors creates problems in the uniformity of methods and standardisation of teaching. There are regular meetings with the tutors and evaluation data is presented with

each tutor being given his own data when he is able to compare this to that of the group. These meetings with visits to the general practitioners in their own surgeries, have helped to create a unity of purpose.

The questionnaire to the University teachers of general practice in other centres and to the Glasgow tutors has shown that there is a greater uniformity of opinion about general practice teaching than had been realised. There was also little difference between the full-time University teachers and the part-time tutors in their opinions about teaching.

In the teaching in third and fifth year, a record was kept of all the teaching consultations. This provided a record of conditions seen and allowed a comparison with the corresponding morbidity in a general practice situation. The student learning was measured in the third year and the opinions of those concerned was sought in both years.

The detailed marking of the recording booklets and the computer print-outs provided the main basis for the evaluation in fourth year. The elective period

was evaluated using a questionnaire and the tutors' opinions were gathered in each part of the teaching.

The methods used to evaluate were appropriate for the course in Glasgow but many are applicable to other courses in general practice in other Universities.

CHAPTER I

CHAPTER I

HISTORY OF TEACHING
RELEVANT TO GENERAL PRACTICE.

There was no school of Medicine in mediaeval Scotland. Until the fourteenth century the universities of Europe were few in number and although restricted in their location were international in character drawing students and teachers from all other parts of Europe including Scotland (Poynter, 1966). In the fourteenth century a spirit of nationalism was prevalent and it became inevitable that the educational needs of Scotland could only be met by the establishment of Scottish universities. By 1400, Scottish students had largely disappeared from English universities and soon France forsaking the Avignon cause and pursuing a neutralist line was also barred to the Scots. For Scottish students and for teachers alike there was only one choice: to return home.

The University of Glasgow was founded in 1451 when the population of the town numbered only two thousand inhabitants. The new University seemed to have had no plans to introduce teaching in medicine although it is

recorded that, in 1496, one Andrew de Garleis was admitted as a Doctor of Medicine. Andrew Brodie, a genial and learned physician and traveller reported that he studied at the "Litty1 Unyversite named Glasgo" in 1536 from which it can be inferred that there was some medical teaching at that time. In 1598 one physician, six surgeons and two midwives were in practice in Glasgow, although much of the population's medical care was provided by a numerous band of unqualified charlatans. In response to public concern over the skills of unqualified practitioners Peter Lowe founded the Faculty of Physicians and Surgeons in 1599. The new Faculty was responsible for the examination and licensing of surgeons: physicians, most of whom had studied at continental schools, were only called upon to produce their University Diplomas. In 1602 the Faculty planned to teach "upon Medicine, Chirurgerie or Apothecarie" and ordered that apprentices should serve for a period of seven years.

The real founder of Glasgow University Medical School was William Cullen (1710-1790). Cullen, a graduate of Edinburgh University and a founder member of the Royal Medical Society, was undoubtedly influenced by the teaching curriculum of the medical faculty at Edinburgh

and resolved to devote his energies and talents to raising the academic status of the Glasgow School. In 1744 he gave up his practice in Hamilton, moved to Glasgow and began lecturing as a private teacher in English, as opposed to Latin, on the theory and practice of medicine. Within a few years Cullen, single handed, had established a medical seminary of repute but his achievements were still not formally recognised. In 1751 he was appointed Professor of Medicine and until 1755 when he moved to the Chair of Medicine at Edinburgh, Cullen remained the mainspring of the new school. He was succeeded in Glasgow by his pupil and friend, Joseph Black, who continued the Cullen tradition of teaching. These two by their brilliance as lecturers, their modesty and their benevolence attracted increasing numbers of students to Glasgow, and towards the end of the century, although neither Cullen nor Black were still associated with Glasgow, the School had progressed remarkably both in stature and in ability. At this time some two hundred students were in attendance at the University Medical School although not all completed their studies and graduated.

Of the three branches of the medical profession - surgeons, physicians and apothecaries - the apothecary was lowest in popular and professional esteem. Originally shopkeepers, they had assumed a separate identity when in 1617 they broke away from the Mystery of Grocers (Stevens, 1966). They established their right to treat the sick during the plague of 1655 when the physicians together with their rich patients moved out of London to seek the healthier air of the country.

The Apothecaries Act of 1815 was the culmination of some years of discussion and agitation concerning the need to lay down standards of medical education and to establish a medical register. Owing mainly to the self-protective opposition of the College of Physicians, the Act did not achieve all its aims. In the early nineteenth century the greater part of medical practice throughout the country was undertaken by apothecaries who were anxious to establish a professional status. While the Act of 1815 instructed the apothecary to prepare and dispense the prescriptions of physicians who were lawfully licensed to practice, it also gave him for the first time the legal right to prescribe: a right that he had long assumed.

The legal recognition of this right brought him a step nearer to the general practitioner as he is known today. The Society of Apothecaries were empowered to appoint twelve of their number each of twelve years standing to be a court of examiners who could examine and grant certificates of qualification. The candidates had to be at least twenty-one years of age, to have served an apprenticeship of not less than five years, and to produce testimonials of sufficient medical education and of a good moral conduct. From the standpoint of medical education this was the first time that specific courses of instruction had been required by law. This was an important advance since it became accepted that no longer was it solely by the study of books and the work of Hippocrates and Galen, but by instruction in the basic sciences and by learning about disease at the bedside, that the student became a doctor.

The Medical Act of 1858 was principally the result of the difficulties that stemmed from the limited scope of the Apothecaries Act. The Medical Act was important in that it established common rights to practice throughout the British isles. It established the

General Medical Council whose duty it was to set the standard required of those whose names could be admitted to the Medical Register. Patients were diverted to special hospitals and in 1860 the British Medical Journal commented "Do these teaching hospitals subserve the education of pupils? - most decidedly not. Their tendency is to starve the general hospitals, where the schools are established, of that variety of cases which are so instructive to the general practitioner. Moreover the splitting up of the specialties with a more than Egyptian minuteness has a tendency to destroy that unity of disease which the philosophic mind should always keep in view."

Physicians tended to be concentrated in the major towns, while outside London and beyond the spheres of influence of the Royal Colleges, general practitioners were growing in importance with the increasing affluence of the industrial revolution. By 1860 the general practitioner was firmly established as the doctor of the rising middle class. In the late nineteenth century the purpose of the General Council was above all to produce a safe general practitioner rather than to devise an ideal scheme of medical education (Newman, 1957).

The system of patient referral that developed in the late nineteenth century was designed to eliminate competition for patients between general practitioners and consultants. General practitioners were excluded from the staffs of major voluntary hospitals at the beginning of the twentieth century; and the consultants continued insistence on a monopoly of hospital beds has merely followed an established trend. The National Health Insurance Act was passed in 1911 and was the first example of medical services being supported by State finance. The Act however consolidated and strengthened the general practitioners' position, leading to an increase in the number of general practitioners and an improvement in their income and standing. The Act brought great numbers of wage earners into ready contact with doctors and thus bolstered the referral system. In many ways it was a further and significant step in the advancement of general practice that was initiated by the Apothecaries Act of 1815.

Prior to 1939 there was no specific training for general practice and many students left hospital immediately after graduation to set up their plates as independent general practitioners, to buy a vacant practice, or to be taken into an established partnership. At this

time the ratio of specialists to general practitioners was of the order of one to seven and one third of the specialists were concentrated in London. The growth in medical knowledge that exploded in the early twentieth century led to a marked increase in the number of specialists. These changes tended to encourage a fragmentation of the profession and the general practitioner uneasily surveyed his future role.

The Goodenough Committee on Medical Education (1944) said that "in deciding the importance that should be attached to the various subjects and the type of instruction that should be given, the bias should be towards the needs of the future general practitioner." The Health Services Act (1946) broadly followed the lines of the 1944 White Paper and recommended a system of health centres, based on premises equipped and staffed at public cost. These were to include general medical and dental services, local authority clinics, and occasionally out-patient departments. The establishment of the National Health Service seemed to recognise and intensify the divisions between hospital and community medical services: the consultant was now no longer financially dependent on the general practitioner and the links between them

became weaker. For many years after 1948 all investment and development was in hospital to the neglect of the community; the general practitioner was relegated to a back seat and it became fashionable to hold a narrow rather than a broad clinical interest. Lord Moran (1946) discounted the possibility that general practice might be a vocation, "If a man's vocation was obviously trying to help the community, would he not have more opportunities as a consultant?" In contrast, Sir Lionel Whitby (1947) said "Shall we perhaps like a Gilbertian Navy be all admirals and suffer from a galaxy of specialists with none to do the field work, the work in the home?"

Collings(1950) looked subjectively at the standard of work in fifty-five practices. He concluded that general practice was at its worst in close proximity to the large hospitals and the clinical centres, and improved in scope and quality almost in proportion to the distance away from the centres. It seemed that general practice was worst where the need was greatest, and especially in industrial areas where the conditions were so bad as to tend to override the abilities and skills of the individual doctors. Rural practice seemed to represent the last outpost of family doctoring. The British Medical Journal (1950) judged the picture as

inexact and unfair. The Lancet (1950) noted the deficiency of the study but welcomed the report as a major challenge, and made a plea for a constructive rather than a defensive reaction. Whatever its defects as a research study the paper had a salutary effect on general practice by galvanising the general practitioner to attempt some self-diagnosis. It prompted a number of other surveys which tended to produce less disparaging conclusions. Lord Taylor's book "Good General Practice", based on observations made in 1951-52 of ninety-four general practitioners in thirty practices, became the most celebrated study on the subject. The Cohen Committee (1950) saw general practice as a special branch of medical practice dealing with the "whole man" and it deprecated the "traditional distinction in status and prestige between general practice on one hand, and any and every specialty on the other."

The Steering Committee of the College of General Practitioners (1953) felt unanimously that "general practitioners were without headquarters, without academic leadership of their own, without much influence over undergraduate or postgraduate teaching, and without the status of their specialist colleagues. General practitioners

had muddled along and time and time again they had found themselves left behind, left out, edged out and even pushed out as from certain cottage hospitals. They had never organised themselves and they had no one of the standing of the Executive of the Royal Colleges to put forward their claims when big decisions had to be made."

The Lancet (1952) accepted the view that general practitioners were as much entitled to a College as were physicians and surgeons. The College of General Practitioners was established on 1st January 1953 and in the first three weeks had 1,007 members and 142 associates. By six months there were 2,000 members, the general practitioner already knew his responsibility but he was now asserting his value as a member of a distinct professional group.

The main impetus to the undergraduate teaching of general practice came from the College of General Practitioners. However there is some evidence that this teaching was being developed before the College was in existence. Barber (1952) reported that a course of

six lectures in general practice had been introduced in 1935 as an extra for the student at St. Mary's Hospital, London. Lord Moran, then Dean, had prophesized gloomily that the lecturer must not expect an attendance of much over a dozen but handsomely ate his words when eighty turned up. This lecture course was repeated annually and every second year during the second world war. After the war a full-time one week attachment was arranged with a general practitioner and proved popular with students. Scott (1949, 1950) reported the setting up of a teaching practice in what was formerly known as the Royal Dispensary of Edinburgh. Prior to this time there had been four dispensaries to which the poor sick had direct access as a primary source of medical care. The new teaching practice gave continuing care for three thousand patients and the practice team consisted of two doctors, a medical social worker and a nurse. The practice was therefore run by full-time academic staff seconded to the project. From the beginning twenty medical students were accepted each term for practical training in the day-to-day setting of general practice. As the term advanced the role of the student changed from

that of an observer to one of an apprentice. Two further reports of teaching in general practice then appeared during 1952, Brockington reported on the proposed Manchester Health Centre which he stated would present an admirable opportunity to remedy previous deficiencies and at the same time show how the prevention of disease and the promotion of health can be integrated with general practice. Hobson (1952) reported on a voluntary two week attachment for final year students at Sheffield, fifty-five per cent of the students took part in this in 1951 and this figure rose to seventy-seven per cent the following year. The teaching of general practice grew gradually over the next twenty years with the main expansion coming in the early seventies after the publication of the report of the Royal Commission on Medical Education (1968).

CHAPTER II

CHAPTER II

WHY TEACH GENERAL PRACTICE IN THE UNDERGRADUATE CURRICULUM?

In 1949 Scott noted that the free public dispensaries would disappear with the advent of the National Health Service. All had a common pattern and offered free medical advice and treatment to the sick and the poor. For many years the dispensaries had provided invaluable teaching facilities for several universities. The medical student was introduced by the physician in charge to a wide range of conditions, the so-called minor maladies, which he was unlikely to meet in the wards of the teaching hospitals, but which would comprise more than nine-tenths of the material with which he must deal eventually as a general practitioner. The student was called to the homes of his patients where he was given his first opportunity to accept personal responsibility. Furthermore while he might be fully concerned with the niceties of clinical diagnosis and treatment, he could hardly fail

under these conditions to develop an increasing pre-occupation with the physical and social circumstances which constituted his patient's immediate environment. In prescribing treatment he came to appreciate the need for simple explanation, reassurance and advice, and learned the value of social and recreation therapy as adjuncts to the British Pharmacopeia. Scott thought an ounce of such learning by example was worth a pound of formal precept and theoretical instruction.

The Medical Act of 1950 and 1956 recommended "that the Universities now had to produce the educated graduate prepared to fit himself for further training for his chosen part in the profession". It was realised that undergraduate training could no longer be expected to produce the complete doctor as it did in the late nineteenth century.

Morale in general practice was low during the early 1950's. Dicks (1950) wrote that at least one of the major factors in this demoralisation of the general practitioner was that his education did not equip

him for his job. He argued that the good general practitioner was the "pivot of all adequate, personal, friendly care for sick people" and "maintained a preventive watch over the health of families and work groups." To be fitted for this role he ought to have had the opportunity from the beginning of his medical studies to develop the "widest vision of human beings and manifold troubles". He argued that the discouragement of the general practitioner began on the day he entered hospital as a clinical student. The social and scientific prestige of the teaching hospital was created by the "demigods of specialism, who even if modestly endowed could still lord it within the kingdom of their own firm and ward."

Dicks thought that the true framework of general practice was holistic medicine: the integrated care of a person based on an appreciation of the psychosocial as well as the biophysical factors in aetiology not at the time adequately taught or subsequently put into practice.

In a review article in 1951 the British Medical Journal noted that both the Goodenough Committee and

the General Medical Council were at one in stressing that the bias of medical education should be towards the needs of the general practitioner. The leader asked how the future general practitioner was prepared for his work and noted that he learned little about general practitioners themselves. It was stressed that medical students should be taught their craft by those who practice it and noted that at least some medical schools were beginning to call for the help of local practitioners. A British Medical Students Association Survey of General Practitioner Teaching Schemes in operation in 1953 noted that in thirteen of the medical schools there was no provision for any attachment to a general practitioner.

The College of General Practitioners (1953) set up a Working Party to review the teaching of general practice as an undergraduate subject. They recommended that all medical students should be given an insight into general practice by general practitioners, and that medical schools should co-opt general practitioners to advise and take part in this teaching. They also asked that all general practitioners who wished to cooperate in this should notify the College or the Dean of a Medical School.

MacGregor (1953) compared the morbidity which he saw in general practice with that occurring in Peel Hospital (Selkirkshire). He concluded that an endeavour should be made to show students all gradations of disease. Hodgkin (1956) reported a similar study in which he compared the differences in morbidity between hospital and general practice - he presented data collected over a thirteen year period during which he had practiced for an equal amount of time in each environment. Hodgkin clearly demonstrated the different patterns of illness seen in hospital and in the community and his experience led him to believe that the training of medical students could be widened by an exposure to general practice. He thought that this would be unlikely to confuse the student nor would it greatly add to the duration of the undergraduate curriculum. He concluded that general practice represents the background of all hospital medical practice.

At the first World Conference on Medical Education (1953) there were repeated calls for the inclusion of undergraduate teaching of general practice as a formal part of the curriculum. The meeting recommended "The

Medical student has therefore to be familiarised not only with the pathology of the disease condition in the patient, but with those more important conditions in the home, family and community". This call was reinforced by the College of General Practitioners (1954) when their Undergraduate Education Committee reported on their views of the medical curriculum.

Mair (1955) sent a postal questionnaire to two-hundred-and-forty-eight doctors who had graduated from Aberdeen during the years 1941 to 1943. The conclusions he drew from this extensive questionnaire were that the basic sciences, apart from those with a special application to medicine, should be acquired before entering medical school, and that the tuition given during the course needed to have better integration with a greater focus on the common and practical aspects of medical practice. Further studies with suggestions similar to those which have been summarised, continued to appear (Marien and Ardouin, 1954; Barber, 1956; British Medical Students Association, 1956; Logan, 1958; White, 1963).

Scott (1958) was of the opinion that the most important things that the undergraduate could learn in

general practice were the intangibles, a philosophy and an attitude of mind. It was the practical demonstration of medicine actually at work in open society rather than the clinical details which was important.

Brotherstone et al. (1959) reviewing the Edinburgh Family Medicine Teaching Programme, sent questionnaires to former students and of one-hundred-and-forty who replied only three considered that they had derived no benefit. The great majority had found that their understanding of the importance of social and domestic circumstances in illness had increased.

Despite the increasing number of papers which were advocating the need for this teaching, progress was in fact slow. Fleming (1962) writing about the new curriculum at Glasgow University included one paragraph on general practice in which he said that an attachment in general practice was offered through a scheme organised by the College of General Practitioners. This normally took place in the Western Region of Scotland for a period of one or two weeks, but there were also a number of attachments in other parts of the country. An editorial in the students magazine Surgo

(1963) considered the problem of what Universities should do about general practice teaching. They noted that some suggested that attachments to general practitioners should be organised for short periods, but they thought that this only gave the student an idea of what the life was like rather than a more specific training.

A Lancet editorial in 1964 emphasised that the student must see disease in general practice and quoted the words of Sir Robert Platt who had said "it is in general practice that his widest experience can be obtained, disease which you will never see in hospital, disease in its early stages and in late stages with all its social implications." The Lancet noted that this statement came from one of the leaders in medical education and illustrated a remarkable change of attitude over that held a decade or two before. In 1964 the College of General Practitioners brought out a further report on University Departments of General Practice and stressed that the task of these departments was to familiarise students with problems which arise in patients outside hospital.

The British Medical Students Association produced a further report on medical education in 1965,

and they noted that there was now a general practitioner attachment scheme in all but three medical schools. They emphasised however, that in only three was this compulsory. In eighteen of the twenty-three schools there was a strong student demand for contact with general practice and they recommended that there should be immediate action by medical schools to emphasise the general practice aspect of medicine in the undergraduate curriculum. They also thought that this teaching should not be held in the students free time and that they should have no financial loss. They also emphasised that no student should be allowed to qualify without having had some contact with general practice. Richardson (1965) carried out a questionnaire with sixty-nine students following a voluntary two week attachment to general practice. Fifty-five (80 per cent) had found the attachment very interesting and thirty (43 per cent) said that it had affected their choice of career. Of the thirty, twenty-one had changed their choice of career to general practice and Richardson concluded that such an attachment may have a vocational element.

The students commented that they were impressed by the skill in diagnosis and the wide range of conditions seen; they also noted the difference between medicine in a hospital and a community setting.

A School of Medicine and Human Ecology Working Party (1965) advocated that the role of a medical school as far as general practice was concerned lay primarily in the undergraduate M.B.,B.S. course and in the pre-registration period. The part it could play in vocational training and continuing education was quite distinct. The Working Party advocated that each University should have a Department of General Practice with a Professorial head. All members of the department should have a clinical commitment and a group of local active general practitioners should be involved with the teaching. The Department should be responsible for research. The Working Party considered that students should be exposed to general practice throughout their clinical years but they thought that the second clinical year was the most appropriate time for the main attachment in general practice and that this should be for a six week period.

Walker and Barnes (1964) described a new method of teaching Family and Community Medicine. They said that they wanted to break away from the old idea of a full-time attachment to general practice. Family medicine in common with any other branch of medicine consisted of a body of knowledge and their new scheme included seminars and family case studies in addition to twice-weekly sessions in which the student sat in with the general practitioner during surgery consultations. They concluded that the close association between the teaching of family practice and community medicine had been shown to be an effective way of introducing the student to the social and family aspects of illness at an early stage in his career. Heller and Heller (1968) after a three month attachment as students in general practice noted that the spectrum of medicine was very different from what they had seen in their teaching hospital. They saw not only the diseases which rarely reach hospital but also the early stages and symptoms of those that do. They saw what happened after the patient left hospital and returned to the community. The

important part the general practitioner plays in the management of disease in the community was brought home to them.

Scott (1967) could not see how general practice could be considered as other than part of the main stream of medicine. He thought its major activities were such as to cause it to lean heavily on three disciplines. First and foremost was medicine itself and especially internal medicine and its supporting laboratory disciplines, secondly the skills and knowledge concerned with epidemiology that included biometrics and computer sciences, and thirdly the behavioural sciences in particular sociology, social and industrial psychology and social anthropology.

The rate of change had been slow but in 1968 the Royal Commission on Medical Education published their findings and this accelerated this process. They stated that there seemed to be no reason why a general practitioner with appropriate training and practicing in an appropriate environment should not achieve an equal professional satisfaction and moreover, a similar level of regard both within the profession

and outside, to that of his counterpart in a major hospital. The Committee could not emphasise too strongly that the undergraduate course should be primarily educational. Its object was to produce not a fully qualified doctor but an educated man who would become fully qualified by postgraduate training. The Commission thought that an essential part of a medical student's education was a knowledge of how to treat human beings in trouble, to gain their confidence and to understand the psychological and social background to the physical problem. In the aims that they gave for the clinical part of the undergraduate course, they included "to encourage a holistic attitude towards patients and avoid the increasing danger of considering them as cases rather than persons", and "to ensure that the student has assimilated the ethos of medicine." In their main recommendations about general practice the Royal Commission thought "that every undergraduate medical student should be given an insight into general practice. In the past, undergraduate clinical teaching has been based almost entirely on

patients referred or admitted to hospital and only recently has an attempt been made to provide some instruction in the wider problems of sickness in the community. The medical student should understand that the patients seen in the teaching hospital represent a highly selected group and that the overwhelming majority of those seeking medical attention are treated in general practice without reference to hospital. In addition to the serious conditions which are often first seen by the general practitioner, many common infections are seen only in the home, and patients with emotional disturbances and minor psycho-neurotic illnesses usually go no further than the general practitioner's surgery. Certain aspects of medicine such as domiciliary care of the elderly and the chronic sick which are becoming increasingly important are best taught in the context of general practice. The student must be given an opportunity to see for himself the impact of illness and death on the family, and to learn how the general practitioner meets the clinical, personal and social problems involved. He should see patients presenting

new symptoms to the doctor for the first time and learn how decisions have to be made at this stage, moreover he should see how the doctor/patient relationship often differs in general practice from that in the hospital. Students should be able to visit patients in their homes more easily than they do now, although this practice is already more common than many witnesses appear to have realised. The undergraduate medical students should in our view learn about general practice, not a preliminary to training for a career in that field, but as an educational experience whose purpose is to give every student an understanding of problems which are of major importance in themselves and should not be thought of as variants of a minor sub-division of the problems raised in hospital practice. The aim of the teaching should be to afford the students some insight into the nature of the problems and opportunities in general practice. No department in the Medical School is ideally fitted to provide the necessary teaching." The Royal Commission's report continued stating how this could be done and ended by saying "A series of formal

lectures on the subject of general practice would seem particularly inappropriate; much more could be accomplished by arranging that the students meet family doctors either on an individual basis or in small informal groups."

The British Medical Students Association brought out a further report in 1968, when they re-emphasised that all students should be made familiar with the work of the general practitioner and urged that the recommendations, that Departments of General Practice should be established in all medical schools soon be implemented. The Report stated that the attachment scheme should not be considered as a method of training for general practice and that its purpose was to bring the student into contact with the practitioner to enable him to see general practice as first hand.

135 doctors who had graduated at Aberdeen University between 1956 and 1958 filled in a questionnaire which asked for the doctor's retrospective opinion of the undergraduate curriculum (McAndrew et al., 1970). Of the 135 who replied 58 were working in general

practice and a total of 111 considered that undergraduate training in general practice was desirable. Only 20 were not in favour. Apart from those graduates working in surgery who as a group had no definitive views on the need for undergraduate training in general practice, those in other hospital specialties were greatly in favour.

Morrell (1972) stated that those responsible for teaching in general practice should define those aspects of medicine that can be taught most effectively in general practice. He thought that these aspects included the prevalence and incidence of disease in the community, the social and psychological factors which determine the demand for primary medical care and primary care responsibility to patients with chronic disease, and the medical and social services which were available in the community. A Working Party of the Royal College of General Practitioners (1970) formulated objectives of undergraduate teaching in general practice. They emphasised that there were areas of knowledge, skills, and attitudes that were common to undergraduate medical education wherever it took place, and they emphasised

that in both hospital and the community there were many similarities in diagnostic and treatment methods, in the use of professional and ancillary skills and in the realm of ethical standards.

Commenting on their undergraduate experience of social medicine teaching McKillop and Oakley (1971) noted that one of the best features of the course was a visit to a health centre where they were able to see how many of the principles that they had been taught could be put into practice. They concluded however, that a single short visit was inadequate and they considered that the teaching of students in health centres would, in the future, be an important part of medical education.

In studies of the attitudes and response of medical students to undergraduate instruction in general practice (Dean, 1971; Dean, 1972) it was noted that students became more positively disposed towards general practice as they progressed through medical school. The nature and the amount of contact that the students have with general practitioners influenced

their attitudes towards it, and the exposure to general practice was considered as a valuable experience.

The students considered that the practice team, the social and environmental factors in disease, visiting patients in their own homes, and the relationship which a general practitioner has with his patients were concepts which they found interesting and appreciated.

In considering the contribution that general practice could make to undergraduate medical education, Wright (1973) considered that general practice was suited to be a University discipline. He gave the following criteria for an academic discipline: firstly the discipline should have a distinctive aggregate of knowledge, skills and thought which can be translated into educational objectives. He made a plea that general practice should confine itself to the teaching of those aspects of medicine which were peculiar to general practice. Secondly, the discipline should show a distinctive field of research and lastly it should have the capacity to cultivate intellectual integration. He noted that large numbers of students

could not be coped with by the staff of small University departments and he suggested the concept of an extended department which co-ordinated the resources of that department with a group of part-time teaching general practitioners. This demanded a core of practitioners who were able and willing to be involved in teaching, who had to think in terms of educational (rather than vocational) objectives, and who are willing to subject service commitments to the time-consuming preparation and thought which student teaching demands.

After his student attachment World (1973) noted that the present undergraduate medical training was inadequate for the doctor who intended to work in general practice. He thought the undergraduate course was more appropriate as a training for hospital practice and that a dual standard seemed to exist whereby the student received no training in the medicine of general practice.

A recent report (Merrison, 1975) considering the future control of undergraduate medical education noted that "the aim of basic medical education ought to be to produce a graduate whose knowledge, skills, attitude

and potential are relevant to the medical needs of society. His understanding of human development, health and disease will have been established through the acquisition of knowledge of the appropriate sciences. He will have developed an appreciation for the complex aetiology of contemporary medical problems and of the services available for their management through academic courses and work with patients. His basic skill will be in clinical method. He will recognise the limitation of his own knowledge and ability and will be prepared for a career in medicine that is based upon continuing education. All these are, in our view rightly, general aims and reflect first the recognition that all doctors will need vocational training before being able to practice independently, and secondly that the doctor must be given a sound basic training before specialising."

A British Medical Journal Leader (1975) on Academic General Practice noted that it had been required to defend its validity and credibility to an unusual (though healthy) degree. Richardson (1975) wrote on

the value of a University Department of General Practice and restated the criteria for academic status given by Wright (1973). He proposed four criteria to be met for a subject to gain academic independence. Firstly, the subject must encompass substantial and distinct areas of clinical practice: four out of five illnesses seen in general practice never reach hospital care. Secondly, the subject must teach skills in defining and managing problems that are not available elsewhere; in general practice decisions must be made in predominately self-limiting illness, time is used as an investigation, the physical and psychological components of illness need to be unravelled, and the absence of illness must be diagnosed. The discipline must, thirdly, have a recognisable philosophy: the degree of the general practitioner's concern with the whole patient rather than exclusively with the disease is probably his hallmark although he has no more monopoly on humanity than the hospital specialist has on clinical competence. Finally, the subject must be able to support active research requiring critical self-analysis, experimental thinking and active progressive development.

In a study of career preference of doctors graduating in 1974 (Parkhouse and McLaughlin, 1976) a questionnaire was sent to 2,348 doctors in England, Wales and Scotland. There was an 86.1% response and 665 (32.9%) gave general practice as their first career choice. Medicine, with 454 (22.5%) was the second career choice. The figures for Glasgow were 27.4% for general practice and 26.2% for medicine. General practice was included in the first three choices of 67.5% of all those surveyed. This level of interest is an indication that an adequate exposure to general practice should be included in the undergraduate curriculum so that students can make a choice based on first-hand experience. McIntyre and Parry (1975) carried out a survey in the 1962 graduates of Scottish Medical Schools. They found there was a tendency for graduates to make an early career decision and to have their training almost exclusively in one specialty.

Since self-care by patients can be taken as representing the first level of care within the community, the general practitioner represents the second level,

and the first level of professional care. The different range of diseases and symptom complexes that are presented to the general practitioner will be varied by many factors including the age/sex bias of the practice, the social class distribution of the patients, the prevailing epidemics within the community, and the season of the year. The range of illnesses seen will also be influenced by the doctor in that he can subconsciously affect the timing of his patient's consultations. This is also clearly seen in relation to disease groups such as psychiatry where the doctor who is less interested in this kind of problem can through this, influence patients to present such conditions to another member of the practice.

The undergraduate course in medicine attempts to give the future graduate a broad but comprehensive medical education. This is the base on which specialist vocational training can be added to equip the doctor to work independently and in his chosen branch of medicine. If the aim of a comprehensive basic training is to be achieved, the undergraduate must have some experience

of the broad range of disease and illness states that exist in the community. The extension of clinical teaching from the hospital into the community allows the student to have a more comprehensive view of illness and its effect on the patient. The course of teaching in general practice aims at giving the student experience of important facets of illness that are normally difficult to demonstrate in the hospital, but which are necessary if medical training is to be comprehensive. These facets include the important illnesses and diseases that are common in the community, the early presentation and progress of acute illness, the problems of the long term care of patients with chronic illness, the rehabilitation of the patient, and the ill patient in his own environment and the effects of that environment on the illness. It is now universally recognised that to give the student a proper and comprehensive medical training he has to learn his subject both in hospital and in the community.

CHAPTER III

CHAPTER III

HISTORY OF GENERAL PRACTICE TEACHING
IN GLASGOW

The undergraduate Education Committee of the West of Scotland Faculty of the College of General Practitioners met twice during the year 1953-54 (Harrison 1977). They discussed their function at the first meeting and later planned methods of instructing students. They then had an informal discussion with the Dean and secured a measure of good will. A formal joint meeting in January 1954 established a series of lectures and the approval of a scheme of student attachment to general practitioners. By May 1954, twenty-five general practitioners had volunteered to take part in the attachment scheme but during that year only two students were actually attached. A lecture course was introduced the following year and two courses of three lectures were given in each of the main teaching hospitals. There was a poor attendance as the lecture was in the students' free time. Thirteen students were attached during this session and in the following year (1955-56)

the lecture course continued. It was now given within the formal curriculum; this was well received and attendances improved. It was hoped that these lectures would continue on an annual basis.

In 1956 the Medico Chirurgical Society had their first lecture given by a general practitioner; Dr. W.N. Pickles, President of the College of General Practitioners. This was successful and it was hoped that it could continue as an annual event. There were by 1956, thirty-six general practitioners willing to take part in the attachment scheme which was extended to a period of two weeks. Twenty-four students took the attachment in that year. In the following year 33% of all students took part in the attachment, and by the following year (1958) this figure rose to one hundred students with ninety general practitioners willing to take part. In 1960 the curriculum changed with the disappearance of the three-month summer holiday; the student attachment had thus to be condensed into three weeks in the Easter vacation. As a result of this change there was less enthusiasm for the attachment both

among the students and general practitioners and only forty-two students were attached during that year. In 1962 this had grown to one hundred students. A student questionnaire was carried out after the 1959 attachment and 11 of the 21 students responded. All thought that the attachment was valuable and almost all replied very positively. Half of the students remarked on the amount of psychosomatic illness which they had seen in their attachment to general practice.

In a survey in 1961-62, Dr. Charles Wilson, Principal of the University, referring to the integrated year in medicine said "It is hoped that general practitioners, and almoners, amongst others, will also play a part in this teaching". The local Faculty of the College of General Practitioners remained active and in September 1962 there was a suggestion that a combined teaching practice and College headquarters should be established in Ashton Road near the University. Two practices in that area had fallen vacant; a number of meetings were held but the consensus of feeling in the College was against this concept. In April 1963 there was a further attempt to secure premises, this time at Queens Gate, and it was

proposed that ten general practitioners should use it as a teaching unit. Queens Gate lies some distance from the University, and this was the main contra-indication to this site.

A Working Party from the West of Scotland Faculty of the College reported in April 1964 and suggested that a Department of General Practice could be initiated under the Chair of Medicine. The new Department could be initiated by the part-time appointment of a practitioner well versed in general practice and its needs. As the work of the Department expanded it was anticipated that the appointment would become whole time with the appointment of additional staff as this became necessary. The Working Party stated that the Department would not teach general practice in any vocational sense; it would organise the attachment of students to general practitioners so that all students would see illness as it occurs in the community, and thus achieve a better perspective of medicine as a whole. The Department would also arrange for general practitioners to assist in the teaching of students, in seminars, by lectures, and through clinical demonstrations. The Dean at this time (1964) suggested

that if a proposal to establish a Chair in General Practice was submitted, it would have a very low priority as such a suggestion would have to be taken along with other proposals. He felt that the time was not appropriate. The Professors of Therapeutics and of Social Medicine intimated that clinical tutors in general practice should be established in the Royal Infirmary and the Western Infirmary. They thought it would be important that the practitioner should not give up his general practice which would be his main source of income, and that he could take a special interest in the activities of the integrated year.

The West of Scotland Faculty were approached in 1963 to see if arrangements could be made for one hundred students in the integrated year of study to be attached to local doctors during three or four evening consulting periods. The College decided that this should be incorporated in the scheme of studies for the year 1965-66. There was also increasing encouragement from hospital consultants for general practitioners to teach within the hospital. The Faculty then suggested the names of suitable practitioners to be honorary

clinical tutors in general practice within the hospital.

The student attachment scheme continued during the Easter vacation. It had been introduced by Dr. Cooper Harrison, Blane field and he continued to administer this course until 1967, when it was taken over by Dr. R.G. Sinclair, Falkirk. The student enthusiasm was maintained and there was a heavy demand for rural and small town practices (Sinclair, 1977). Dr. Sinclair's lasting impression of this scheme was that it was instructive to those students who took advantage of it and the doctors concerned obviously enjoyed taking part, and regarded it as beneficial both to the students and to themselves. This was obvious from the way that they kept volunteering year after year. Many thought that one week was too short and in many instances the one-week attachment was voluntarily extended.

The West of Scotland Faculty for the College of General Practitioners introduced an open day for students in May 1970. This was well attended and took the form of a one-day Symposium which tried to define the role of the general practitioner, the fundamentals

of general practice and the techniques involved. The students showed interest in the Symposium, they considered that family doctors should play a much larger part in their teaching and commented that family doctors had been very successful as teachers in the integrated year. The Symposium was repeated in 1971.

In 1965, following lengthy negotiations between the Local Medical Committee and Executive Council for the City of Glasgow and the Scottish Home and Health Department, the Secretary of State for Scotland announced his intention to build a health centre to provide general medical and other health services in the Woodside area of Glasgow, (Robertson, 1973). Woodside Health Centre was conceived of as a focus of health activity in which there would be a strong participation by the general medical practitioners, local health authority staff and hospital-based specialists in a primary health care team which would include an important nursing contribution and a variety of support services including social work. The participation of the University in undergraduate and postgraduate teaching, in research, and

in the clinical services to be provided was basic to the whole concept. The official opening of the health centre was in June 1971. At that time the Centre provided for the primary care needs of 46,000 patients and was staffed by twenty-one full-time general practitioners in the eight practices.

A scheme was introduced in 1972 (Hannay and Strang.) whereby interested final year students could gain practical experience of medicine as it is practised in the community. This voluntary scheme was carried out with the cooperation of the practitioners at Woodside Health Centre. The idea for the scheme was initiated by the students themselves and undertaken entirely voluntarily in addition to the normal full final year curriculum. An evaluation completed in 1972 indicated that the social medical aspects were more appreciated than the clinical or vocational, and the time spent with a district nurse and health visitor or on home visits was thought to be especially valuable. It was concluded that such an attachment should be an integral part of the medical curriculum and preferably on a full-time basis.

A Senior Lecturer in Primary Medical Care was

appointed in 1971 jointly in the University Departments of Epidemiology and Medicine (Royal Infirmary). The preparation of a more structured teaching course began in January 1972. The objectives for the new teaching were identified and it was emphasised that the students were to be taught medicine in the context of general practice rather than the way of life of the general practitioner (Barber, 1973). It was accepted that the course would be clinical in outlook and those aspects of medical care which could only be demonstrated in the community were identified to ensure that there was no overlap with teaching given by other clinical disciplines. Joint sessions linking hospital and general practice teaching were envisaged. Five main objectives were formulated and from these a list of eight conditions were selected to form the content of the first term's teaching. During the Martinmas and Candlemas term of 1972-73, each fifth year student group of four or five students had three teaching afternoons made up of one session every three weeks. The teaching methods used by the tutors were variable except that they had all

agreed that the teaching would not be conducted during normal surgeries or visit rounds. The course was evaluated by a multiple choice examination paper and by questionnaires to both tutors and students; additional comments were made by 46% of the students on their questionnaire and all were appreciative of the course. The multiple choice questionnaire provided no difference between the group who had the teaching and a control group. This however, was after a small number of teaching sessions. Most wanted it extended with greater continuity. The visits to patients' homes were popular as were visits to industry and with the health visitor. During the second term the students' interest remained high and the attendance remained good. Over the two terms the attendance rate was 86% and this was remarkably high considering that the teaching was given in the students' free afternoon. It was decided that planned teaching would remain the basis of undergraduate teaching in general practice in Glasgow. In the following session (1973/74) the teaching was increased to eight weekly afternoon sessions and this allowed greater

continuity and an improved rapport grew between the tutor and his group.

The main emphasis of the teaching in general practice continued in the fifth year (Barber and Haraldsson, 1975). Several other varied areas of teaching had been developed and there was now an input for selective groups of students in each of the clinical years. Attendances remained high during this year and the modified essay question was used to evaluate the teaching. The two comments most commonly expressed by students showed that they were receptive to seeing patients in their own homes rather than in the surgery and that the group discussions which occupied the last hour of each afternoon were popular: indeed, several students commented that this was an essential component. By selecting the patients who were seen, by allowing the students to take an active part in the learning situation and by stressing the preparation of complete problem lists the students were encouraged to think in terms of whole person medicine and to appreciate the complexity of the problems shown by some patients.

If the social environment was thought important in the management of the patient the home condition was obvious for the student to see. It was interesting to note that 30% of the students took the Elective in the Easter vacation in 1973, and that this figure rose to 45% in 1974. The objective assessment of the course using the modified essay question showed a statistically significant improvement in factual clinical knowledge and more importantly in areas relating to the general practice content of the teaching.

The Department of General Practice came into being in October of 1974 with the appointment to the Norie-Miller Chair of General Practice. There were two further medical appointments within the next six months, one to a permanent senior lecturer post and one to a research post.

In the academic year 1974-75 the teaching was expanded into additional areas of the curriculum with the main input being still in the students' penultimate year. In a study of attitudes towards the content of general practice teaching (Hannay et al., 1976) there

was good agreement between the values placed by students and tutors on the content of the teaching. The main difference was that the students placed most emphasis on the social aspects of illness but there was little difference of opinion between students and tutors about the relative values of the other activities. In particular both students and tutors emphasised the importance of seeing patients in their homes, and of the time that was allowed for discussion about the cases seen. Both students and tutors attached least importance to seeing patients in the surgery although this caused most disagreement in the student groups. A few students and one or two tutors commented on a need to sit in on surgeries to see how a practice works, but this was not the view of the majority.

Since 1975 the teaching has been expanded to include all students in each of the three clinical years and the description and evaluation of this teaching is described in the following chapters.

CHAPTER IV

CHAPTER IV

UNDERGRADUATE TEACHING OF GENERAL PRACTICE IN OTHER UNIVERSITIES

Of the thirty medical schools in the United Kingdom almost all include general practice teaching as a formal part of the curriculum. The few who do not, intend to introduce this teaching in the near future. In 1966 (Pearson et al., 1968) eight schools included general practice and this figure rose to twenty-two in 1972 (Byrne, 1973). The introduction of general practice teaching has necessitated foresight and planning: most schools have specific aims and objectives and continually evaluate their teaching. The development of general practice teaching has been so rapid that as yet no uniformity has appeared in the content or method. In most schools general practice is taught as a separate course and tends to be in the student's senior clinical years. The subject does not lend itself to formal lectures and most of the instruction given is in a small group situation in a clinical setting.

Almost all academic teachers of general practice have a 'service' clinical commitment of varying degree and this is greatest in those schools which have a University practice - Cardiff, Edinburgh, Guy's, Liverpool, Belfast, Manchester, St. Thomas's and Southampton.

The information contained in this chapter was obtained from a series of structured interviews (Appendix 1) with the Heads of Departments of General Practice in the following centres: Aberdeen, Birmingham, Dundee, Edinburgh, Guy's, Leeds, Leicester, Liverpool, Manchester, Newcastle, Nottingham, St. Mary's, St. Thomas's, Sheffield, Southampton and University College, London. Details from the remaining thirteen centres, of which only Belfast and Cardiff have Departments of General Practice, were obtained by correspondence.

ABERDEEN

The final year contains five blocks of teaching, each of which is of eight weeks. General practice is included as half a block (four weeks) during the final

year when groups of nine or ten students are attached to the Department (Richardson, 1976). The first day of the four-week block is spent in briefing the student about the aims and purpose of his general practice teaching, after which the student is attached to his practice. He returns to the Department on the Wednesday of the fourth week. Case discussions of patients seen on attachment occupy the Thursday. The final day includes visits to other practices of particular interest and ends with a seminar on the attachment.

For the first three or four days of the attachment the student observes the normal work of his general practitioner tutor. As the attachment progresses the student is allowed to take greater responsibility for clinical care and may pay a few return visits to patients on his own or may visit the family of a handicapped child. The student also studies the practice record system and the different roles of the members of the practice team.

BELFAST

The Department of General Practice gives three one hour lectures as an Introduction to the second year Behavioural Science course (Irwin, 1976). The Department also participates in fifteen hours of tutorials during the course of Social Factors Related to Medicine. In the third and fourth years of the curriculum the Department gives eight lectures in the introductory clinical and the co-ordinated systems lecture courses.

The main general practice input is in the fifth year of the curriculum when all students have a mandatory two-week attachment to a teaching practice in Ulster. This is supplemented by eighty-one hours of small group teaching in which the emphasis is on the presentation of case histories in undifferentiated illness and on the development of problem solving and management skills. Final year students also have a two week mandatory attachment to general practice and the course ends with a three-hour assessment of the students.

BIRMINGHAM

All second year students spend one half day visiting a health centre (Drury, 1976). A scheme is being developed allowing each student to be introduced to a pregnant mother and to follow-up the family over a period of one to two years. This scheme is in a pilot stage and at present only involves twenty students. An introductory course in Clinical Medicine occupies the last six weeks of third year. The Department of General Practice has a ten-hour input during this course when the doctor/patient relationship and communication are stressed and interviewing techniques and videos are used to stimulate discussion.

General practitioners come into hospital in the fourth year and teach on their own patients. Each student has five sessions of this teaching during which two patients with acute problems, one with a social problem, one with a chronic disease and one with a poor prognosis, are demonstrated. A scheme is being introduced in which the consultant is involved in teaching with a G.P. on patients in the community.

This at present only involves four teaching practices and may be extended to twelve. In the fifth year the Department have a joint teaching session with clinical pharmacology once every two weeks throughout the academic year. A small discussion panel is formed consisting of the Professor of Pharmacology, one of the members of the Department of General Practice and a clinical consultant who has a particular interest in Pharmacology. One week before the teaching session six students are given the necessary details about a patient and are expected to work up all aspects of the case. The six students discuss the patient's problems with the panel, with the other students in the year as the audience.

Fifth year students must complete an 'elective' and over 30% now carry this out in community care. Throughout the fourth and fifth years there are a number of teaching sessions involving the Department in the main block of clinical teaching lectures; discussion panels, video, papers or clinical topics take the place of formal lectures.

In the final year all students have a compulsory two week attachment to general practice and 190 to 200 practices throughout the West Midlands participate. The student keeps a log diary of the attachment and there is both a briefing and a debriefing session. The attachment is structured, the student observing in the early part and gradually being given a greater responsibility.

BRISTOL

General practice is taught as part of a nine week "Medicine in the Community" course organised by the Department of Community Health and to which all final year students are attached in groups of forty (Philipp, 1976). Two of these nine weeks are devoted to a full-time usually residential attachment, with teachers in general practice, throughout the south-west region. In addition to this, students are also attached on a half-day sessional basis to general practitioner teachers in Bristol city.

There are fourteen of these half-day release

attachments, and both the full-time and part-time attachments are deliberately left as unstructured learning experiences in which the student is exposed to the life and work of general practitioners and the problems with which they deal. While in Bristol the student studies a suitable case in a family study to explore the wider aspects of the disease process. These family studies are written up and presented during seminars at the end of the course. The student is graded on his family study and also by his two tutors in general practice; this assessment then forms part of his final M.B. assessment.

CAMBRIDGE

For the past ten years informal arrangements have been made for students to sit in at general practitioners' surgery consultations and/or make home visits (Reiss, 1976). In the third pre-clinical year there is an option open for those reading Social Science and the History of Medicine, to take part in group studies led by a social

scientist and a general practitioner. These studies give the student a wider perspective of the social aspects of medicine and a broader view of illness in individual patients.

General practice has a two-hour slot during the Introductory course of the clinical year of the curriculum. This two-hour lecture is used to illustrate the facets and variety of general practice. Later the students are attached to a general practitioner for eight consecutive Wednesdays each day ending with a short seminar involving eight or nine students. General practice is involved in joint teaching with the Department of Psychiatry and other University Departments. The students visit patients after discharge from hospital and a few practitioners teach within the hospital. Therapeutic conferences are held every two weeks during the year and a general practitioner contributes to these sessions as an expert resource. These conferences are designed to explore the practical problems of the management of different diseases. The Department also make a limited contribution to the systematic lecture course. The

elective periods are only possible on a half-time basis over a sixteen week period, i.e. eight weeks full-time. A limited number of students carry this out in general practice in the University area, either on the basis of a clinical attachment to a local practice or as a project within a community setting.

CARDIFF

In the first clinical year the students are given an introduction to the concepts of comprehensive care and problem-orientated medical recording (Davis, 1976). This teaching occupies eight hours and is in seminars with small groups of students. A family case study is initiated at this time and the students have four seminars related to this project during the following two years.

In the third clinical year students spend two weeks with a general practitioner on a half-time attachment collecting morbidity and workload data which is subsequently used in small group discussion. The students are also given the opportunity of interviewing patients who are

consulting a doctor for the first time. This attachment is followed by the final seminar on the family case study.

CHARING CROSS, LONDON

In their final year students have an attachment, usually residential, for three weeks to general practitioners in London and the home counties (Denis, 1976). These tutors are known to the School and are either local practitioners or graduates of Charing Cross. There is no agreement with the Medical School about the content of teaching in this attachment but the tutors submit a confidential report on each student to the Dean who interviews all students after the attachment.

DUNDEE

General practice makes a contribution to teaching throughout each year in the curriculum (Knox, 1976). The first year includes an 'Orientation course' in which students pay several visits to a general practitioner to observe him at work. In the second year the Department of General Practice collaborates with the Department of

Physiology for an occasional lecture and selected patients are used to demonstrate physiological principles such as spasticity.

General practice is one of three main components of the Behavioural Science course in third year. In the first term interviewing, inter-personal relationships and history-taking are emphasised and each student is recorded on videotape once while interviewing a patient. The other students in the group observe the recorded interviews and the student sees a replay of his own performance before the consultation is discussed in detail. The students in this course also have access to patients of G.P. tutors in the Dundee area and in the autumn and spring terms have a weekly session seeing patients in general practice. In the summer term of this course a series of joint symposia are held in the Medical School where subjects such as 'bereavement' are covered.

During the fourth year the students have two to four mornings in general practice, accompanying the G.P. on home visits and participating to some degree by carrying out tasks such as checking blood pressure. This teaching is repeated in the fifth year when the patients problems

are considered in greater depth. During both these years the Department has an input in topic teaching and lectures are given in Renal Disease, Sexual Problems and Psychiatry.

Final year students have a four week block in general practice. The first two weeks are spent with a G.P. tutor outside Dundee with the student mainly as an observer. The second two weeks are spent in Dundee when the student plays a role more appropriate to that of a trainee in general practice. This part of the course has agreed aims and there is a briefing session at the beginning and a seminar at the end. Collaborative teaching with the Professor of Surgery has just been introduced; the students visiting a patient who is on the waiting list, observe him when he is admitted and following his progress while in hospital. The exercise ends with a seminar. There is also an elective of up to eight weeks and some students do this in general practice outwith the Dundee area.

EDINBURGH

A sociologist member of the Department makes a substantial contribution to the first year course of Psychology and Sociology in relation to Medicine (Scott, 1976). In the fourth year members of the Department take part in inter-disciplinary seminars and discussions in that part of the course entitled 'The Nature of Disease'. In the last clinical year all the students have a two month elective with general practice as one of the options.

The main input in general practice is in the fifth year of the six year course, one half in the first term and the second in the following term. The course occupies a ten-week period; the teaching methods and objectives are explained at the beginning of the first week and notes are provided on problem-solving. The student attends one tutorial group meeting each week and the topic selected is one from among the main objectives of the course. The tutorials continue for eight weeks and the final two weeks are used for feedback and a class examination. Students additionally spend two fixed periods each week in a general practice situation; this

is generally from 2 to 5 p.m. but the arrangements can be flexible. As the term progresses the student is expected to take increasing amounts of responsibility in the practice. Each student is taken individually on a problem-solving exercise by a member of the Department staff, relating to a problem case he has seen in his practice.

GUY'S, LONDON

In the second term of the basic medical sciences course the students are given an opportunity to learn something about patients, their problems and how doctors attempt to help them (Higgins, 1976; Williamson, 1976). These sessions are usually conducted by clinical consultants but the students have one session at Thamesmead to see the different approach of doctors working in the community with patients. In the fifth term of this course the students learn the principles of interviewing and problem-solving. The patients in the practice agree to act the part of a patient visiting the doctor with a problem they have experienced or are experiencing and the emphasis is on how the interview is conducted.

In their second clinical year the students are attached to a teaching practice associated with a regional hospital. This allows the student to make direct comparisons of the sort of work done by hospital and community-based doctors. The students have a two-week period in practice and keep a log diary of all patients seen. During this year the students are also attached to the University teaching centre at Thamesmead. The broad aim of this part of the course is to integrate what students are learning about human behaviour and social factors into the practice of clinical medicine, and to help them learn about the psychological disorders rarely seen in hospital. The students spend one day per week for a three month period in a general practice and seminars are used during the teaching sessions. There is also close liaison with other departments in the Medical School; during the course in paediatric medicine opportunities are given to examine children both in the health centre and in their own homes.

KING'S COLLEGE, LONDON

In the first clinical year students have eight one hour tutorials to introduce general practice orientated aspects of medical care into the assessment of patients in the wards (McEwan, 1976). In the second clinical year each student spends one half day in practice each week for eight weeks; there is also a weekly seminar related to the objectives of the course.

In the third clinical year students go into residence with G.P.'s outwith the area of their teaching hospital, for two weeks. A seminar is given before and after the residence and individual student projects may be used as a method of learning and means of assessment.

LEEDS

The medical course at the University of Leeds is of five years: two of which are pre-clinical and three clinical (Wright, 1976). In the first clinical year the students have an introductory course in clinical methods and the division of general practice provides eight one-hour sessions with an emphasis on describing the processes on which clinical methods are based.

During the Psychiatric clerkship in the second clinical year each group of students has one seminar on Psychiatry in general practice and spends two afternoons in the community. During the course in paediatric medicine the students are given one seminar on the care of children in the community. A three-day course in Clinical Epidemiology is included in this year in which the Department of General Practice plays a part. A specific problem such as deafness, is studied and project work on different aspects of the problem is undertaken. A two month elective period is included during this year and about thirty students (20% of the year) spend half or all of this time in general practice. Some minor projects are completed during this time. During the course in Community Medicine the Division provides one session on "The Care of the Dying".

All students have a four week block in general practice during the final year. Two of the weeks are spent with a tutor in Leeds city, and for the second two weeks each student is attached on a full-time basis to a practitioner in the region. During the first two

weeks the students have four seminars; and the last day of the four week attachment is spent in the Division with reports, assessment and discussion.

Clear aims are stated for each seminar and the content is specifically related to what the students have seen in practice. Use is made of videotaped simulated consultations; and one additional afternoon seminar is devoted to group observation of practice consultations (using a one-way mirror).

LEICESTER

The students are now in the second year of their five year course (Marinker, 1976). During the first two years the Department is concerned with teaching "Man in Society". The family placement and agency placements are part of this course. In the former each student is introduced to a family in the practice of one of the part-time tutors and he is expected to follow this family for two years. The families chosen have a problem which is mainly physical but is complicated by relevant social factors. In the agency placements

the students visit centres relevant to their course such as general practice and hospital waiting rooms. Different aspects of the course are discussed in seminars while the theoretical background to the course is covered in formal lectures. All the lecturers teach in the Epidemiology course. The Department is involved in thirty of the fifty hours in demonstrations and practicals.

During the third year it is planned that the students will have eight mornings, at weekly intervals, in general practice. The first and last of these sessions will be seminars while the others will be in the tutor's own practice where the emphasis will be on clinical method.

In the fourth year the students will have a four week attachment in the city or county with an individual practice: this may or may not be residential. Two seminars are planned for each week of the attachment; these will be held in the practice and organised by Department staff. During the attachment the students will be involved in the follow-up of patients and if possible, in a project. The students will have a series

of degree examinations during this year, one of which will be specifically in general practice. In the final year members of the Department will be involved in seminars and joint clinical teaching in hospital.

LIVERPOOL

During the second year students can take a voluntary attachment to a family in Merseyside and half the class participate in this (Hall-Turner, 1976). Each student is allocated a patient who is in the last few weeks of her pregnancy: he attends ante-natal visits and if possible the confinement and continues to keep in touch with the family over the following few years. Advice about this project is given in tutorials throughout the year.

The course in Community Health is spread over the sixth, seventh and eighth University terms, and the class is involved in each term. The students have two weeks in general practice/geriatrics and in pairs are involved full-time in a project. The project is presented to the group on the last day of the course.

During the fourth year all students spend three weeks in the University practice at Runcorn and one week in an Accident and Emergency unit in the region. While in the practice the students spend the mornings sitting in on surgery consultations and accompanying their tutor to home visits. One session per week is spent on the consultation for which video equipment is used. Each student is given the opportunity to act the doctor and his consultation with the patient is observed by his colleagues, on the video monitor. Seminars are also used to cover subjects such as bereavement, that are pertinent to general practice. In the final year students have a four week elective and this may be taken in general practice in the region.

MANCHESTER

In the pre-clinical course the Department contributes a few seminars in elementary statistics and sociology (Byrne, 1976). In the first clinical years the students have ten mornings in general practice spread over a two week period. Each group of fourteen students

has an introductory seminar on the first morning and a closing seminar on the last afternoon. The attachment is on a one to one basis either in Darbshire House or with one of the inner ring tutors in Manchester: the students sit in with the general practitioners and accompany him on his visits.

In the second clinical year each student spends an eighteen-week period in a district general hospital and for two of those weeks has a full-time attachment to a general practitioner in the area. The main emphasis is on whole person medicine and each tutor in the outer ring has two to three students per year. In the penultimate year students can take a two month elective in general practice: forty of the 270 students take this option.

THE MIDDLESEX HOSPITAL, LONDON

There is a four week course in Community Medicine and General Practice (Clark, 1976). The students spend a fortnight visiting various practitioners and community health centres in London and attending lectures and seminars on general practice topics. During the second

fortnight each student is attached to a general practice outside London and finally returns to London for a two-day "Debriefing Seminar".

NEWCASTLE

An extended course called Human Development, Behaviour and Ageing, has been introduced in the first two years of the curriculum (Walker, 1976). This is an integrated inter-departmental project in which the Department of Family and Community Medicine has a major stake. The course of lectures and practicals consists of 175 hours of tuition of which the Department is involved in 100 and have the sole commitment for 40. The students undertake a family project during this course; pairs of students are introduced to a mother in the last trimester of her pregnancy and follow the family over the following two years.

Eight afternoons of the fourth year are devoted to Community Medicine. This course consists of six one-and-a-half hour lectures with the remainder of the time being spent in group work covering such topics as 'The

Health Needs of the Community' and ' Management Problems'. There is a five week block in which the mornings are spent in the Department; ten of the sessions are with a general practitioner and the others are in seminars, tutorials and visits. Visits are made with the district nurse, the health visitor and to agencies such as the School Health Service, and the Geriatric Services. The students work up a patient with a psychiatric or social problem and present the patient's case history at a seminar. Modified essay questions are used to develop the students' skills in problem-solving.

NOTTINGHAM

The Department makes a contribution in each of the five years of the curriculum (Metcalfe, 1976). In the introductory term the students spend half a day with a general practitioner and later in the first year the students visit patients with chronic lung disease, identified by the teaching practice, as part of their Respiration course. In the second year the students carry out field work projects in groups of twelve. The

populations for these studies are usually identified by general practitioners and a free choice of subjects in the health care field is allowed. The students are supervised to ensure that they learn and use proper research methodology. In the third year the students work mainly on their own for B.Med.Sci. Degree: this involves 60 per cent of their time in original research. About one fifth of the students choose community health and some of the research is based in the teaching practices.

All students rotate through a four week block during the fourth year in one of the seven teaching practices. The student spends three half-days on a one-to-one clinical attachment, two half-days on project work, one to present and discuss their findings as a group, one doing modified essay questions as a group or studying consultations with simulated patients, and one half-day in a seminar related to important topics which may not have been covered during the attachment. The projects include the work of other members of the practice team, visiting and assessing a patient with chronic disease, or attempting an audit from the practice

records. There is also a month's elective during this year; 25% of the students elect for general practice and are accommodated in practices outwith the Nottingham district. In the final year the general practitioners are involved with consultants in seminars on clinical patient management.

OXFORD

All clinical students experience a two-week attachment in general practice but this is unsupervised and unstructured and as a result unsatisfactory (Vessey, 1976). A Working Party have produced a paper concerning the further development of general practice teaching and this is at present under consideration.

ROYAL FREE HOSPITAL, LONDON

All students complete a two week compulsory attachment with local general practitioners or outwith the area of the teaching hospital (Ellis, 1977).

ST. BARTHOLOMEW'S HOSPITAL, LONDON

Each student spends eight half days in a general practice setting during the first clinical year (Salkind, 1977). Later in their clinical course all students have the option of a two-week full-time attachment with a general practitioner.

ST. GEORGE'S HOSPITAL, LONDON

All students spend a two-week attachment with general practitioners throughout the U.K. (Freeling, 1977). A senior lecturer has just been appointed and the teaching in general practice is thus likely to be further developed.

ST. MARY'S HOSPITAL, LONDON

The Department of General Practice is responsible for the pre-clinical sociology course and is involved in the course in Psychology: a total involvement of forty-two hours. (Harris, 1976). In the early part of the clinical course each firm has a seminar on the use of the social history as a clinical tool. In the first or

second clinical year the students have a two week full-time attachment to practices within the teaching hospital's area. Three seminars are held during this period. There is a two month elective in the final year and general practice is one of the options.

The Department is involved in integrated courses on Sex, Infectious Diseases, and in the B.Sc. course in Sociology for medical students at London University.

ST. THOMAS'S HOSPITAL, LONDON

In the pre-clinical phase the Department takes part in a course 'Sociology Applied to Medicine' which includes seminars and visits to general practice (Marson, 1976; Morrell, 1977). The clinical course lasts eight weeks, each student spending a day-and-a-half per week in seminars and practical work in general practice. At the beginning of the attachment the student observes the work of the doctor in office consultations and home visits, later increasing responsibility is allowed and the student sees some patients on his own. Each seminar is planned to illustrate a major theme.

Two recent innovations in the teaching course are a home visiting project in which students visit patients in their own home after discharge from the medical wards, and combined teaching with the Department of Obstetrics centred round joint ante-natal sessions held in the University practice.

SHEFFIELD

The first clinical year includes a course concerned with Psycho-social Problems in which general practice is one of three contributors (Wilkes, 1976). Students attend seminars on such topics as bereavement and its management, and have one morning with a general practitioner who introduces a pair of students to a patient with a chronic illness. The students visit the patient in his home the following week and repeat their visits over a period of between three and twelve months. The students also have the opportunity of being attached to the Sheffield Deputising Service.

In their second clinical year they will have seminars at which the patients they have followed up are presented, thus giving a long term view of the problem.

This project contributes towards the Community Medicine Professional examination.

Each student is allocated for one week to two different general practices; these weeks are consecutive and as far as possible the practices are selected to be contrasting. This experience is backed up by seminars, by management discussions, and with a brief project. The students visit day hospitals, social care homes, and St. Luke's Hospice and have sessions with other members of the practice team.

The final year includes an elective and between thirty and sixty students (23-46% of the year) take the general practice option.

SOUTHAMPTON

In the early medical contact course the student is introduced to a patient at the ante-natal clinic and is expected to see her during her pregnancy, labour, the puerperium and during the three months after confinement (Forbes, 1976). Each student also visits a patient in his own home on four occasions during the first academic

year. Patients are chosen who illustrate social aspects of disease and the effect of disability on every-day living. The students work in pairs and the visits are followed by a teaching seminar.

In third year the student spends 15% of his time in clinical instruction in primary medical care. He spends one morning each week for forty weeks in the community, looking at problems related to the branch of medicine that he is studying in hospital.

In the final year the students spend a two week attachment to practices throughout the Wessex region.

THE LONDON HOSPITAL, LONDON

The students can have an elective attachment to general practice during the senior clinical year (Ellis, J.R., 1977). Other facets are at present being developed and the general practice teaching is likely to expand.

UNIVERSITY COLLEGE HOSPITAL, LONDON

In the first clinical year the students have three lectures on general practice given by the Departmental

staff and also have the opportunity of attending a local G.P.'s surgery once a week for one month (Modell, 1976). In the second clinical year there is a one month module in general practice in which the student is seconded to two separate practices. The first two weeks is usually spent at the Kentish Town Health Centre where 50% of the time is spent with the general practitioner and the remainder with other services at the Centre. In the second two weeks the student is allocated a practice outwith London and a seminar is held at the end of the attachment to discuss a case history presented by the student, and other aspects of the teaching course.

THE WESTMINSTER HOSPITAL, LONDON

In the first year one lecture on general practice is included in the introductory course (Scobie, 1976). In the final year the students have a six week module of general practice, community medicine, geriatrics, and social services. Ten to twelve days are spent in general practice. One day a week is seminar day at the Medical School and one seminar of an hour is on general practice.

It can be seen that there is great variation in the methods of undergraduate teaching of general practice. The development of this teaching in each University is dependent on the local facilities and on the curricular time available. It is difficult to make specific criticisms but some of the variations need to be mentioned. Pearson et al., (1968) commented that "the existing attachment schemes are amateur, haphazard, and provide little or no feedback to either the medical school or to the student or rarely the practitioner. There is no planned teaching process and it is not an academic exercise. The usual pattern of consultation confuses rather than helps. Since 1961 there has been some progress but no bold innovations. The students were generally appreciative but would have liked more." Almost ten years later this statement could be made about a number of medical schools although there is no doubt that a great deal of overall progress has been made.

There are two main methods of organising the teaching course; firstly formal classes conducted by staff from the Medical School and related to sessions of clinical experience in selected practices, and secondly

a full-time attachment in which the student is free from formal teaching and is away from the medical school. This conflict highlights a problem which does not still seem to have been resolved in a number of Universities, whether the teaching in general practice should be related to clinical medicine in the context of general practice or about general practice as a way of life and a career.

One trend which is developing is that students are tending to see patients much earlier in their undergraduate course and in this general practice teachers are actively involved. The new medical schools are particularly prominent in this regard.

Another conflict which is at present unresolved relates to the discipline which should be responsible for teaching general practice. General practice has strong links with community medicine and in some schools the subject is still taught entirely by this discipline. An overlap does exist between the two subjects: there are also clear divisions of responsibility and interest. General Practice is a clinical subject concerned

with the individual patient whereas community medicine is non-clinical and deals with the epidemiology and control of disease in populations. Each has its own area of expertise and although one can contribute to the other, each is concerned with different aspects of illness.

Within the last twenty years no discipline has been more critical of the content and method of its contribution to the undergraduate curriculum than has general practice. The development of undergraduate teaching in general practice is so recent that experimentation and variation in approach are still necessary. With time and experience, common and agreed objectives, content and method should develop once the full place and potential of general practice as an academic discipline is understood and accepted by all involved.

CHAPTER V

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EVALUATION

Once a programme of instruction has been produced, there is usually a desire to evaluate it. The primary role of any evaluation is to facilitate decision-making for those responsible for the education system and to assist them in formulating future progress. Education is a process, the chief goal of which is to bring about a change in human behaviour. Human behaviour is so complex that it cannot be described or summarised as a single score and many techniques are required to estimate change, each result being part of the whole.

Educational evaluation - the estimation of the worth or usefulness of an instructional programme - is a developing field in which people hold different views. It is an area that abounds with jargon - formative, summative, preordinate, goal-free, responsive, illuminative and agricultural-botany. This chapter

attempts to examine the problems of evaluation and tries to define the advantages and disadvantages of different methods. There is no one way to evaluate an educational programme; the best of each technique should be used when appropriate.

Wittrock (1969) has said that critics of evaluation of learning were quick to find faults in it. If only behavioural changes are measured in respect of pre-planned objectives, other significant changes in behaviour are ignored. Before discussing the different parts of the instructional process a definition of learning must be given: the behaviour of an individual changes through his experience of his environment - the process underlying these changes is called "learning". The purpose of teaching is to facilitate learning. Learning itself cannot be observed, only the changes that occur in the behaviour of the learner. The student may learn the Pythagorean theorem but in the process may also learn to dislike mathematics. Since a dislike for mathematics was not an objective of instruction, this change in behaviour may not have been measured. Not all the

important dimensions in student learning can be foreseen, and important changes that were not apparent nor desired before instruction began, should not be ignored. Changes of behaviour of people other than students, such as teachers, are also important and should not be omitted from studies of evaluation.

Wittrock also stated that "precisely worded behavioural objectives tend to be narrow and trivial and thus lose the essence of the instruction. In time this narrowness can be overcome by writing hierarchical sets of more specific objectives to sample more general, imprecisely worded, but specific objectives."

House (1973) criticised the traditional methods of evaluation: "Employing such a precise, narrow methodology has obviated all else. The result is a measurement of a tiny range of detached intellectual skills. Gone even are Binet's own categories of mental imagery, imagination, aesthetic appreciation and moral sensibility. Gone are all other modes of experience. Whether a student is happy, becomes wealthy, contributes to mankind, or is the most miserable person on earth is irrelevant. The technology of evaluation measures only

what the technocratic society want it to measure."

Several people have contributed to the increasing criticism of evaluation procedures, but the most conspicuous has been Robert E. Stake. Stake had been a respected traditional evaluator but now stated the value of data other than test scores, particularly the judgements of concerned persons, the inadequacy of achievement test scores as a measure of educational quality, and the relevancy of data according to the audience for which it is intended (Stake, 1967; 1971; 1973). Others have questioned the use of behavioural objectives as the sole focus for an evaluation procedure. (Scriven, 1973).

McDonald and Parlett (1973) writing about a Cambridge conference on 'Rethinking Evaluation' thought that past efforts had not properly served the needs of the audiences because of an under attention to educational processes including those of the 'learning situation' and an over-attention to test measurement of student learning. The existence of an educational research climate that rewards accuracy of measurement aided traditional

evaluation which focused entirely on intended outcomes.

Evaluation helps to clarify objectives of education, can be used as a quality control and shows whether different teaching methods are appropriate or inappropriate. No evaluation embraces all themes. Some emphasise one theme and reject the others. There is no comprehensive, overall, systematic exposition nor is there likely to be. An evaluation brings into play an evaluator's own values - what is medicine, how do students learn? By explaining the underlying philosophy of what he is doing the evaluator influences decision-making. Evaluation should be used to understand how the course produces its effects and what parameters influence its effectiveness and this is the kind of evidence on which it may be judged. The evaluator must get close to the programme, experience it, and convey that experience in its totality. In developing an educational programme it is important that each component be separately evaluated before extensive use of this procedure is made in the total educational programme. (Flanagan, 1969).

It is important to examine the different types of evaluation in current use, the advantages and disadvantages of each and to decide who should be responsible for the evaluation - should it be someone within the project or an external evaluator ?

Pre-ordinate model (traditional evaluation)

This model arose from Tyler's work (1950) to design instructional material using behavioural objectives. This early work and that of Bloom (1956) in educational objectives led to this model being developed. The aims and content of the course are broken down into specific objectives, written in terms of the way the student's behaviour is expected to change with the programme. The programme is then changed according to the evaluation and adapted until the students working through it can reach its pre-specified objectives. Parlett and Hamilton (1972) compared the learning outcomes of the students after they had worked through an instructional programme to the growth of seedlings in a laboratory experiment, after being subjected to

different treatments. Following this analogy this model was also known as an 'agriculture-botany' type. A medical example of a behavioural objective would be to examine an abdomen to demonstrate liver enlargement: Being able to fulfil this gives no indication of how the student relates to the patient, a most important part of any examination.

After the students have been given a pre-test they are submitted to the new method of teaching and their attainment is subsequently measured and isolated variables like I.Q., attitude ratings, are codified and processed to indicate the efficiency of new curriculum media and methods. This type of evaluation produces reports in the measurement (psychometric) tradition of educational research.

This model has some advantages: it is relatively simple and the pre-and post-tests must be designed after determining the pre-specified objectives. It is thus objective and free from the evaluator's prejudices, producing definite results which can be generalisable.

Recently there has been an increased resistance to this type of evaluation because -

1. Large samples are required to randomise the numerous relevant parameters. This, therefore, entails a major data collection exercise and is expensive in time and resources.
2. Before-and-after research designs assume that the innovatory teaching programme undergoes little or no change during the period of the study. This assumption tends to discourage new developments and redefinitions of the teaching aims until the teaching programme is completed.
3. It imposes relatively artificial and arbitrary restrictions on the scope of the study. It assumes that all instructional aims in all subjects can be translated into behavioural

objectives. Even if behaviour objectives can be produced, the translation from aims to objectives involves a valued judgement and it may be difficult to produce agreement between the evaluator and the programme producer on the precise definition and usefulness of these objectives. An external person may then disagree with their values.

4. This model ignores the learning process and the many complex outcomes which can occur in students and it ignores side-effects and unintended outcomes, e.g. the student has fulfilled the objectives but has come to dislike the subject.

This evaluation produces one report which does not change irrespective of its audience. It is impossible to produce a report which is applicable to a number of audiences.

Illuminative model

The illuminative or responsive model arose from a dissatisfaction of the preordinate model. Responsive evaluation is what people do naturally in evaluating things. They observe and react. What is new is the beginning of a technology developed around this natural behaviour, in part to overcome its defects. An education evaluation is a "responsible evaluation" (Stake, 1972) if it orients more directly to programme activities than to programme intents, if it responds to audience requirements for information, and if the different value-perspectives present are referred to in reporting the success of the programme. In these three separate ways an evaluation plan can be responsive.

The responsive/illuminative model (Parlett and Hamilton, 1972) is concerned with the complexity of the teaching/learning situation. It is more concerned with an overall view than with the individual student. This involves study of new teaching programmes in several dimensions: how it operates, how it is

influenced by the differing situations in which it is applied, the opinion of those directly concerned regarding its advantages and disadvantages, how students' intellectual tasks and academic experiences are most affected. It seeks to address and to illuminate a complex array of questions.

In illuminative evaluation there are characteristically three stages: an investigation of its constituent factors, observation of the method in practice, further inquiry and then an attempt to explain the change in student ability. The design of this evaluation model should be flexible so that the evaluator can respond to unanticipated events and the changing aims of the project as it develops. The evaluator in this model with the previous medical example, would watch the student examine the liver and observe how he relates to the patient.

The reports are addressed to different audiences, e.g. teachers, students, project staff and other institutions and separate reports can be written for each. It is the evaluator's task to identify the needs of the different audiences, pay attention to the

aims and operation of the project, obtain the appropriate data and then produce his report.

An important feature of an illuminative evaluation is its flexibility; it can adapt to different and unforeseen circumstances and often some of the initial aims have to be changed or abandoned. Because of these last features this model is most able to cope with the changing circumstances of a developing innovative programme.

An illuminative evaluation may contain some statistical data with pre-test and post-test data if this was thought to be desirable but its main content would be observational data and the results of interviews with the workings of the project's team and the institutional background. From this description it can be seen that this is a much more ambitious evaluation model.

The main criticism of the illuminative model is that the evaluation is entirely subjective. The evaluator must decide how he should approach his task, what data he should gather and what interpretations he should make. There is no doubt that he could include his own prejudices in his evaluation and that it could

become an anecdotal account of what the evaluator feels. For this reason he must attempt to present his preliminary findings to others preferably outwith the project team.

Secondly any observational study alters the behaviour of the participants; the learning situation is no longer relaxed and free of tension; the presence of an evaluator on a student can be quite marked. In interviews students may answer what they think the evaluator wants to hear and the evaluator's personality becomes very important in this type of evaluation. The use of 'open-ended' questions in a relaxed manner is another way of overcoming this difficulty although the evaluator can still obtain data which is not completely true. In this type of evaluation discretion must be exercised in using the data, e.g. student criticism of the instruction.

Outside audiences can read this evaluation and then decide whether a similar innovation would be applicable to their institution.

Goal-free evaluation

This model suggested by Scriven (1972) represents the opposite end of the evaluation spectrum from the preordinate model. Scriven argues that the consideration of goals is unnecessary and possibly a contaminating step for an evaluator to take: the study is evaluated without any knowledge of the goals and the evaluator concentrates on the actual observed effects of the programme, freed from the danger of looking only for those effects which he expects to find. It has many of the features of the illuminative model and shares many of its advantages and disadvantages. A goal-free evaluation in medicine could be to observe doctors and evaluate which attitudes are important to their profession.

The main disadvantage of the goal-free model is knowing what data to collect, how to use it and analyse it. He has to analyse a large amount to detect important issues. It could probably only be used by an experienced evaluator.

Formative evaluation

The main purpose of formative evaluation (Scriven, 1967; Bloom et al., 1971) is to determine the degree with which the student masters a given learning task and the identification of the parts of the task that are not understood: an attempt is made to observe the student before he attempts the new task.

The purpose of formative evaluation is to allow changes to occur at an early stage in the development of an instructional programme, so that suitable amendments and revisions can be made before it reaches a finished state. It should be goal-free. It is carried out with the people involved and its aim is to provide information to make any necessary changes while the development is in a fluid state.

Summative evaluation

The purpose of summative evaluation is to give an objective external critique of a finished instructional programme and to decide on its worth and usefulness to others. It is addressed to a wide

audience, e.g. the academic staff of the institution involved and other institutions. It should be carried out by an external assessor but he cannot provide all the necessary information although he can help. It is best to have both an external assessor and someone from the project with both evaluating it from a different philosophical experience. It is directed towards a much more general assessment of the degree to which the major objectives have been attained over the entire course or a substantial part of it.

Formative and summative evaluations are general terms and can be applied to any evaluation irrespective of the techniques or model used.

Who should perform an evaluation ?

This is a most important question and the person could be a member of the project, an agent for the funding body or an independent external agent.

A summative evaluation should if at all possible, be conducted with the help of an external agent. Members of the project are often too close to it to give an unbiased view of its strengths and

weaknesses; they often have a vested interest in a good report as their future career may be dependent on it.

It is very important that the evaluator has a grasp of the subject matter and some experience of teaching students at that level. It is often impossible to get any one person with all the necessary skills and knowledge. Several evaluators looking at different aspects of the project may be the ideal situation but the financial constraints would not allow this.

The evaluator in the present study had a background in the subject matter with experience of teaching but his experience in educational techniques at the beginning of the study was limited. Guidance was provided by the Education Department at the University and a combination of techniques described have been used taking into account the evaluator's experience.

Summary

There is no evaluation technique which can be used in any given situation. Many parameters and

extraneous factors have to be taken into account. The model adopted in any given situation depends on the budget available, the time available for the collection of data, the requirements of the different audiences and as noted by Becher (1974), on the style of the curriculum development.

The preordinate model is narrow but can often be used in a summative evaluation; the illuminative requires a skilled evaluator and the goal-free is for the most skilled. The end result must always be to improve instruction and learning in our education system.

Finally one must never forget that evaluation is philosophical and one does not obtain scientific proof. Evaluation is not to prove but to improve. In any evaluation two people can view the same thing from their own perspective and come to totally different conclusions and it is this aspect which makes evaluation so difficult.

CHAPTER VI

CHAPTER VI

TEACHING IN THIRD YEAR

Students' teaching in third year, the first clinical year, began as a pilot study in April 1975 when this teaching was given to 22 students. By October that year it had been expanded to involve 151 students and by October 1976 it was extended to all students in that year.

Todd (1968) said that "students should see patients presenting new symptoms to the doctor for the first time, and learn how decisions have to be made at this stage. Moreover he should see how the doctor/patient relationship often differs in general practice from that in hospital." Lord (1963) suggested that there was a great need to expose students to the conditions found in general practice at an early stage in their learning. The student's education would become wider as he became aware of the problems that faced the individual and his family in times of sickness and

distress. The World Health Organisation (1963) has suggested that the initial consultation in a general practitioner's surgery was an essential of teaching so that the student could see an experienced doctor being put on the spot, being confronted by a new and undifferentiated situation. Clyne (1963) had investigated to what extent psychological medicine as applicable to general practice was being taught in general practice. His study was carried out in the teaching practices at Edinburgh and Manchester and at the Radcliffe Infirmary in Oxford, and he found that though the teaching of comprehensive medicine for future general practitioners was an accepted principle, there is little evidence of such teaching. Byrne (1969) carried out a questionnaire asking his students for their views about their general practitioner attachment. The suggestions made by students, were that more complete facilities should be available in doctors' surgeries for physical examinations and that more time should be spent with each patient. Gaskell (1969) suggested that general practice teaching should be given throughout

the clinical course and that surgery visits should be integrated into clinical teaching.

Simpson (1972) suggested that the student needs to develop a considerable tolerance of uncertainty. Medicine is becoming increasingly scientific but a purely scientific attitude and response is inappropriate to medical practice. It is a feature of the behavioural and biological sciences that students deal with situations in which a balance of probabilities operates. There is often no unique solution to a problem and indeed even clinical or laboratory results are inconclusive. A doctor must be able to act on probabilities with a significant but usually unknown margin of error. Morrell (1972) reviewing the teaching of general practice felt that general practice should concentrate its teaching in areas which are unique to the community and which can seldom be duplicated in hospital. He said that the selection process which occurs in a patient's referral to hospital results in a biased pattern of morbidity in the hospital. A more balanced picture of the prevalence and incidence of disease can be shown in

the general practitioner's surgery, where the important contribution that acute infection makes to morbidity in the community can be seen. General practice is also the milieu in which the natural history of acute illnesses which rarely reach the hospital, can be studied.

Todd (1968) noted that "Taking the history forms part of every student's introduction to clinical methods; but there is a great deal more to this than simply asking a series of prescribed questions and checking the accuracy of the answers. Students must be aware of the factors which impede or distort communication, factors such as limitations of vocabulary, cultural attitudes and social prejudices and above all, anxiety; students should learn at an early stage to recognise and overcome their own anxieties as well as those of their patients when frightening or embarrassing topics have to be discussed." Helfer and Levin (1967) using video-tape in the teaching of paediatrics found that students commonly asked leading questions, used unfamiliar medical terminology, cut off communications, failed to ask questions pertaining to interpersonal aspects of the case and rarely gave reassurance or

explanation to the patient. There were similar findings with senior medical students of the University of Manchester during their psychiatric course (MacGuire and Rutter, 1976).

Development of third year teaching at Glasgow University

An experimental third year teaching scheme was carried out in the Whitsun term of 1975, involving the students from two medical units. The purpose of this preliminary scheme was to test the feasibility of demonstrating the acute presentation of illness in a limited amount of teaching time which was available. This pilot was successful and in the following academic year this teaching was extended to all third year students (84% of the year) attending the University's two main teaching hospitals: The Royal and the Western Infirmaries.

The students were attached to general practitioner tutors in groups of two or three and each group had four mornings of teaching between 0900 hours and 1045. During the Martinmas term, 151 students

were taught by 12 general practitioner tutors, the students being released in small numbers from their medical clinics.

For each teaching session the tutor booked four to six patients who were presenting for the first time with a new illness which had started during the previous forty-eight hours. On the first morning (for each group of students) the tutor himself took the patient's history while the students listened and observed. On the remaining three mornings the students took turns at taking the patient's history, the tutor intervening and giving instruction and explanation when required.

The aims of the teaching were discussed before term with the tutors and these were:-

1. To introduce the students to problems of primary diagnosis.

2. To show the unstructured and colloquial way in which patients express their symptoms and complaints.
3. To demonstrate the early presentation of common conditions.

The latter two aims were stressed as the students were only beginning their clinical training and were lacking in medical knowledge. The students were also introduced to the skills of interviewing and history-taking in the general practice situation.

The students were given written instructions on how they should approach the consultations:-

1. Establish a relationship with the patient by introducing yourself by name, as a medical student, and make sure that the patient is comfortable and at ease.

2. Ask why the patient has come and listen to the patient's story as he describes it in his own words.
3. Enquire into the precise nature and duration of the presenting symptoms or problems.
4. Ask about the past medical history (serious illnesses and operations) and any current disease or disability, and present medication.
5. Ask about the patient's family circumstances (who else is at home ?)
6. Ask about the patient's occupation (how does he spend his day ?)
7. Ask if there are any other symptoms or problems, with a brief system review if necessary.

By the Whitsun term the third year students had completed one term of clinical medicine and clinical surgery and were starting their second term of clinical medicine. The students had a further four teaching sessions in this term. The aims of the third term were essentially similar but were extended to include an introduction to -

1. the measures required to allow a diagnosis to be established.
2. the initial and follow-up treatment, and management of the patient.
3. the indications for referral of patients to hospital for in-patient or out-patient care.

Video-tape recording was introduced this term to record consultations and demonstrate interviewing skills. A pilot study was carried out involving nine students.

Developing methods of evaluation

The pilot study in Whitsun 1975 was evaluated by sending an anonymous postal questionnaire to the 22 students involved and their comments resulted in the teaching being extended to all students from the two main teaching hospitals in the academic year 1975/76. The students and tutors completed log books (Appendix 2) which recorded the following information about each patient seen:-

1. Age and sex.
2. The symptoms complained of by the patient.
3. The diagnosis or problem decided by the tutor.
4. The presence of important social and psychological components of the illness.
5. The treatment given.
6. Whether the patient's illness could be assumed to be self-limiting.

The students were given a comments' sheet on their first morning (Appendix 3) and were asked to return

this after the teaching. There were two headings :-

- A. Have you noticed any difference in the history-taking from that used in hospital ?
- B. Any comments ?

The main purpose of the log book was to allow an illuminative evaluation of measuring the content of the teaching: the conditions and patients that the students actually saw. This evaluation was carried out throughout the year and can be termed summative. The students' comment sheet was open-ended and was included so that a measure of the students' attitudes to this teaching could be obtained. A formative evaluation was carried out at the end of the first term from a series of interviews with all the tutors, asking them for criticisms and comments. The students were given an alternative choice questionnaire related to the conditions that they were likely to see in a general practice setting. This questionnaire was answered on the first teaching

morning in first term and a scrambled version of the same questionnaire was given during their last morning in third term (Appendices 4 and 5).

In the third term as in the first term the students kept log books of all conditions seen, recording exactly the same information. On their last morning they were also asked to write down any comments or suggestions that they had which might change the teaching in the next academic year (Appendix 6). Lastly a small questionnaire was given to those students who had taken part in the pilot study on the use of video-tape to study the interview.

RESULTS

In the postal questionnaire relating to the pilot study (Whitsun 1975) 21 of the 22 students replied and all commented that they found the course in general practice interesting, relevant and instructive. 17 of the 21 felt that the course had been too short but they seemed satisfied with the clinical content and the quality of teaching. 15 of the 21 felt that this teaching

had assisted their understanding and knowledge of hospital-based clinical medicine. 16 students were asked for general comments and these included the following statements:-

- * "Now realise good medicine can be practiced in general practice."
- * "Much too short to be of any value."
- * "Would make better doctors of us, i.e. more understanding etc. - will it help us pass exams?"
- * "Opportunity to see common ailments which are rarely if ever, seen in hospital wards."
- * "Very limited time-wise: if longer could include a follow-up of some of the patients."

- * "A good idea and well-formed, bringing it in in the first clinical year is also a good idea because it brings a new dimension to clinical medicine."
- * "Patients are real people with a life outside hospital which is an aspect that one tends to forget in pure hospital medicine."

Results of the First Term's Teaching in the Academic Year 1975/76

During 206 individual teaching sessions a total of 899 patients were seen, or 4.36 patients per session. The age/sex distribution is shown in Table 1.

Morrell et al., (1971) in his Lambeth practice have recorded the 12 commonest symptoms presenting as new diagnostic problems in one year. The same 12 symptoms were taken in the analysis of the log books and this is shown in Table 2. The diagnoses made are compared with Morrell in Table 3.

Analysis of the log books revealed:-

- A. 49.7 per cent had organic disease only.
- B. 33.7 per cent of the patients' problems showed an important social component.
- C. 32.0 per cent of the patients' problems showed an important psychological component.
- D. 15.4 per cent had both social and psychological components.

Of the conditions seen 576 (64.1%) were considered to be self-limiting.

The students returned 109 (72%) of their comment sheets and their impressions were almost all favourable. Some students had not completed their comments on their last teaching session and they were asked to post their forms to the Department of General Practice. In the history-taking they noticed that the main emphasis was given to the system principally involved with more time being spent on patient's social history. The students commented on the relaxed atmosphere in the surgery which helped to enhance the doctor/patient relationship. The students felt that the teaching was enjoyable and instructive and felt that it had been very useful to see the more common and less serious conditions.

Some surprise was expressed at the number of psycho-somatic complaints and at the number of problems with a social component.

Comments from the students

* "Helps to remove the one-sided view of medicine."

- * "Helps to build up a more relaxed attitude to history-taking, creating a sounder basis for student/doctor/patient relationships."
- * "General practitioners tend to hand out antibiotics and other drugs too freely."
- * "In general they are more 'human' in that they treat people as human beings and not objects."
- * "A real opportunity for the study of Materia Medica is discovered."
- * "Shows a different side of medicine which can never be seen stuck in hospital."
- * "Very broad scope from mumps to scaphoid fracture and appendicitis."

- * "I always thought that general practitioners did not do much, but this week's study has changed my view. They do a great job. They get varied problems - sometimes very difficult."
- * "Might possibly find my attitude to patients seen in hospital will be slightly less clinical."
- * "Seldom clear-cut, typical cases straight out of a textbook."
- * "A bit traumatic at first but very enjoyable and a useful experience."
- * "One striking point was their fear of hospitals."
- * "Yes - colloquialisms are very common in the majority of the patients seen."
- * "More notice taken of clothes, appearance etc."

* "I don't know whether this is a good thing to do general practice at this stage since we haven't done any gynaecology, obstetrics, paediatrics etc., but I felt that I gained a lot of confidence simply by talking to people."

There were some criticisms of the teaching and several students felt that they would gain more by seeing a general practitioner at normal work and not this structured approach. A few expressed the view that the teaching was held too early and before they had accumulated enough clinical experience. A large number of students were keen that they should be taken on house-calls. One student suggested that it may be worthwhile to allocate a student to a general practitioner at the beginning of his training and that this general practitioner should be willing to allow the student to sit in during the student's free-time in much the same way as hospital allows students to come into Casualty Departments and Receiving Units.

It was noted while analysing the log books that the rate of drug prescribing varied from tutor to tutor. With their permission a more detailed analysis

of the prescribing habits was carried out. It was noted that the tutors fell into two groups: three tutors who saw an average of 5.8 patients in each teaching session, and nine who saw 3.8 patients (Table 4). The patients seen by the first group of tutors had an average consultation time of 18 minutes while the second group of tutors allowed each patient 27 minutes. 39.8% of the longer consultations and 23.7% of the shorter consultations were concluded with advice rather than prescription (Table 5). Antibiotics were prescribed in 17.3% of the longer consultations and 28.8% of those that were shorter (Table 6). Sedatives or tranquillisers were prescribed at 3.6% of the longer consultations and 9.5% of the shorter consultations (Table 7). These differences were highly significant, but there were no significant differences between the age/sex structure and the morbidity patterns and presenting complaints of the patients seen by each group of tutors.

In the formative evaluation all tutors were enthusiastic about this innovatory teaching method.

There were however, two main criticisms - almost all tutors felt that three students in a group adversely affected the doctor/patient relationship and that two would be a more practical number. During the first term the teaching was given on Monday, Wednesday, Thursday and Friday of alternate weeks. This arrangement put a great deal of strain on the practice and the tutors asked if the teaching could be changed to the Thursday and Friday of every week. This timing alteration was made in the third term and the majority of tutors were allocated two students. By October of 1976, all groups were made up of two students.

The Results of third term Teaching

During 174 teaching sessions a total of 749 patients were seen (4.3 patients per session). The age/sex distribution of these patients is shown in Table 8, and the morbidity presenting symptoms is compared with Morrell's figures in Table 9. The diagnoses seen by the students are shown in Table 10.

An analysis of the log books revealed that :-

- A. 66.2% had organic disease.
- B. 23.6% of the patients' problems showed an important social component.
- C. 24.2% of the patients' problems showed an important psychological component.
- D. 14.0% had both social and psychological components.

Of the 749 conditions seen, 431 (57.5%) were considered to be self-limiting. 97 students (64.2%) made comments and suggestions for the teaching in the next academic year. Their main comment was that the teaching should be expanded and should include more visits to patients at home. They felt that the teaching was well planned and constituted a useful introduction to general practice. The students suggested that two weeks in third term would be more beneficial than one week in

first and one week in the third term. Those who had been in a group of three suggested that this should be reduced to two. Opinion was divided as to whether the teaching sessions should be spread over a two week period, or should all be in the one week. The questionnaire and the comment sheet were considered by some to be a waste of time, and a number commented on not being able to attend the sessions at the end of term because of professional exams.

Comments from students

- * "Some time could be made available at the end of the course for discussion in a group of the value and usefulness of the course and to let everyone know the range of conditions seen."

- * "I feel very strongly that the Human Ecology course in first year should be totally abandoned and re-organised to cover problems such as this and the services available. Apart from G.P. work it would give a better understanding in depth of the hospitalised patient's problems

before he came in and what he might expect on returning to the community from the voluntary service and Social Work departments, etc."

- * "The G.P. course in third year is a most interesting, helpful and revealing one, and a welcome break from bedside teaching."
- * "Considering that qualifications from General Practice rank alongside the Physician, the student should be given a decent chance to form firm opinions on practice as a career, and this should start alongside his or her teaching in medicine or surgery."
- * "Gained more from these visits than three terms of Human Ecology."

The results of the alternate choice questionnaire are shown in Table 11. 21 students who did not have the teaching, showed no significant increase in their scores, and the 130 students who did showed a significant increase in their scores.

The prescribing habits of the two groups of tutors were again examined: the group of tutors who had seen less than 5 patients per session in the first term (average 3.84) behaved in a similar way in the third. The number of patients seen, the prescribing per patient, the frequency with which advice was given, the prescribing of antibiotics, sedatives and tranquillisers, occurred with the same frequency. The group of tutors who had seen more patients in the first term significantly changed their habits during the teaching and became similar to the other group (Table 12).

The pilot study of patient interviewing using video-recordings was successful. All nine students felt that this had been valuable and especially the ability to watch a replay of their own performance. They did not feel that the microphone and the camera in the room had interfered with their consultations but they would have preferred being on their own with the patient without a tutor being present.

DISCUSSION

During the third year teaching the students were introduced to the skills of interviewing and history-taking in general practice and their own reactions as students to interviewing patients. The responsibility of conducting the first interview with a patient can help the student to overcome his own anxieties and to feel more comfortable and confident in his role as a student doctor.

It was thought that the broad aims of the teaching had been achieved. The students saw only the first presentation of new illnesses which were representative of those seen in general practice (Morrell et al., 1971) and which involved a variety of complaints amongst patients of all age groups. This range of illness at this stage in its development can only be seen in general practice and the restrictions in the numbers of patients seen during each teaching session allowed the student to become actively involved in the learning process. The extended consultation also gave the tutor sufficient time to explain the steps he was taking to reach his

diagnosis and to elaborate on any difficulties the students might have in following his train of thought. No patient objected to a student being present at this consultation or being responsible for taking the medical history. The West London Faculty of the Royal College of General Practitioners (1972) carried out a study on patients' attitudes to the presence of an undergraduate student. 68% accepted a student without question; 8% rejected the idea absolutely, and 24% gave instances of situations in which they would not want a student to be present. Wright (1974) carried out a similar study interviewing 259 adults. He found that patients did not mind students being present when a physical complaint or when a problem relating to smoking or drinking was discussed. However, almost all had appreciable inhibitions if other kinds of problems were involved. Over 50% of young women were hesitant about a student being present during a physical or pelvic examination. There was a general feeling that the maximum number of students who should be present was two. Richardson (1970) carried out a similar study. All patients in three practices were warned that students would

be present during the consultation. 703 patients took part in the study and only 43 (6.1%) refused to have the student present. The objections appeared to be most commonly related to complaints of an intimate or embarrassing nature.

In the teaching the students were able to appreciate the social or psychological factors which appeared of importance in the presentation of illness. One of their main comments was surprise at the number of consultations in which these factors seem to play a significant part in modifying the way in which the patient's complaint was expressed, and the way in which the patient was managed.

A system of structured teaching in general practice is sometimes criticised because of its apparent unreality. The third year teaching was structured, consultation time was not constrained and totalled seven hours in each term. Each student saw an average of 34 consultations that were representative of the illness seen in general practice.

The patterns of illness and presenting symptoms in the patients seen by the two groups of tutors were similar. A psychological component was noted in 29.1% of all consultations with group '1' tutors (5 or more patients per session) and 33.6% of group '2' tutors (less than 5 per session). The age/sex and social class distribution of the patients seen were also similar in both groups. There was a consistency of behaviour within the two groups of tutors. In group '1' less than 5 patients were seen in only 10 out of 54 consultations (19%); in group '2' 5 or more patients were seen in 29 out of 152 teaching sessions (19%). The two groups of tutors therefore, acted consistently in 81% of their teaching sessions.

It has been shown that consultations are longer, the older and more experienced doctors are, (Wright, 1968; Williams, 1970; Morrell et al., 1970). In the present study there was no significant difference between the average age of the two groups. The teaching was set aside from normal practice work and time was not therefore a constraining factor as it can be in normal service. The tutors in group '2' took 52% more time for a consultation

than did those in group '1', although some of this time may have been used for teaching rather than in the consultation. Less than one quarter of the patients attending the doctors in group '1' and almost two-fifths of those in group '2' were given advice. This would seem to imply that with fewer patients booked and thus more time available, the doctors were able, when it was appropriate, to give advice rather than a prescription. More time available can lead to more explanation being given to the patient; conversely it is usually quicker to write a prescription which can become the more usual form of therapy when time is limited. The differences between the groups were highly significant in the prescribing of antibiotics, sedatives and tranquillisers; groups of drugs the need for which might well be related to the time spent on the consultation. There was no difference in the prescribing of other drugs between the two groups of tutors.

A year's prescribing by five family doctors in a new town showed that 71.8% of all patients seen were given a prescription (Bain and Haines, 1975). The prescribing rate in the first term of teaching was 86.2%

but as the consultations concerned were for new, acute illnesses only, the overall rate for the general practitioner tutors would seem to be similar to that reported by Bain. In a study of drug prescribing in the North East of Scotland (Berkeley and Richardson, 1973) 35% of consultations ended without prescription, and an average of 1.2 items were prescribed at each of the consultations at which a prescription was given. The Local Executive Council figures for the period covered by the Aberdeen study was 1.35 items per patient, and the authors considered that there had been some under-recording of prescribing by the doctors involved in their study.

Dunnell and Cartwright (1972) state that 52% of general practitioners thought that they would write fewer prescriptions if more time was available at each consultation. However, their study showed that doctors with relatively fewer patients on their medical list, and therefore with presumably fewer consultations per day, wrote more prescriptions per patient.

These prescribing figures were an incidental finding but they would seem to suggest that the presence of students and a teaching commitment exaggerated an

inverse relationship between the time available and the doctor's tendency to prescribe rather than give advice. Morrell et al., (1970) found that of all consultations 25% are new and patient-initiated, and 47% are re-attendances at the request of the doctor. These figures would suggest that the general practitioner has some control over his own workload. It is also possible that the time available at the initial consultation governs the likelihood that the patient will attend again for a follow-up consultation. Staff and time are finite but limited resources. A circle thus seems to exist in which insufficient time can lead to a tendency to prescribe and to the recall of the patient for a further consultation, thus adding to the existing pressures on time available.

The results of the first term's prescribing were presented to the tutors at a seminar in the Department of General Practice and a copy of each doctor's prescribing and that of both groups of tutors, were demonstrated. Each tutor was thus aware of these findings before the beginning of the third term's teaching. During the third term the group of high prescribing tutors altered their

behaviour and became similar to the other group.

There has been a great deal written about the effect that general practice teaching has on students (Horder et al., 1962; Heller and Heller, 1968) but there are no reports in the literature of the effect that students can have on general practitioners. The incidental findings reported here would suggest that teaching can have a profound effect on the tutor and it must be argued that some of this will influence the practitioner in his normal day-to-day work. The teaching/learning situation is thus likely to affect both teacher and student.

It was encouraging that the student's factual knowledge also increased during this period of general practice training (Table 11), as well as the teaching having an effect on their attitudes. The pilot study of the video-recordings has been encouraging and this will be made more widely available to students.

This third year teaching was evaluated in a number of ways using objective criteria and the structured approach with firm guidelines to all tutors, allowed the student to see a range of morbidity which he would be unable to see in any other setting.

Age	MALE		FEMALE	
	Number	%	Number	%
0 - 5	49	5.5	44	4.9
6 - 15	40	4.5	37	4.1
16 - 35	121	13.5	173	19.2
36 - 65	186	20.7	155	17.2
65 +	30	3.3	64	7.1

TABLE 1 :- AGE/SEX DISTRIBUTION OF PATIENTS - 1st TERM

Presenting symptoms	Per cent of all consultations (Morrell, 1971)	Per cent of all consultations log books
Cough	9.9	14.7
Rash	5.8	5.2
Pain in throat	5.4	4.8
Pain in abdomen	3.7	7.6
Disturbance of bowel function	3.5	4.4
Spots and sores	3.4	3.4
Pain in back	3.3	4.6
Pain in chest	3.2	5.7
Pain in head	2.9	5.0
Pain in joints	2.6	6.7
Disturbance of gastric function	2.6	5.5
Pain in ear	2.0	3.1
Others	51.7	29.3
TOTAL	100.0	100.0

TABLE 2 :- COMPARISON OF PRESENTING SYMPTOMS - 1st TERM

System	Per cent of diagnoses (Morrell et al., 1971)	Per cent of diagnoses log books
Respiratory	25.2	26.9
Psychiatric	12.0	7.8
Digestion	7.8	12.6
ENT	7.2	5.2
Skin	6.9	9.2
Locomotor	6.9	9.6
Circulatory	6.7	6.4
Trauma	5.1	4.6
Genitourinary	4.4	5.3
Other	17.8	12.4
TOTAL	100.0	100.0

TABLE 3 :- COMPARISON OF DIAGNOSES MADE IN TEACHING
SESSIONS- 1st TERM

Groups	Number of patients seen on average	Overall average	Prescribing per patient
'1' - 3 GP tutors	5 or more per session	5.85	1.04 items
'2' - 9 GP tutors	less than 5 per session	3.84	0.77 items

TABLE 4 :-

AVERAGE NUMBER OF PATIENTS SEEN PER SESSION - 1st TERM

	GROUP 1	GROUP 2
Advice only	75 (23.7%)	232 (39.8%)
Advice plus treatment	241 (76.3%)	351 (60.2%)
TOTAL	316 (100%)	583 (100%)

χ^2 Test highly significant $P < 0.0005$

TABLE 5 :- CONSULTATIONS ENDING WITH ADVICE OR
ADVICE AND TREATMENT - 1st TERM

Consultations	GROUP 1	GROUP 2
Antibiotics prescribed	91 (28.8%)	101 (17.3%)
Antibiotics not prescribed	225 (71.2%)	482 (82.7%)
TOTAL	316 (100%)	583 (100%)

χ^2 Test highly significant $P < 0.0005$

TABLE 6 :- ANTIBIOTIC PRESCRIBING - 1st TERM

Consultations	GROUP 1	GROUP 2.....
Sedatives and tranquillisers prescribed	30 (9.5%)	21 (3.6%)
Sedatives and tranquillisers not prescribed	286 (90.5%)	562 (96.4%)
TOTAL	316 (100%)	583 (100%)

χ^2 Test highly significant $P < 0.0005$

TABLE 7 :- PRESCRIPTIONS FOR SEDATIVES AND
TRANQUILLISERS - 1st TERM

Age	MALE		FEMALE	
	Number	%	Number	%
0 - 5	36	4.8	30	4.0
6 - 15	35	4.7	26	3.5
16 - 35	80	10.7	117	15.6
36 - 65	121	16.2	149	19.9
65 +	57	7.6	98	13.0

TABLE 8 :- AGE/SEX DISTRIBUTION OF PATIENTS - 3rd TERM

Presenting symptoms	Per cent of all consultations (Morrell, 1971)	Per cent of all consultations log books
Cough	9.9	9.7
Rash	5.8	5.9
Pain in throat	5.4	4.9
Pain in abdomen	3.7	6.0
Disturbance of bowel function	3.5	4.4
Spots and sores	3.4	3.6
Pain in back	3.3	5.2
Pain in chest	3.2	5.7
Pain in head	2.9	4.1
Pain in joints	2.6	7.3
Disturbance of gastric function	2.6	3.6
Pain in ear	2.0	3.5
Others	51.7	36.1
TOTAL	100.0	100.0

TABLE 9 :- COMPARISON OF PRESENTING SYMPTOMS - 3rd TERM

System	Per cent of diagnoses (Morrell et al., 1971)	Per cent of diagnoses log books
Respiratory	25.2	19.9
Psychiatry	12.0	6.0
Digestion	7.8	10.1
E.N.T.	7.2	3.2
Skin	6.9	8.9
Locomotor	6.9	8.1
Circulatory	6.7	10.7
Trauma	5.1	4.8
Genitourinary	4.4	4.3
Other	17.8	24.0
TOTAL	100.0	100.0

TABLE 10 :- COMPARISON OF DIAGNOSES MADE IN TEACHING
SESSIONS - 3rd TERM

	Number of students	1st Term	3rd Term
Group A	130	51%	59%
Group B	21	49%	53.5%

$A_1 - A_3$ P significant at 0.01

$B_1 - B_3$ P not significant $P > 0.05$

TABLE -11 :- COMPARISON OF ALTERNATE CHOICE
QUESTIONNAIRES

	A		B	C	D
	Average number of patients seen	Prescribing per patient	Advice	Antibiotics prescribed	Sedatives and Tranquillisers prescribed
1st term	5.85	1.04	39.8%	28.8%	9.5%
3rd term	4.13	.72	30.1%	18.3%	1.6%

A - Highly significant $P < 0.01$ (Number of patients seen plus prescribing)
 B - Significant $P < 0.05$ (Advice)
 C - Significant $P < 0.05$ (Antibiotics)
 D - Highly significant $P < 0.0005$ (Sedatives and tranquillisers)

TABLE 12 :- 3 GENERAL PRACTITIONER TUTORS - COMPARISON OF 1st AND 3rd TERMS

CHAPTER VII

CHAPTER VII

COMPUTER-ASSISTED LEARNING (C.A.L.) -
DEVELOPMENT AND METHOD

In 1969 the National Council for Educational Technology (N.C.E.T.), following two years of study and consultation, recommended that the Government should establish a programme of "computer-based learning". In early 1972, the Government accepted this recommendation subject to certain modifications in the N.C.E.T. plan. The programme began on 1st January 1973 (Hooper, 1974(a) and (b)).

The central administration costs of the Committee and Directorate account for some 15% of the £2.5 million estimated total expenditure. A large scale independent evaluation of the programme and its projects is being carried out - costing 7.5% of total expenditure. The financial evaluation is being undertaken by Peat, Marwick, Mitchell & Co., Management Consultants. The Educational evaluation is being undertaken by the U.N.C.A.L. team

from the University of East Anglia (UNderstanding
Computer Assisted Learning).

The National Programme has two aims. The
first and major one is :-

"To develop and secure the assimilation of
computer-assisted and computer-managed
learning on a regular institutional basis
at reasonable cost."

To achieve the "reasonable cost" the Programme
has laid emphasis on developing transferable teaching
materials. One major way of achieving this has been
to fund inter-institutional projects, in contrast to
the Research Council method of funding individual
institutions, departments or researchers. The second
aim of the Programme is :-

"To make recommendations to appropriate
agencies in the public and private sector
concerning possible future levels and types
of investment in computer-assisted and computer-
managed learning."

The clinical decision-making project began on 1st April, 1974, and the initial development phase lasted until 31st May, 1975. This led to a second development phase which is funded until 31st December, 1977. This is the only project in medicine within the National Programme and involves the University Department of General Practice in Glasgow, the Department of Medicine at the University of Leeds and the University Department of Medicine, Royal Infirmary, Glasgow. The Department of Medicine at the Western Infirmary Glasgow, are likely to become involved.

Medical Education

The aim of much of undergraduate and post-graduate medical education is to provide the clinician with the skills needed to inform himself of a patient's problem, to identify the basis of this problem and to select and carry out an appropriate regime of treatment which will restore his patient as rapidly and completely as possible, to health. The clinician learns to deploy clinical skills of observation and communication, to use

many specialised instruments such as stethoscopes or ophthalmoscopes, and to interpret visual data such as electrocardiograms, x-rays, and blood films.

Once the student has acquired sufficient basic factual information he must learn to make use of this in the management of clinical problems. Remarkably little is known about how the clinician makes the decisions which underlie the day-to-day management of his patient. Medical training traditionally entails a long apprenticeship of teaching in clinics and wards. The student must, at some stage, become fully responsible for his patient's care if he is to acquire the necessary clinical decision-making skills: in his training he is gradually introduced to increasing levels of responsibility for patients. This learning process can create very real ethical problems.

C.A.L. in Clinical Diagnosis

The use of computer-assisted learning in teaching clinical diagnosis can be justified on a number of grounds:

- A. The student is given an individual experience of a systematic approach to clinical decision-making.

- B. A wide variety of cases can be presented for the student's assessment without his teaching being dependent on the availability of suitable cases on the wards.
- C. The patient is not exposed to unnecessary disturbance while students gain experience in making decisions and following the consequences of such decisions.
- D. Cases can be assessed comprehensively within a short time span.
- E. Limited features of a patient's problem can be tackled without extraneous details.

Clinical Decision-making Models

A series of C.A.L. models have been developed in the University of Glasgow. These become progressively more statistical and give the student an insight into the way in which the clinician uses information in the clinical situation to make decisions. The first model

is expressed in terms of a case history which is written in detail. This model has been widely used by the students and there is now a bank of over thirty case histories representing patient problems in hospital and in the community.

The second is the emergency model which is time-based. The student is given limited basic information and is able to obtain more; he suffers a time penalty comparable to the real-life situation in exchange for this information. The patient's clinical condition is dependent on his management and his physical state is altered as a consequence of the student's actions. There are now six emergency programmes representing again both hospital and community emergencies.

The third model represents a three-disease system, the data having been collected from a large number of cases. From the information available, the computer calculates the probability of any one condition being present and the clinician is able to compare his diagnostic ability with that of a panel of clinicians represented on the computer. This has been used on a very limited scale with students but will be the natural progression once the earlier models are mastered.

The Case History Model

The case history model was developed in the Department of General Practice and was used in the formal teaching course from October, 1975.

The process of decision-making in clinical medicine has been analysed (Card, 1970; Taylor, 1970; Taylor et al., 1971; De Dombal, 1975; Lancet Leader, 1975) but this analysis has been mainly confined to the process of the diagnosis of well documented and specific cases in a hospital setting. A similar application of computer-assisted learning has been described (Hoffer, 1973; Weinberg, 1973). In 1972 Taylor envisaged a method of application for computer-assisted learning involving decision-making.

A form of decision-making in general practice has been developed as an examination tool by the Royal College of General Practitioners - the Modified Essay Question (MEQ - J. Roy. Coll. Gen. Practit., 1971). In the Association for the Study for Medical Education (A.S.M.E.) booklet on the MEQ, Knox states that the uses are:-

1. As a formal assessment technique.
2. As an aid to learning :
 - (a) As an adjunct to a lecture.
 - (b) As a group discussion method.
 - (c) As a self-instruction method.
 - (d) As a self-audit.

The system of computer-assisted learning (C.A.L.) represents a development from the principles of the M.E.Q. and other additional benefits of teaching of aspects of decision-making. The lack of emphasis on decision-making in the undergraduate curriculum needs to be corrected and in a way which approximates as closely as possible to the future work of a doctor.

A number of management problems were described by the staff of the University Department of General Practice and were based on real cases known to the members of the Department. The case histories were written in detail and involved the presentation, investigation, diagnosis, treatment and long-term management of the patient. The social and psychological aspects of the illness, when

appropriate, were stressed as much as the organic component of the disease.

The management problem can be considered as consisting of a set of 'decision nodes', each of which is preceded and followed by an information branch. At each decision node there are a variety of possible actions which vary in their 'correctness'. The case histories have about ten decision nodes to each of which is given five to eight optional actions. Each decision node has to be completed before the student is allowed to proceed to the next node.

After the management problems are written they are circulated to 11 full-time general practitioners in the West of Scotland who are asked to give their priorities to each decision. A consensus of their values are taken and this forms the 'expert' value. They are also asked for comments and criticisms of the management problems.

The decisions are valued between 1 and 5, with 5 representing the most important action and something which must be done always, and 1 representing something which must never be done :-

- 5 - must do
- 4 - would do
- 3 - could do
- 2 - should not do
- 1 - must not do

The computer is programmed in such a way that the participants must always be correct with the 1 and 5. They are allowed a leeway of + or -1 on 2, 3 and 4. The values have to be re-assigned to those actions where there is a significant difference from the experts. After the second attempt feedback is provided on why a certain action should be taken. If the answers are correct the participants proceed to the next node without feedback.

Data structure has been developed which provides certain rules which the medical author must obey. These rules are non-restrictive and have the advantage that the data structure is independent of the particular management problem. Each case history can therefore be programmed quickly and clearly using Fortran language and is stored on a G.E.C. 40/80 Computer. The problems are displayed on a Computek 300 visual

display unit which is connected to the computer by a dedicated line via a G.P.O. modem.

For each management problem the students are provided with an A4 folder containing the patient's previous medical history and details of family and occupation. The student is aware of all details pertaining to the patient, and is thus in the position of the patient's family doctor.

At the end of the programme there is a short display of the incidence and prevalence of the condition in the community.

The programme on 'Hypertension' is shown as an example. The experts' value is shown beside each decision. In the first term's teaching, 1975-76, five groups of four students managed this case: the range of values assigned to each action is shown with their consensus decision (value in brackets).

The Management Problem

Mr. Ross is 42 years of age. He is a steel erector, smokes 30 cigarettes a day, and is a heavy drinker.

Mrs. Ross is 40 years old and has a part-time job as a home-help.

They have been your patients for 15 years and have a very low consultation rate. They have two children, 15 and 12 years of age. No past history of note in the family.

You have a well-equipped surgery with an ECG machine and open access to all hospital facilities.

Mr. Ross consults you one evening about a rash which you diagnose as pityriasis rosea.

You explain this condition to him, and as you have not seen him for three years you decide to check his blood pressure - this you find to be 185/125.

Do you -

- | | | | | |
|----|---|---|-----|-----|
| 1. | Carry out a full examination | 3 | 4-5 | (5) |
| 2. | Refer him to a hypertension clinic | 2 | 2-3 | (3) |
| 3. | Reassure him and say elevation probably due to excitement | 4 | 1-5 | (2) |
| 4. | Admit him to hospital | 1 | 1-2 | (2) |
| 5. | Arrange to review in one week | 5 | 2-5 | (5) |
| 6. | Lie him down for five minutes and take blood pressure again | 4 | 5 | (5) |

FEEDBACK

1. No point in full examination as no diagnosis can be made until adequate baseline readings are made.
2. Hypertension clinic not yet indicated - baseline readings and first line investigations required first.
3. Reassuring him would be reasonable action as one reading is often unreliable - but at this level likely to be significant.

4. Admitting him to hospital totally wrong at this stage - acute hospital beds are required for acute emergencies.
5. Arranging to review in one week is the treatment of choice - most experts agree that three baseline readings are required.
6. Repeating after five minutes is reasonable action but significant change unlikely. More definite follow-up required.

When you see him again in one week his blood pressure is 180/120. You carry out a full history and examination: he is asymptomatic. Which of the following findings would be compatible with hypertension in an asymptomatic man ?

- | | | | | |
|----|------------------------------------|---|-----|-----|
| 1. | RV hypertrophy | 1 | 1-2 | (1) |
| 2. | Marked AV nipping in ocular fundus | 5 | 4-5 | (5) |
| 3. | Delayed femoral pulses | 5 | 1-5 | (3) |
| 4. | Prominent carotid pulsation | 3 | 1-5 | (4) |
| 5. | Finger clubbing | 1 | 1 | (1) |

FEEDBACK

1. RV hypertrophy never occurs in systemic hypertension. Think of physiology of CVS.
2. Marked AV nipping would usually be present in significant hypertension, suggestive of long-standing condition

3. Delayed femoral pulses can be present but uncommon. Compatible with coarctation of aorta - always look for primary cause.
4. Prominent carotid pulsation is a possibility, although unlikely - more likely in hypertensive middle-aged woman.
5. Finger-clubbing would not occur - if present, think of some other cause!

The only findings on examination are hypertensive vascular changes including marked AV nipping in the ocular fundus. There are no haemorrhages, exudates or papilloedema. Do you:

- | | | | | |
|----|--------------------------------|---|-----|-----|
| 1. | Sedate him | 2 | 1-4 | (3) |
| 2. | Begin antihypertensive therapy | 1 | 2-5 | (4) |
| 3. | Insist that he stays off work | 2 | 1-4 | (2) |
| 4. | Begin further investigation | 4 | 3-5 | (5) |
| 5. | Review in further week | 5 | 2-5 | (4) |
| 6. | Refer to hypertension clinic | 2 | 2-5 | (3) |

FEEDBACK

1. Sedation not indicated at present - probable that anxiety would be normal reaction to stress.
2. Antihypertensive therapy absolutely contraindicated - no baseline readings and no investigations.
3. No indication to stay off work at this stage - patient has long-standing condition and has been at work.

4. Further investigation definitely indicated, but not until you have adequate baseline readings.
5. Reviewing in one week would be the action of choice - adequate baseline readings are required.
6. Referring to hypertension clinic is not yet indicated - required only for problem cases.

You decide he is to continue at work while you carry out the investigations. You see him weekly and check his blood pressure, lying and standing.

Which investigations would you carry out in a man of this age ?

- | | | | | |
|----|---|---|-----|-----|
| 1. | ECG and chest x-ray | 5 | 3-5 | (5) |
| 2. | Urinalysis and MSU | 4 | 5 | (5) |
| 3. | FBC and ESR | 3 | 3-5 | (4) |
| 4. | Urea and electrolytes | 4 | 4-5 | (5) |
| 5. | LFTs | 2 | 1-5 | (2) |
| 6. | IVP | 4 | 2-5 | (4) |
| 7. | Serum calcium and phosphate | 2 | 1-5 | (3) |
| 8. | Aortogram | 2 | 1-3 | (2) |
| 9. | 24-hour urine vanillylmandelic acid (VMA) | 2 | 1-5 | (3) |

FEEDBACK

1. An absolute necessity to assess cardiac size and status. Look for any signs of pulmonary oedema.
2. MSU and urinalysis indicated as they may provide some useful information - look for protein, sugar, etc.

3. FBC and ESR are good to know - but what is the relevance ?
4. Urea and electrolytes important in assessing renal function as well as potassium and bi-carbonate status.
5. LFT's could be argued to have some indication - but not much relevance to this problem.
6. IVP probably indicated but must be hypertensive IVP - so require films at early stage plus films at regular intervals.
7. Serum calcium and phosphate valueless - they have absolutely no indication in this problem.
8. Aortogram is a complicated hospital investigation with no indication at present.
9. 24-hour urine VMA is a high-powered hospital investigation - no indication at present.

His blood pressure remains at 180/120 and all the appropriate investigations are negative.

Do you :

- | | | | | |
|----|---|---|-----|-----|
| 1. | Refer to hospital for further investigation | 3 | 1-5 | (2) |
| 2. | Begin treatment with Mr. Ross staying at work | 3 | 1 | (1) |
| 3. | Begin treatment with Mr. Ross staying off work until stabilised | 5 | 1-5 | (4) |
| 4. | Advise change of occupation and then make further BP checks | 2 | 3-4 | (4) |
| 5. | Leave untreated as he is asymptomatic | 1 | 1 | (1) |

FEEDBACK

1. Referring to hospital for further investigation has more relevance now but a trial of therapy seems preferable.
2. To begin treatment with him at work potentially dangerous with his occupation - but some people would do this.
3. Beginning treatment with Mr. Ross staying off work until stabilised is the action of choice in view of his occupation.
4. Advise him to change occupation then doing further checks of BP completely impractical until treatment initiated.
5. Leaving untreated completely unjustified - studies show dangerous complications if untreated, e.g. renal failure, CVA, IHD

You decide that Mr. Ross should stay off work in the meantime and you start treatment. Would you begin :

- | | | | | |
|----|----------------------------|---|-----|-----|
| 1. | Methyldopa 125 mg b.d. | 5 | 4-5 | (5) |
| 2. | Methyldopa 250 mg q.i.d. | 4 | 1-4 | (2) |
| 3. | Bethanidine 5 mg b.d. | 5 | 3-5 | (5) |
| 4. | Bethanidine 10 mg q.i.d. | 3 | 1-4 | (4) |
| 5. | Chlorothiazide 0.5 g daily | 4 | 3-5 | (3) |
| 6. | Propranolol 40 mg b.d. | 4 | 2-4 | (4) |

FEEDBACK

1. Methyldopa is a drug of choice in b.d. dose - must begin with small dose to see patient's response, then build up dose slowly.
2. 250 mg methyldopa q.i.d. is good action, but patient could be sensitive to drug and so this could be dangerous.
3. Bethanidine is a drug of choice in b.d. dose - must begin with small dose to see patient's response, then build up dose slowly.
4. 10 mg bethanidine q.i.d. is good action but patient could be sensitive to drug and so this could be dangerous.
5. Chlorothiazide has a hypotensive effect but is of limited value at this level of hypertension.
6. Propranolol good action but considerable increase in dose may be required, and can precipitate cardiac failure.

Mr. Ross is stabilised over the next month and at that time is on bethanidine 10 mg q.i.d.

You have discussed with him the question of returning to work. The next evening you receive an urgent call from Mrs. Ross saying that her husband has 'passed out' four times.

The most likely diagnosis is :

1.	Epilepsy	2	1-2	(1)
2.	Glioma	2	1-2	(1)
3.	Vasovagal attack	4	2-4	(3)
4.	Postural hypotension	5	5	(5)
5.	Hypertensive encephalopathy	2	1-3	(2)
6.	Functional due to anxiety state	4	1-4	(3)

FEEDBACK

1. Epilepsy is most unlikely. History not suggestive - to begin at this age is uncommon.
2. Glioma is a rarity - does not present as acute situation. Nothing to suggest this.
3. Vasovagal attack is possibility but uncommon in a middle-aged man - common in young women.
4. Postural hypotension is most likely diagnosis especially when being treated for first time with hypotensive agents.
5. Hypertensive encephalopathy unlikely - uncommon condition. Baseline readings would suggest this is not a possibility.
6. Functional disease caused by anxiety state likely as disease will change lifestyle - but history does not make this very likely.

His blood pressure when seen was 90/60 and he fainted when he stood up quickly.

Over the next two weeks he stabilised on 10 mg t.i.d.
of bethanidine. Would you :

- | | | | | |
|----|--|---|-----|-----|
| 1. | Allow him to return to work now that his condition is stable | 3 | 1-2 | (1) |
| 2. | Allow him to return to work provided he only works on ground | 5 | 4-5 | (5) |
| 3. | Suggest Government Retraining Scheme | 4 | 2-5 | (4) |
| 4. | Under no circumstances return to work even if it means unemployment | 2 | 1-5 | (3) |
| 5. | Advise him to stop smoking. | 4 | 5 | (5) |
| 6. | Advise him to stop drinking | 2 | 3-5 | (4) |
| 7. | Allow him back to work - but accept less than optimal control thus reducing hypotensive episodes | 2 | 1-5 | (2) |

FEEDBACK

1. Allowing him to return to work could be done, but would involve considerable risk for steel erector with hypotension.
2. Treatment of choice is to allow him to return to work but only on ground - few risks. Employers should be sympathetic.
3. Retraining is a reasonable action but is an expensive course with no definite job at end.
4. Not to let him return at all is rather authoritarian - effect of unemployment could be worse than original disease.
5. Stopping smoking is a good idea, but is it practical ? More risk of heart disease in smokers.

6. Stopping him drinking reasonable action but impractical - patient will be less co-operative if you insist.
7. There is no point in treating unless optimal control is achieved - remember complications of hypertension.

Mr. Ross was very resentful and required a great deal of counselling. Eventually he agreed to a Retraining Course and after this he obtained a clerical job.

In his long-term care you arrange to see him monthly.

At each visit would you :

- | | | | | |
|----|---|---|-----|-----|
| 1. | Check his blood pressure when sitting | 4 | 2-5 | (4) |
| 2. | Check his blood pressure both lying and standing | 5 | 5 | (5) |
| 3. | Ask about symptoms and any possible drug side-effects | 4 | 3-5 | (5) |
| 4. | Discuss his long-term care with him | 3 | 2-4 | (2) |
| 5. | Carry out full CVS examination | 2 | 2-4 | (3) |
| 6. | Check an ECG for early signs of LV hypertrophy | 2 | 2-3 | (2) |
| 7. | Check renal function | 3 | 2-4 | (3) |

FEEDBACK

1. Taking his blood pressure sitting is a good action - but remember he does not sit all day. What about BP standing?

2. Action of choice is to take BP both standing and lying - gives best parameter of control.
3. Asking about symptoms and any drug side-effects should be done at each visit - he will often say he is 'fine' when he is not.
4. Discussing long-term care should be done often, but not necessarily mentioned at every visit.
5. CVS - impractical at each visit - could give cardiac neurosis. Depending on control need baselines each three to six months.
6. Impractical to do ECG at each visit - also ECG is a poor indicator of early LV hypertrophy.
7. Impractical to check renal function at every visit - but comprehensive renal assessment needed in periodic reviews.

Over the next year Mr. Ross's condition is satisfactory, his blood pressure is well controlled, he is free of all side-effects and his psychological outlook is good.

Mrs. Ross becomes a frequent surgery attender, her main complaints being headaches and dyspepsia. The headache is a constant tight band round her head. She sleeps badly, she frequently has dyspepsia - this has no relationship to the time of day and nothing relieves it.

Which investigations would you like to arrange :

1.	Barium meal	2	1-4	(2)
2.	Skull x-ray	2	1-3	(2)
3.	X-ray of sinuses	3	2-3	(2)
4.	EEG	1	1-2	(1)
5.	Check liver function tests	2	1-4	(2)
6.	None at present	5	5	(5)

FEEDBACK

1. Barium meal not indicated in first instance - almost certainly an anxiety state - counselling more important.
2. Skull x-ray not indicated at first - would increase already anxious situation - counselling more important.
3. X-ray of sinuses not indicated at first - but would be the least inappropriate of all the investigations.
4. EEG completely wrong - no indication - patient will become more anxious thinking something seriously wrong.
5. Liver function tests would be a pointless exercise - would almost certainly be normal.
6. Doing nothing at present would be the most sensible course of action.

The most likely diagnosis is :

1.	Duodenal ulcer	3	2-4	(3)
2.	Hypertension	2	2-3	(2)
3.	Sinusitis	3	2-3	(2)
4.	Anxiety state	5	5	(5)
5.	Intracranial neoplasm	1	1-3	(2)

FEEDBACK

1. Duodenal ulcer is a possibility but unlikely - dyspepsia has no relation to time of day and nothing relieves it.
2. Hypertension is very unlikely but worth checking her blood pressure - will be aware of husband's condition.
3. Sinusitis is a possibility - some features in history are suggestive but most are against.
4. Anxiety state is most likely diagnosis, especially with all that has happened to family in last year.
5. CNS signs would be present if headache a symptom. Nothing to suggest intracranial neoplasm - general practitioner sees one every ten years.

Mrs Ross is suffering from an anxiety state because of a marked drop in income. Strict budgeting has become a necessity for the first time in years.

No drugs are necessary, but psychotherapy is required: talk about Mr. Ross and what might have happened if the condition had not been detected.

Give her the prognosis now and explain that the outlook for the family would have been worse if it had not been found.

You should find that extended interviews with Mrs. Ross have a good effect.

Summary Information at close of Programme

Fry (1975(a) and (b)) in his practice during a twenty year period diagnosed 704 hypertensives from a population at risk of 5,500.

The diagnosis was made when the diastolic BP was 100 mm Hg or more in a sitting position.

Of the total complications and deaths (418), half were cardiovascular and one-third were strokes.

Hawthorne (1975) in his epidemiological study in Renfrew found 15.6 per cent of the 3,001 screened had a diastolic over 100.

These were males and females between 45 and 64 years of age with about 54 per cent female.

When these people were re-screened at six weeks, the incidence fell to five per cent. These cases were not known to their own doctors.

DISCUSSION

A valuable teaching situation is created when students work as a group and can discuss the action to be taken at each decision node: the members of the group are thus actively involved in their own instruction. The time taken for each case varies with the amount of discussion time the participants require and, although time was not constrained, each programme took over an hour to complete.

In the example given the consensus of undergraduate values came closer to the experts' opinion than did any one individual group. The range of students' values showed a wide variation, especially in the management aspects of the case.

Each problem can be divided into two distinct areas:

1. The management of the patient.
2. Other aspects such as investigation, diagnosis, and treatment.

The consensus of student opinion was furthest from the experts in the 'management' aspects (Table 1).

These results suggest that undergraduate teaching in general practice needs to put more emphasis on all areas of patient management, including the social and psychological aspects. Investigation and specific treatment are areas in which students appear more competent.

In computer-assisted learning the participants are able to appreciate and discuss the grey areas of management. They are also made aware of the differences in content and approach between the care of the patient in hospital and general practice.

One potential benefit of this teaching method is that the programme can be reproduced as a computer printout with a scoring system which can give a score expressed for individual aspects of each case problem or as a percentage of the expert's score. This can therefore involve assessment of the teaching given as well as of the individual student's ability.

Computer-assisted learning as an educational aid appears to have the following advantages over the M.E.Q.:

1. It is based on a proven educational model which has been used successfully outside medicine. If the first choice is not correct then an opportunity is given to think again. This is then followed by positive feedback which reinforces the learning process (Skinner, 1954).
2. As choice of action can only be made after the options have been discussed fully by the group, each member of the group must state his priorities and give reasons for his decisions. An active learning process thus takes place throughout the exercise.
3. There is no time delay between the choice of action being taken and the feedback on its correctness. The participants can become engrossed in the problem without the distraction of gaps in continuity.

4. It is impossible to retrace in the light of information gained later: when a decision has been taken it cannot be altered. However, the student can obtain a review of any part or all of the previous history.
5. Each decision node must be completed before proceeding to the next. Opinion can be biased if the next part of the problem is known.
6. Computer-assisted learning asks for priorities and includes actions which must not be taken or considered in addition to those that are correct.

The M.E.Q. however, has the following advantages:

1. Participants have to formulate their own responses rather than select from a 'printed text'.
2. It is more cost effective as it does not involve large capital outlays.
3. It is more flexible. It can be used anywhere, whereas the computer facilities are only available in a few centres.

The Emergency Model

This model has been used on a much more limited scale with students; its early development was hospital-based although general practice cases are also available. This model allows the student to 'manage' a patient at home with an emergency such as an acute myocardial infarction or post-partum haemorrhage and he can see the results of his treatment on the patient's clinical condition.

The case is introduced by a number of frames, introducing the background, summarising the patient's condition and the actions already initiated.

The student is then given a choice of systems and the digital clock is set to zero. The model has a branching tree structure and within each branch the student can be given information, obtain results, can diagnose and can treat. He suffers a time penalty in exchange for information and this is added to his thinking time. The student suffers the consequences of his actions: the vital signs are in a dynamic state and they change with the passage of time and the student's actions.

This model provides a critical situation in which rapid decisions are required. The programme does not overtly teach but attempts to provide the student with a realistic experience. A series of single-character commands are used at the terminal :-

- V - display the vital signs
- T - treat this system
- I - display the information frame for this system.
- L - leave this system to treat another
- G - display graphs of the vital sign changes
- R - display the results.
- H - display case history. Allows student to review all the information.

When the case histories are prepared the treatments available are only applicable to that particular system and the student has to return to the main trunk before progressing to other treatments. Some modifications are being adapted at present to allow more flexibility.

The majority of computer-assisted learning techniques have been carried out in disciplines where the subject matter expert is already versed in computer techniques and can often write their teaching material or models in a computer or author language. This is a slow process and at Harvard Medical School where the resources are extensive by British standards; it can take one year to develop a new programme (Farquhar, 1977).

An early decision was made in Glasgow that with the resources that were available, the rapid creation of a library of realistic and useful cases was of maximum importance. This has resulted in a highly structured format for creating the case material. This in turn leads to restrictions for the 'author' of the material, but this has to be considered against the cost-effectiveness and educational impact of a library of material rather than a small number of more sophisticated tools.

One advantage of the C.A.L. system in Glasgow is the ease with which the medical author writes the case. This can be done in less than ten hours for the case history model and slightly longer with the emergency model.

Values	Management (per cent)	Others (per cent)
1 and 5	81	92
2,3 and 4	63	75

TABLE 1 :- CONSENSUS SCORES FOR DECISIONS 1 AND 5
('BLACK AND WHITE' AREAS) AND 2,3 AND 4
('GREY' AREAS).

REGARD EXPERTS AS 100%

CHAPTER VIII

CHAPTER VIII

COMPUTER-ASSISTED LEARNING - EVALUATION

Computer-assisted learning was introduced as a formal part of the general practice course in the penultimate year in October, 1975. The students in the old curriculum had nine afternoons in general practice teaching. Each general practitioner tutor had a group of four students and the content of the course related to the detailed management of serious or chronic disease in general practice. During the first and second terms 1975-76 each group of students attended once for instruction in computer-assisted learning. In the Whitsun term of 1975-76 in the penultimate year of the new curriculum, the students had twelve afternoons in general practice teaching and each group attended once for computer-assisted learning.

Developing methods of evaluation

Computer-assisted learning was an innovation in undergraduate medical education and it was important to devise methods of evaluation which could address

both a local and a national audience. For this reason an illuminative evaluation was carried out for the first year of the project with a formative evaluation in first term and a summative evaluation at the end of second term. As described in the previous chapter, this project is also being evaluated by an external source.

FORMATIVE AND ILLUMINATIVE EVALUATION

Introduction

A structured pre- and post-interview (Appendix 7) was conducted with each of the twenty-one groups of students who attended for instruction in the first term. The pre-interview attempted to determine the students' standards of progress in their medical course to date. The interview also included their impressions of the content and nature of the medical course and any conceptions they might have of C.A.L. The post-interview which was recorded on tape, attempted to determine their attitudes to this method of teaching. The students were observed throughout the computer-assisted teaching during the first year.

Results

Almost all students in the pre-interview felt that the most important attribute of a medical mind was a good memory. Being able to reproduce facts at examination seemed to be their main concern. They felt that a doctor should have an analytical mind, should be able to talk to people, to show empathy towards patients and colleagues, and to be sympathetic and aware of peoples' problems.

The students clearly preferred the clinical part of their course and said that they had found the pre-clinical years of their course difficult. They thought that they learned more with enjoyable teaching methods and with better teachers.

In the first two or three weeks of term there was a marked feeling of antagonism to the concept of C.A.L. but this was noticably absent later in the term as the views and opinions of those students who had had this instruction filtered through to the rest of the class. None of the students, however, enthused in their pre-interviews. They wanted to make up their own minds about the value of this new teaching method.

In the post-interview all the students except one were enthusiastic about this form of teaching and were keen to have further such tuition. They felt that this system forced them to make decisions about the management of the case which only came after a great deal of discussion. The educational value of the group discussion at the visual display unit made the exercise much more worthwhile as a teaching and learning situation.

The students felt they had all been able to take part in the process of decision-making and the machine enabled them to manage a case: a situation they felt was valuable at their stage. The design of the programme made them think, and forced them into conclusions so that they learned in a way which is much less possible from a textbook or in a clinic.

The view was expressed that the programme allowed the group of students to participate actively as in a team and that this was instructive and would give them more confidence in decision-making in the future. Only a few students had previously had any experience of decision-making. Medical teaching tends to be in separate compartments and the students felt that the

management problems brought together a variety of different disciplines seen from the general practice point of view. In the early part of the term the students thought that the programme did not provide enough feedback, and this was changed accordingly. They also suggested some improvements in the scoring system and this was also incorporated.

A knowledge of the more scientific aspects of medicine, such as the choice of the appropriate drug and its dosage is easily measured, but the students felt that they had learned something which was more difficult to describe - their attitudinal values. In the programme on carcinoma of the lung for example, the student had to decide what they would tell the patient and his family about the diagnosis, how to deal with the terminal illness and how the doctor should cope with the family after the death of the patient. One surprising comment was made - that the machine seemed to be able to bring out personal feelings. The students felt that they were aware of the total situation.

There was some competition between students within the same group but the system potentiated the benefits of social interaction and small group discussion. A few students made the comment that this method of teaching had no relevance to passing an examination. The students said that their main aim at University was to pass examinations; the art of being a good doctor was to be considered at a later date. They felt that this form of teaching should be more freely available and they should have more immediate access to it.

Students' comments

- * "Had to solve it ourselves - in the clinic the problem is already solved."
- * "Taught us to think and to think in terms of priorities."
- * "Tired by the end of the programme."

- * "In the clinic there was an art in getting to the right part of the bed so that you were not asked any questions."
- * "Clinics often made us very lazy."
- * "Round a bed 90% of us say nothing and only speak when we know we are correct."
- * "Drugs are so easy to quantify in increasing our knowledge but attitudes are difficult. Our attitudes change with doing this programme."
- * "Gave us confidence. Achieved something."
- * "I am anything but a machine-minded person and yet I enjoyed this."

Discussion

The students participating in C.A.L. have to think critically and systematically, to weigh up

the value of different actions and are confronted with a series of problems each one of which has to be solved. In C.A.L. the attitudinal values and the grey areas of medicine are stressed perhaps more than in other parts of the undergraduate course. The students felt that the management problems made them think of and discuss clinical decisions: most thought this was seldom possible in more orthodox teaching in that it formed a useful complement to bedside teaching.

Why do students enjoy this experience ? A combination of some of the following factors may contribute to this. Firstly the students are given an actual case history in sufficient detail that they can identify with it and initiate the management of the patient over a significant time scale. Secondly, they have the benefits of social interaction with their peers which is one way in which they can develop intellectual independence. Thirdly the teaching is in small groups; a method which is recognised as one of the most important methods of teaching (Walton, 1973). Fourthly, the students in C.A.L. are given an opportunity to test

their knowledge and if this is lacking to learn from their peers. They can hear other students' opinions. The undergraduate curriculum is normally concerned with the acquirement of knowledge whereas the work of a doctor is concerned with applying this knowledge to the 'real life' situation. C.A.L. is an attempt to compress this teaching period and to give the student an opportunity of applying his knowledge to a 'real life' situation.

It may be felt that conventional teaching can deal as well with similar areas of learning but it can be difficult to restrict the teaching to one individual topic. In conventional teaching it is difficult to assess each course of action separately; one tends to scan and make a choice. The case study model has a systematic approach and all students take part; the latter is more difficult in conventional teaching when the teacher can tend to play the dominant role.

The initial publications of this work (Murray, et al., 1976(a) and (b)) brought two criticisms.

Simpson (1976) wrote "It is sad to see no assessment of whether the programme does what it is supposed to do. Do students gain anything from it in terms of knowledge, problem-solving skills, or attitudinal change? All we are offered is the information that the students grew to like using the programme. That so many students had found no other opportunity to attempt to think of and discuss clinical decisions, is not so much a vindication of the technique as an indictment of the clinical curriculum within which the students worked. I hope in later publications that Dr. Murray and his colleagues can demonstrate the true benefits of a potentially valuable technique." An Editorial appeared in the students' magazine Surgo (1976) under the heading 'Tin brains and Medical Education' - "Innovations in medical education are always controversial. The combination of the uncritical evangelism of the innovators with the basically conservative attitudes which most other medical students and teachers will invariably produce, leads to an academic punch-up of some sort. This innovation however, seems particularly worth criticising. It is still at an early stage of its development and

might yet be stopped. Any clinical teacher who does not encourage his students to think of clinical problems and of the priorities of management, has something very seriously wrong with him; I have met few consultants who were reluctant to provide their own sort of instant feedback which is surely no less valuable than the computers. Yet if such a problem were found the solution would surely be to amend the clinical teaching accordingly. It is certainly not self-evident that the deficit can be made up by the introduction of this type of computer-assisted learning which is really little more than an expensively impressive presentation of the problem on paper."

No attempt was made to answer either of these criticisms as the project was at an early stage and a number of points made by both were in fact correct, but many of the claims about conventional teaching cannot be substantiated. The innovation of any high technology system invariably leads to criticism and the innovators felt that they should continue to seek objective proof of the value of this innovation. This proof has since been produced in further publications (Murray et al., 1977(a); Murray et al., 1977(b)).

In the second term of the year (1975/76) the format was slightly different from the first. A brief introduction was given to C.A.L. and the students were then left to complete their first problem. A discussion of the case problems with criticisms and suggestions was held during a 'coffee break'. The students were then informed that they were free either to go or to stay and complete a second problem; without exception all remained and completed a second problem. The attendance was high throughout both terms and the students felt that this facility should be available to them on a more regular basis. Their criticisms were few and their comments were similar to their classmates in the previous term. There is no doubt that this method of instruction at the initial learning experience has a novelty value but the enthusiasm was maintained throughout the academic year.

SUMMATIVE EVALUATION

Introduction

Much of the skill of a doctor relates to the clinician's ability to confront and solve a clinical

problem, and the medical student must develop these skills if he is to make adequate use of the factual information acquired by him during his formative undergraduate years. Card (1975) has objections to the traditional methods of teaching. Firstly, each doctor has to train anew to acquire his whole diagnostic programme which can be extremely skilful but which dies with him. Secondly, there is suspicion but as yet no proof, that the traditional way may not always be the most efficient way.

Newall and Simon (1972) have stated that man is an information processing system when he is solving problems but their approach to decision-making is complicated and would be difficult to apply in a medical context. Aitchison (1970) has described the application of statistical theory to the teaching of clinical decision-making. However in the later publication (1974) he stated that the recognition of numerical patterns is unlikely to be acquired very easily by clinicians.

When an experienced clinician is presented with a diagnostic problem he formulates a number of differential diagnoses and intuitively makes a mental estimate of the probabilities of each. He will later eliminate some possible diagnoses from his differential list as he collects more information and thus threads his way through the diagnostic search tree (Card, 1970). In the more traditional forms of clinical teaching emphasis is placed on the most probable course of action and on the action which must be taken. There is less systematic emphasis on actions which are contraindicated and which could be harmful, or on the possibilities which can be eliminated from the decision-making process. An awareness of these is one of the skills of the experienced clinician.

Method

Two groups of six students from the fourth year of the five year medical curriculum, were asked to participate in this method of teaching. They had not previously been exposed to C.A.L. Each group completed

two case problems during an afternoon session and attended for this instruction on three alternate weeks, completing in all six management programmes. The programmes chosen related to patients with asthma, hypertension, coronary thrombosis, pernicious anaemia and myxoedema, diabetes mellitus and backache. Each programme had been valued by a panel of 'experts' and a consensus of their values represented a score of 100%. One of the purposes of the study was to determine whether exposure to C.A.L. improved the students' decision-making, especially in decisions considered mandatory by the 'experts'.

The twelve students were given a multiple choice questionnaire related to the factual content in the programmes one week before commencing the instruction and a scrambled version of the same questionnaire two weeks after completing the last case history (Appendices 8 and 9). A group of ten students from the same medical year who had not previously been exposed to C.A.L. formed a control group on both occasions.

Following the teaching the study group of students were asked to write a C.A.L. case history centred around a patient presenting in general practice. Pairs of students wrote their own C.A.L. problem and assigned values to their alternative actions at each decision point: their case histories were then sent to the panel of 'experts' who were asked for their own values and comments. Two of the six problems selected were by chance also included in the topic teaching course during the period of the study. This course was attended by both the study and control group of students.

The factual knowledge was assessed from the multiple choice questionnaire and the decision-making ability from a print-out of the students' gradings at each decision node in the six programmes.

Results

The student scores in the mandatory decisions is compared with the 'experts' in Tables 1 to 3. The students become more definite in their decision-making

and there is a marked improvement in decisions having a score of "1".

The students scored significantly higher in the multiple choice questionnaire following instruction in C.A.L., whereas the control group showed no significant improvement (Table 4). Table 5 shows that the students' decision-making ability also improved following C.A.L. instruction, a finding that was reinforced by their ability to write a C.A.L. problem and to assign values to optional actions which compared well with those of the experts (Table 6).

Discussion

In the traditional forms of clinical teaching greater emphasis is placed on actions which must be done than on actions which are positively harmful. The students were unaware of the latter at the beginning of the study but became much more aware of these decisions as they worked through the programmes. Their '5' decisions varied only slightly and this is understandable since their factual knowledge would not be likely to vary

greatly in an interval of two weeks. There was a marked fall in the number of '2' and '4' decisions used showing that the students became more definite in their decision-making. The number of '3' decisions rose slightly.

The order in which the problems were given to the students was selected by the computer programmer and both groups did the units in the same order. It was felt that the results could be explained as a problem effect; a further six students at the same stage in the curriculum and who had not previously been exposed to C.A.L. then completed the six programmes in the reverse order. The trend towards an improvement in the "1" decisions was even more marked; from 64% to 100%. On this occasion there was a slight fall in the number of correct decisions '5' from 79% to 74%.

It can be argued that this learning experience will enable the student to make better use of the information available to him in the clinical situation and it will alert him to the dangers of its misuse. Studies in computer-assisted diagnosis (Taylor et al., 1971; De Dombal et al., 1972) had suggested that the decision-

making of clinicians appeared to improve to a marked extent with practice. This was thought to be due to the doctor gaining an insight into his diagnostic mechanisms. By being introduced to decision-making, the student is thus prepared for more complicated statistical models. Emmerson (1975) states that doctors do not readily accept a numerate approach to clinical decision-making. One reason for this is that the intellectual reward of medicine lies in making independent judgements and doctors are less comfortable when they have to define precisely the data on which their judgements are based. C.A.L. is an attempt to introduce the students to these complex processes.

Nossal (1976) has stated that medical educators must be much bolder in harnessing the computer as an aid to medical decision-making. The ultimate goal of medical education is to enable the student to solve clinical problems (Palva, 1974) and while factual knowledge is relatively easy to acquire, decision-making is a skill which the clinician develops with experience. C.A.L. seems to have the ability to accelerate this

experience-taught process by providing the student with both the factual information and the problem situations with which he will be confronted as a doctor. This study has shown that the student's decision-making ability improves as he works through a number of problem situations.

The students who were instructed by C.A.L. improved significantly in their factual knowledge. It is perhaps not surprising that this group did better than the control in the post-test, but the degree of improvement was more marked than expected. A comparison between the pre- and post-tests of both groups shows that the improvement which occurred in the control group was in the identification of correct decisions. The study group also improved in this area but additionally showed an improvement in identifying incorrect decisions.

In medical education there is a move towards self-directed learning often in small groups. Harden et al. (1969) has shown that students taught with tape slide presentations significantly improved their position in class. Graves and Ingersoll (1964) divided

their anatomy class into two groups for traditional and self-directing learning. Their instruction was appropriate to these titles and the mean marks of the experimental group was significantly higher than that of the traditional group. Dressel and Thomson (1973) had expressed their opinion that the use of small groups for independent study might for some students produce a climate more conducive to learning than is the current practice of individual independence. Walton (1973) recognises small group teaching as one of the most important methods of instruction. Harden et al. (1975) states that group independent study may have an important role especially at a time when increasing emphasis is being placed on team work in the management and treatment of patients. A small group approach is characteristic of C.A.L. since the students attend in a group of four, and reach a consensus view after adequate discussion.

The student whose knowledge is inaccurate or incomplete can learn from his peers. Such interchange of knowledge is of as much benefit to the student who knows the answer because he has to formulate the principle

and in doing so clarifies it further for the recipient. The students are provided with two types of decisions: those which are mandatory and either appropriate or inappropriate such as to prescribe a drug, and those for which several possible actions are possible and which lead the students to speculate on the efficacy of the different possibilities. The student's ability to make decisions improved with C.A.L. and the 'real' situation created by C.A.L. helped them remember the content of the programme.

The 'teach-back' case histories written by the students were in themselves a learning experience and were of a high standard considering that the student had no formal tuition in general practice. It was interesting to note that although no guidance had been given about content, four of the six cases were based on common conditions, none of which had been demonstrated to them previously in C.A.L.

The computer was used in the late sixties in the U.S.A. (Hoffer et al., 1975) as an alternative to more orthodox teaching methods but opinions varied as

to its value. The skills of problem-solving and decision-making which are more difficult to define and thus to teach, rely on the student having an adequate factual data base. The students' traditional clinical and lecture teaching provides the factual knowledge while the computer seems to have an important potential in helping the student to learn about decision-making. This dual approach seems to have a significant value.

THE EMERGENCY MODEL

This model has been used on a more limited scale with students but it is popular. The student works individually and the dynamic interactive nature makes him become very involved in the management. The student is upset if the patient 'dies' but the patient can be immediately restored and the student can try again, modifying his strategy.

VALIDATION OF SYSTEM

There is a reasonable limitation to the amount of responsibility that can be given to a student

in terms of independent decision-making. A teacher cannot knowingly, allow a student to make an error with a patient and then watch the consequences of that error; the student must accept the word of his instructor that many actions the student contemplates would be hazardous or inappropriate and that others would do better.

While the need for these limitations is obvious, it is difficult to achieve competence in clinical problem-solving through reading or observation alone. Supervised practice in clinical problem-solving is the best way to develop clinical judgement. This is the most exciting implication of C.A.L. and a trial was arranged to determine the effects of experience on problem-solving.

Five doctors who had just graduated and were about to commence their first residency in clinical medicine, completed two hospital C.A.L. units on paper in a similar way to the 'experts'. They had not previously been exposed to C.A.L. After a six month period, after they had finished their practical experience in clinical medicine, they completed a further two problems on paper. All five doctors completed the same four problems, allocated in a random manner. The results are shown in Table 7 and show a similar, though less

marked trend to teaching with C.A.L. Perhaps the experience which C.A.L. tends to compress is longer than would be gained in a six month period.

This study tends to confirm the value of the system, showing that with modern technology postgraduate experience can be brought into the undergraduate curriculum.

COST

No evaluation of a highly technological discipline would be completed without considering cost-benefit. With the high cost of training a doctor - £25,000 (U.G.C., 1975) - C.A.L. is in a favourable position to be cost competitive in this discipline. Fielden (1977) has carried out a financial evaluation of the project and has shown that the cost is between £3 and £4 per student terminal hour. In the work described, four students in a group make this cost considerably less. This compares with 60 pence per student, for an Arts lecture and £1.50p. per student, for a Science lecture. Hooper (1977) does not think that this system will save other costs but that these will be add-on costs. He envisaged that the expertise developed

will be maintained in a few centres (about five of the present thirty projects) and that materials developed will be transferred to other centres where the programmes will run on computers already available.

CONCLUSIONS

The present project could not have ended at a worse time with the restriction of public spending. However, although no definite decision has been made, the project in Glasgow is likely to be continued.

Hooper (1977) considers that the dissemination of material is evaluation, and the medical project has been successful in this sphere. The material developed is to be used in Dundee and Leeds, while enquiries have been received from Birmingham, the Royal Free Hospital in London, Leicester, and Southampton. The system has been demonstrated to Memorial University, St. John's, Newfoundland, and they are to follow the concepts. The University of Otago, New Zealand, have asked to buy the material and this is at present being considered.

A considerable number of visitors from all parts of the United Kingdom and other parts of the world, have seen the system and are impressed with its potential.

The external evaluators (Kemmis, 1977) feel that one of the major uses of C.A.L. will be in medical teaching. Over four hundred students at the University of Glasgow have now taken part in this instruction and almost all are keen to have further such instruction. The programme has the potential for combining a learning situation with an objective evaluation of skills and attitudes. The programme on the visual display unit provides a stimulus for discussion. The students' ratings are compared with those of the 'expert' and if the group is at variance, quick and relevant 'feedback' is given which reinforces the learning process.

All students	1st Problem	6th Problem
Decision '5'	73%	79%
Decision '1'	71%	91%

TABLE 1 :- MANDATORY DECISIONS: COMPARING 1st AND 6th PROBLEMS.

REGARD 'EXPERTS' AS 100%

All students	2nd Problem	5th Problem
Decision '5'	62%	63%
Decision '1'	67%	83%

TABLE 2 :- MANDATORY DECISIONS: COMPARING 2nd AND 5th PROBLEMS.

REGARD 'EXPERTS' AS 100%

All Students	Problems 1 & 2	Problems 5 & 6
Decision '5'	67%	71%
Decision '1'	69%	87%

TABLE 3 :- MANDATORY DECISIONS: COMPARING 1st TWO PROBLEMS AND LAST TWO PROBLEMS.

REGARD 'EXPERTS' AS 100%

	Pre-Test (1)	Post-Test (2).....
Group A C.A.L. students (12)	36%	69%
Group B Control students (10)	36%	42%.....

$A_1 - A_2$ Very significant difference $P < 0.0005$ - 1 tail test

$B_1 - B_2$ No significant difference $P > 0.05$ - 1 tail test

$A_1 - B_1$ No significant difference $P > 0.05$ - 2 tail test

$A_2 - B_2$ Very significant difference $P < 0.0001$ - 2 tail test

TABLE 4 :- MULTIPLE CHOICE QUESTIONNAIRE

	1st Problem	6th Problem.....
Agree	42 (34.4%)	59 (59.0%)
Differ by 1	52 (42.6%)	29 (29.0%)
Differ by more than 1	28 (23.0%)	12 (12.0%)
.....	122 (100%)	100 (100%).....

TABLE 5 :- COMPARISON OF STUDENTS' AND EXPERTS' DECISIONS (CASES IN C.A.L.)

Agree	76	(57.6%)
Differ by 1	35	(26.5%)
Differ by more than 1	21	(15.9%)
	132	(100%)

TABLE 6 :- COMPARISON OF STUDENTS' AND EXPERTS' DECISIONS (STUDENTS CASE HISTORIES)

	Decision 5	Decision 1
Before residency (six months)	70%	46%
After residency (six months)	57%	57%

Number of '5' decisions - 288

Number of '1' decisions - 288

TABLE 7 :- NEWLY QUALIFIED DOCTORS (C.A.L. CASES)

CHAPTER IX

CHAPTER IX

FOURTH YEAR TEACHING

The curriculum in medicine at the University of Glasgow has recently changed from six to five years. General Practice teaching in the fifth year of the old curriculum was developed and evaluated on a voluntary basis and has been described in Chapter III. The students in the fifth year of the old curriculum had nine afternoon sessions in general practice teaching while those in the fourth year of the new curriculum have twelve afternoons as part of a formal course in general practice.

Graves (1963) writing about student attachments to his practice commented that he hoped that he had been able to show his students long term continuity of care and a less selective pattern of morbidity than they had seen before. He hoped that the students would have seen enough of patients lives, homes and work to ensure that they always thought of these factors. The World

Health Organisation (1963) recommended that teaching should be carried out in the patient's home, and that "no other means of teaching was as effective to guide a student to the appropriate attitudes as such an experience in which he may be shocked or otherwise emotionally involved." Todd (1968) reported that on average, students visited patients at home only 1.6 times during their whole course. The Scottish schools as a whole had the largest proportion of students (39.2%) who had never visited patients at home.

During the year in which the evaluation was completed, both the old and the new curriculum students were in the penultimate year of their course. The old curriculum students had their general practice teaching in the Martinmas and Candlemas terms whereas the new curriculum had this teaching in the Whitsun term.

Each tutor had a group of four students and the content of the course related to the detailed management of serious or chronic disease in general practice. Twenty-two general practice tutors were involved in the first and second terms and thirty-two

in the third term.

The aims of this teaching were determined in consultation with the tutors and were given to the students at the beginning of the term. The aims were :-

1. To demonstrate that diagnosis and treatment had physical, psychological and social components.
2. To demonstrate conditions not frequently seen in hospital, but which account for considerable morbidity in the community.
3. To show the measures which can be taken for the prevention of long term deterioration in the health of patients.
4. To demonstrate what is involved in the long term care of chronic sick.
5. To introduce the problems of continuing care, resettlement and rehabilitation.

6. To demonstrate the inter-dependence of the hospital and community services.

A list of conditions were given to the tutors which could fulfil those aims :-

- a) Chronic congestive cardiac failure (C.C.F.)
- b) Blindness
- c) Deafness
- d) Convalescing Coronary (first month after hospital discharge)
- e) Chronic bronchitis
- f) Terminal illness, e.g. carcinoma
- g) Backache
- h) Dyspepsia, Duodenal ulcer (D.U.)
- i) The alcoholic patient
- j) Diabetes mellitus
- k) The adult asthmatic patient
- l) Bereavement
- m) The confused person living on his own
- n) Rheumatoid arthritis
- o) Osteo-arthritis

- p) Chronic central nervous system (C.N.S.).
Problems, e.g. disseminated sclerosis or
Parkinson's disease.
- q) Cerebrovascular accident
- r) Chronic renal problem
- s) The adult epileptic
- t) Angina pectoris
- u) Diarrhoea - causes and investigations
- v) Dyspnoea - causes and investigations

The tutors were free to select any condition from the above list.

The students worked in pairs and visited the patients in their own homes. They were allowed about one hour with the patient in which to complete the history and any necessary examination, and this was followed up by a group discussion in the surgery at which the students presented their patient's case. Many students found difficulty in assessing a patient's complicated history and management in the time available especially if multiple pathology was present. This

difficulty was accentuated if diagnoses were revealed early in the consultation since in their hospital teaching the history and examination tended to lead towards the diagnosis. Recording booklets were therefore introduced in an attempt to give guidelines to the students on the objectives of seeing patients in their own homes.

Developing methods of Evaluation

The recording booklets were used as a method of evaluating the teaching. In the first two terms the tutor kept a master copy of the cases seen by the students and in the third term only the student completed the case histories.

The recording booklets were marked by the tutors on an A to E scale :-

A - Excellent

B - Good

C - Fair

D - Poor

E - Very poor

Both the students' booklets and the master copies were returned to the Department of General Practice where the students' case histories were marked in four separate sections. These sections were :-

- A. History and examination
- B. Social history
- C. Problem list
- D. Management and prospective care

The students also kept details about their practice and also a note of their teaching on the afternoons when the log books were not used (Appendices 10 and 11).

One of the benefits of Computer-assisted Learning was that the computer could produce a print-out with a scoring system expressed for individual aspects of each case or as a percentage of the 'experts' score. In first term this facility was only available in the General Practice Department and this was also used for assessment of the teaching.

The case histories in the Computer-assisted Learning system were similar to those studied by the

students during the clinical component of their general practice teaching; the histories were written in detail covering the presentation, investigation, diagnosis, treatment and further management. In the first term five problems were used :-

Asthma

Non-specific dyspepsia

Hypertension

Carcinoma of the lung

Epilepsy.

Each problem involved the social and psychological aspects of the illness in addition to the organic disease.

Each case history was accompanied by a general practice A4 folder containing the patient's medical history and details of his family and occupation.

The computer print-outs were used during the winter term to assess the clinical part of the course. The case histories had already been scored by a group of 'experts' and their values represented 100%. A scoring system of 1 - 5 was used in which 1 and 5 represented

definite mandatory decisions such as a diagnosis or a drug dosage; 2, 3 and 4 were less precise and referred to the broad management problems and the social aspects of illness and disease.

An illuminative evaluation was carried out throughout this year as the evaluator met every student on one occasion and discussed the teaching that they had had from the general practitioner tutors.

Method

The recording booklet consisted of three pages containing the following headings. The student and the tutors had been given a completed example of a case record at the beginning of the term.

Page 1

Summary of relevant facts in history.

Summary of examination (if necessary). Relevant factors.

Page 2

Social history - expressed in terms of family, occupation, housing and social adjustment.

Effects of illness on patient.

Problem List

A list of the problems that affect this patient today - active and inactive, expressed in physical, psychological and social terms, and in descending order of importance.

Page 3

A list of the treatments necessary for the patient's problem.

A discussion of prospective care.

Detailed prognosis

SAMPLE OF COMPLETED LOG BOOK

DATE ..15.8.75.....PATIENT'S INITIALS D.S..AGE.45..SEX - M/R

SUMMARY OF RELEVANT FACTS IN HISTORY

Increasing angina for three months culminating in coronary thrombosis July 1975. Admitted to hospital for three weeks. Uneventful recovery other than minor episode of C.C.F., on no treatment for this now. Now well - offers no complaints.

Diabetes mellitus discovered ten years ago: on Glibenclamide 5 mg daily. Now well controlled.

Episode of intermittent abdominal pain two years ago - vague history. Diagnosed as D.U. after barium meal. At present quiescent.

Subject to episodes of winter bronchitis about two episodes per year.

SUMMARY OF EXAMINATION (if necessary) - Relevant factors

O/E - looks well. Xanthoma around both eyes

C.V.S. - No signs of C.C.F.

Pulse 82/min - reg. B.P. 120/80

H.S. - normal

R.S. - N.A.D.

SOCIAL HISTORY - express in terms of family, occupation, housing, social adjustment.

Wife aged 43, housewife. Married 20 years. No family. Husband and wife very close.

Clerk in local distillery.

Poor housing - lives in 2 roomed tenement, 4 flights up. Outside toilet.

Difficulty in making ends meet. No savings. Therefore, a long illness a problem. Wages stop after two months. Easy to talk to. A lot of friends as brought up in area. Mother-in-law lives across the road.

Smokes 20/day. Social drinker. Well-balanced outlook despite his multiple pathology.

EFFECT OF ILLNESS ON PATIENT - Not worrying about it - so he says. Must be back at work before wages drop. Wife very concerned but tries to hide this.

PROBLEM LIST - List the problems that affect this patient today, active and inactive. Express in physical, psychological and social terms and in descending order of importance.

	<u>ACTIVE</u>	<u>INACTIVE</u>
A-Physical	1 Myocardial infarction 1975	
	2 Diabetes mellitus 1965	
	3 Type II Hyperlipo-proteinaemia 1975	
	4 Duodenal ulcer 1973	
	5 Recurrent winter respiratory infection 1965	
	6	Inguinal hernia 1955-56
B-Psychological	1 Wife's anxiety state 1975	
	2	Wife's "nervous breakdown" 1961
	3 Future employment prospects 1975	
C-Social	1 Smokes 20/day 1945	
	2 Poor housing (outside toilet) 1965	
	3 Strict budgeting of finances 1975	

LIST OF TREATMENTS NECESSARY FOR THE PATIENT'S PROBLEMS

DISCUSS PROSPECTIVE CARE

TREATMENTS :

- A - 1. Now convalescing satisfactorily.
2. Well controlled on Glibenclamide 5 mg daily. Tests urine daily.
3. On diet + atromid S. Lipids now normal. Still has xanthoma.
4. Quiescent at present. Medical treatment almost mandatory in view of poor surgical risk.
5. Will require early treatment in view of other pathology.
- B - 1. Will require supportive therapy.
3. Should be alright. Has light work and can return to this.
- C - 1. Advised re this. Reluctant to stop.
2. Letter to local housing manager - action being taken.
3. Will require help - health visitor could be useful.

PROSPECTIVE CARE

This patient will require a great deal of counselling. After his discharge from hospital he should be seen every second day. This will gradually be reduced if he progresses to once weekly. He should then be able to attend the surgery.

His diet will require careful planning and the complexity will almost certainly involve the dietician.

He should be encouraged to keep a urine chart. He will require advice on increasing his exercise tolerance: what should he be allowed to do, e.g. sexual intercourse. Wife will require support in any crisis. Their housing situation must be improved.

GIVE A DETAILED PROGNOSIS

WHAT DO YOU THINK COULD HAPPEN OVER THE NEXT YEAR ?

WHAT HAVE YOU LEARNED FROM THIS PATIENT ?

In view of the multiple pathologies in a young man the prognosis is poor. He almost certainly has widespread vascular disease. Good control of his diabetes, weight and lipid abnormality will help his prognosis.

He could die suddenly in next year and wife would require a great deal of support. Angina may recur but should be able to continue to work with the help of trinitrin and β -blocker.

This patient has demonstrated how a serious short term illness can have a damaging effect on the patient's family and on the patient over a long period of time.

At the end of each teaching session the tutors gave an overall mark (A to E) to the student's case history which was returned to the student the following week. The tutor provided a master copy for each case seen and both his booklet and those from the students were returned to the Department of General Practice at the end of term for a more detailed evaluation of the four individual sections. These were also marked A to E.

Results

The value of the recording booklets was appreciated both by the students and the tutors although there was some resistance from a minority of students in first term because of the work involved. There was no professional examination in general practice and the need for such detailed study was not appreciated when it did not count towards an examination. In the discussion with the students in the illuminative evaluation it was apparent that the number of recording booklets being completed in first term was excessive in the sessions available. During the following two terms

the number was reduced from six to four and there were no further complaints.

The tutors felt that the recording booklets gave guidelines which helped them to structure their teaching. Although the teaching in previous years was similar in content and method the introduction of recording booklets was an attempt to standardise this part of the teaching.

In the detailed marking of the student recording booklets the trends were similar during all three terms; the student performance at the beginning of each term was similar. 275 students (93.2%) returned their recording booklets representing 1,150 completed case histories. The students' performance is shown in Table 1. Comparison of scores for certain aspects of the case studies are shown in Tables 2 to 5, history and examination is shown in Table 2, social history in Table 3, problem list in Table 4, and management in Table 5. There was a highly significant improvement in the standard of case histories over the teaching course with the greatest improvement in the social history

and problem list. A breakdown of the marks for history and examination over the year is shown in Table 6, of the social history in Table 7, problem lists in Table 8, and managements in Table 9.

Using the computer-assisted learning print-out the students' performance improved significantly in the decisions related to the broad management and social issues: these were the areas which the clinical course in general practice stressed. There was no difference in their decisions related to the mandatory decisions (Tables 10 and 11).

Validity and Reliability

The term reliability means the consistency with which a test measures; if repeated the measurement should be similar if the test is reliable. Validity refers to what the test measures and how well it does so. Two factors were involved in the reliability of the evaluation measures used. The case histories were all concerned with chronic disease in general practice and were completed by all students from two medical years. There was a homogeneity of items (all chronic diseases) and a heterogeneity of group (all students in two medical

years). One examiner was involved in marking all case histories, and this gave reliability, while the validity was tested by involving an external examiner and by comparing the results with some other test, the computer print-out from C.A.L.

A random sample of 10% of all the case histories were taken and marked blindly by the original examiner. A 5% sample was taken by another person with experience in this field and were again marked blindly. The external assessor was unaware of the original marks or trends, the original examiner's figures correlated in 87% and there was a difference of 1 in the others (e.g. giving B second time when C had been used on the first occasion). The external examiner correlated with the original examiner in 70% of all scores and they differed by 1 in 29%. In 1% of all scores there was a difference of 2 (e.g. one examiner gave B and the other D).

Discussion

In the first term the teaching was given in the one afternoon each week that the student had free of

other classes and the grouping was in effect a random selection by the Department secretary. Unfortunately the C.A.L. was available in other parts of the medical school using the general practice case histories and this particular test could not be repeated in the following two terms.

The introduction of the recording booklets helped the tutors and students by providing a focus for a logical approach to the understanding of a patient's complicated condition. They also provided a basis for the subsequent discussion. The computer-assisted learning print-outs provided a precise scoring system which gave an accurate check of student learning and course assessment. The improvement that was apparent in the decisions related to the broad management and social issues were most likely to have occurred through the student's teaching in general practice which included and stressed such aspects of patient care. Any change that occurred in the scores for the mandatory decisions was more likely to have been due to concurrent clinical teaching.

As there is no formal examination in general practice it was left entirely to the students to return their recording booklets. The high degree of compliance would support the view that the students felt that this was a worthwhile exercise. There is a good spread of overall ability in the recording booklets and this would tend to confirm the validity of the marking system. The recording booklets show an improvement in the students' ability and it is encouraging to find that this is most marked in the areas of social history and the problem lists expressed in physical, social and psychological terms.

The main focus of teaching in the fifth year involved seeing patients in their own homes, and attitudes to the global care of chronic illness. The students' improvement would suggest that there was an attitude shift towards that thought desirable in the management of such patients. Harris (1974) carried out an extensive attitude survey with students at Aberdeen and Manchester Universities; these were professional attitudes and those concerned with patient care. He found that students' attitudes were to a large degree, modelled on

those of their teachers. Differences were found in the attitudes of first year medical and non-medical students and between first year medical students and fourth year medical students. Harris's study emphasises the need for students to have contact with general practitioners throughout their medical course. The fourth year students' attitudes were similar to the hospital doctors who carried out the majority of their teaching. The students should have a more balanced exposure to both doctors in hospital and the community.

The students found greatest difficulty in their first case history with the problem list, but this later showed the highest improvement overall. Seeing patients in their own homes made students very aware of the social issues and in all the case histories 90% of the social histories were either excellent or good. The history and examination of the patient changed least over the year. The teaching that students received concurrently in other disciplines was unlikely to have influenced these results and the fact that the trends were similar in all three terms would support this.

The small group discussion which took place at the end of each teaching session was one of the more important features of the teaching in this year. Small group teaching is recognised as one of the more important teaching methods (Walton, 1973) and its major effect is in professional attitudes (Walton, 1968). The small group system counters the 'authority dependence polarity' which is present in much of lecture and tutorial teaching. It fosters peer interaction and increases the student's ability to work in a team, a skill which is increasingly necessary for all doctors. Much of medicine consists of confronting and solving problems and the students must have the opportunity to practice such skills under supervision. If they are later to make effective use of the information they acquire they need experience in learning how to think both critically and systematically. An effective way to improve one's thinking power is to expose oneself to peers and tutors for constructive criticism. The student should look less to his teacher for pre-digested instruction and should increasingly rely on his own ability to find and to make proper use of available sources of information.

In the afternoons in which the recording booklets were not used the teaching sessions followed the aims of the course. Some students spent an afternoon with other members of the practice team such as the district nurse, social worker, and health visitor. Other activities included child assessment clinics, visits to a Disablement Resettlement Officer, graded housing for old people, rehabilitation unit, studies of terminal care, and visits to factories.

The aims of this part of the teaching course have been fulfilled. The model has been developed over a number of years and could now be taken and used by any other University developing undergraduate teaching. The dissemination of information is again an indicator of the success of innovation and the recording booklets are now being used in two medical schools in London.

A ⁻	(more than 4.66)	12	(4.4%)
B ⁺	(more than 4.33)	45	(16.7%)
B	(4)	102	(37.8%)
B ⁻	(more than 3.66)	80	(29.6%)
C ⁺	(more than 3.33)	20	(7.4%)
C	(3)	9	(3.3%)
C ⁻	(more than 2.66)	1	(0.4%)
D ⁺	(more than 2.33)	1	(0.4%)
TOTAL		270	(100%)

N.B. 5 Recording booklets lost by tutors
or in post.

TABLE 1 : STUDENT SCORES (RECORDING BOOKLETS -
4 sections in each case).

(A = 5, B = 4, C = 3, D = 2, E = 1)

	A	B	C	D	E
1st	21	213	35	-	1
Last	59	197	14	-	-

Mean from 3.94 to 4.17 (A = 5 etc.)

TABLE 2 : HISTORY AND EXAMINATION

	A	B	C	D	E
1st	20	206	41	3	..
Last	145	107	14	3	1

Mean 3.90 to 4.45

TABLE 3 : SOCIAL HISTORY

	A	B	C	D	E
1st	18	167	75	8	2
Last	107	132	28	3	-

Mean 3.71 to 4.27

TABLE 4 : PROBLEM LIST

	A	B	C	D	E
1st	26	177	59	6	2
Last	82	159	22	7	-

Mean 3.81 to 4.17

The overall improvement in the case histories
was significant at 0.005 - Spearman's Rank
Order Correlation

TABLE 5 : MANAGEMENT

A	182 (15.8%)
B	872 (75.8%)
C	95 (8.3%)
D	- -
E	1 (0.1%)
TOTAL	1150 (100%)

TABLE 6 : HISTORIES AND EXAMINATIONS

A	378 (32.9%)
B	658 (57.2%)
C	107 (9.3%)
D	6 (0.5%)
E	1 (0.1%)
TOTAL	1150 (100%)

TABLE 7 : ALL SOCIAL HISTORIES

A	255 (22.2%)
B	655 (57.0%)
C	221 (19.2%)
D	15 (1.3%)
E	4 (0.3%)
TOTAL	1150 (100%)

TABLE 8 : ALL PROBLEMS LISTS

A	240 (20.9%)
B	723 (62.9%)
C	166 (14.4%)
D	19 (1.6%)
E	2 (0.2%)
TOTAL	1150 (100%)

TABLE 9 : ALL MANAGEMENT

	% of correct Decisions 1 & 5	% of correct Decisions 2,3 & 4
Average marks for 1st 7 groups (9th Oct. - 30th Oct.)	81%	41%
Average marks for 2nd 7 groups (31st Oct. - 21st Nov.)	83%	53%
Average marks for 3rd 7 groups (25th Nov. - 4th Dec.)	84%	63%

Differences between the 3 groups for Decisions 1 & 5 not significant at 0.05 level.

Differences between the 3 groups for Decisions 2,3 & 4 significant at 0.05 level and the difference between 1st and 3rd group for Decisions 2,3 & 4 significant at 0.01 level

' t ' Test for significant difference.

TABLE 10 : ASSESSING STUDENTS BY THE C.A.L.
PROGRAMME.

DIVIDING CLASS INTO THREE (LAST GROUP
UNABLE TO ATTEND BECAUSE OF EXAMINATION)

	% of correct Decisions 1 & 5	% of correct Decisions 2,3 & 4
Average marks for 1st 10 groups (9th Oct. - 13th Nov.)	81%	42%
Average marks for next 11 groups (18th Nov. - 4th Dec.)	85%	62%

Differences between the 2 groups for Decisions 1 & 5
not significant at 0.05 level.

Differences between the two groups for Decisions 2,3 & 4
significant at 0.01 level.

' t ' Test for significant difference.

TABLE 11 : ASSESSING STUDENTS BY C.A.L. PROGRAMME.
 DIVIDING CLASS INTO TWO

CHAPTER X

CHAPTER X

TEACHING IN FIFTH YEAR

In their final year all students have an eight week rotational block in the Department of Child Health; approximately thirty students are thus studying this subject at any one time.

An investigation into the undergraduate teaching of Child Health in the United Kingdom (Jackson, 1966) noted that despite the agreed importance of the home background only thirteen medical schools provided regular opportunities for students to carry out domiciliary visits as part of their teaching. St. Mary's Hospital was the only medical school to include a regular programme of undergraduate teaching in paediatric medicine (Shrand, 1966). Students at Newcastle University studied selected families as part of the course in Family and Community Medicine, but this teaching was not specifically related to problems of childhood illness (Walker and Barnes, 1966).

The General Medical Council Recommendation (1967) on undergraduate paediatric teaching stated that "the growing child should be studied in his family setting and in association with members of the domiciliary services". A survey for the Association for the Study of Medical Education (Ellis and Jackson, 1969) showed that the majority of students considered paediatrics to be an important part of the curriculum and that more time should be devoted to this teaching. Court (1969) considered that paediatricians should be prepared to make more home visits when this was considered necessary for a fuller understanding of the child's problems. Mitchell (1973) describing the teaching of Child Health said that in addition to the ability to relate to other people and a knowledge of Child Health and Disease, the doctor needs an understanding of the socio-economic circumstances which shaped the life of his patients. He noted that environmental influences tend to have a greater impact in infancy and childhood than at any other time of life.

The National Morbidity Study (1971) showed that the average practice had 200 children (8%) aged

0 - 4 and 375 (15%) aged 5 - 15. Of all new consultations in the younger age group 7% were referred to out-patients and 2% as in-patients. Price (1974) stated that an average G.P. refers a child to paediatric out-patients about once every other month.

At any large paediatric hospital a large number of patients are self-referred to the Accident and Emergency Department: some of these who are admitted do not require the specialised facilities of a hospital. This does produce some suggestion of dilution of 'specialist' services but it is obvious that the following aspects of paediatric care cannot be adequately taught in hospital:-

1. A variety of common childhood ailments.
2. The early presentation of many common ailments.
3. The consequence for a family of chronic illness and handicap in a child.

A pilot study of undergraduate teaching in Child Health in the Community was commenced in October 1974,

and as a result of student and tutor feedback became a formal part of the course in March, 1975. This is organised jointly by the University Departments of General Practice and Child Health; pairs of students have four afternoons with a G.P. tutor (2 - 5 p.m.) spread over a period of two weeks, and the aims of paediatric teaching in general practice are as follows:-

1. To demonstrate the presentation, management and aftercare of acute childhood illness in the community.
2. To demonstrate the effects of environment and family attitudes on the presentation and management of childhood illness.
3. To widen the student's appreciation of patient management in the community, including the child with chronic illness or handicap.
4. To widen the student's experience of the doctor/patient relationship.

5. To allow the individual student the opportunity to manage episodes of childhood illness from presentation to resolution.

Method

The emphasis of the first afternoon's teaching is on children presenting for the first time with a new illness. The exact arrangements vary from one tutor to another but a typical pattern is that there is a one-hour surgery in which three children are seen following which two or three new housecalls to children are completed. As the four afternoons are spread throughout a twelve-day period follow-up consultations or visits can be completed by the student thus demonstrating some aspects of continuity of care and allowing the students to see the natural history of many of the acute illnesses of childhood. A similar pattern is followed during the other afternoons but in at least one session emphasis is placed on the management of chronic and long-term illness.

One of the features of the teaching is that

each student takes turns at 'acting the doctor' and completes the consultation under the supervision and guidance of the tutor. There is no time constraint and the consultations are allowed to last for as long as the student feels is necessary. The student is thus able to take a history or make his enquiry, and complete any necessary examination using the methods with which he is familiar. At the end of the consultation the student presents the patient to his tutor and has to justify his decisions and any treatments that he recommends. Discussion also takes place after each housecall and at the end of each teaching session. Whenever possible the student who is the 'doctor' at the initial consultation also completes any follow-up appointment that is arranged for the same patient. This exhaustive and in-depth approach frequently means that any appointment schedule is disrupted and the teaching session can be extended for up to one hour past its allotted time.

Developing Methods of Evaluation

A formative evaluation was carried out at the end of the first term's teaching by visiting all tutors

to discuss the previous term's teaching and to ask for criticisms and suggestions. Following this the students and the tutors each kept a log book of the conditions which were seen. This was an illuminative evaluation. The log books served two functions: they allowed the content of the course to be monitored and the students' ability to be assessed. The log books were subsequently analysed over the period October 1975 until February 1976; the results were presented to the tutors and a further analysis was carried out from May to September, 1976. The log books (Appendix 12) recorded the following information about each patient seen:

1. Age and Sex.
2. The main symptoms complained of by the patient or parent.
3. The diagnosis or problem decided by the tutor.
4. The presence of important psychological or social components of the illness.

5. Management.

Results

In the formative evaluation the tutors were happy with the content and method of the course.

In the first twenty-week analysis 518 patients were seen in a total of 107 teaching sessions, or 4.8 patients/session. The age/sex breakdown of these patients is shown in Table 1. 415 (80%) of the illnesses seen were acute and were the initial consultations: the remaining 103 consultations were either arranged as a follow-up to the initial consultation or were arranged for children with chronic disease or handicap. 36% of the consultations took place in the patients' homes, and the remainder in the tutor's consulting rooms. Important social and/or psychological factors were considered to be present in 35% of the consultations (Table 2).

476 presenting symptoms were noted at the 415 new consultations (Table 3). Specific diagnoses were made in 169 consultations of which otitis media (44) and tonsillitis (32) were the most common (Table 4).

In the remaining 246 consultations no firm diagnosis was made and the patient's problem was classified under a system rather than a disease (Table 5).

In the second twenty-week period 313 patients were seen in 102 teaching sessions, or 3.1 patients/session. The age/sex breakdown of these patients is shown in Table 6. 177 (56.5%) of the illnesses seen were acute and were the initial consultation. 143 (45.7%) of the consultations took place in the patients' homes. Important social and/or psychological factors are shown in Table 7.

205 presenting symptoms were noted in the 177 new consultations (Table 8), and specific diagnoses were made in 76 (Table 9). The distribution of the remaining 101 consultations with regard to systems is shown in Table 10.

Discussion

Although the consultations were carried out at a reduced rate the students saw a representative sample of paediatric morbidity in the community. The

log book figures for the specific diseases were similar to the National Morbidity study for all new paediatric consultations except in the second period when the incidence of measles and mumps was greatly increased. Chronic diseases, e.g. spina bifida and enuresis, did appear more commonly as a result of the teaching. A similar range of morbidity occurred with systems other than the respiratory system although the balance is restored when asthma and 'catarrh' are classified with the respiratory system. This range of morbidity can only be seen in a general practice setting, the majority of the illnesses were new and acute, and the importance of the social and psychological aspects of illness in childhood were appreciated more vividly than is possible for the student working only in a hospital setting. In the second period there was an outbreak of measles and mumps which the students were able to observe.

The domiciliary paediatric teaching at St. Mary's Hospital (Shrand, 1966) cannot really be compared with this method of teaching. There the student was attached to a hospital-based home care unit and visited patients in their homes with a paediatrician; the student

was thus likely to see the home background of children who had required hospital care, rather than the illnesses and environments of children whose illnesses were managed solely in the community. Teaching in general practice is included in the undergraduate curricula at most British universities which thus have the potential to extend the teaching of Child Health from hospital into the community. Such teaching however, needs to be planned, to have specific aims and to be so organised as to allow the student sufficient time to appreciate the nature and extent of the clinical problem that the patient presents.

The students were enthusiastic about this teaching although most were uneasy at first about managing the child from the initial consultation to the resolution of the illness. By being actively involved in their teaching the students were able to overcome their own anxieties and difficulties with communication and so to feel more comfortable and confident in their role as student doctors.

The students' attendance rate was high and on almost all occasions absence was due to illness and was

notified to the tutor. One disappointing feature in the first analysis was that handicap and chronic disease featured much less commonly in the log books than had been hoped. The findings were presented to the tutors at a seminar and a handicap register was mentioned as one way in which this could be improved.

The constant feedback to the tutors with suggestions for improvement could be termed non-directive learning. It was therefore encouraging to find in the second analysis that the number of chronic cases seen had doubled. A more active approach may not have produced the same result. However, it is still felt that the percentage of handicap and chronic cases is lower than ideal and the students now spend one afternoon visiting a child with handicap and completing a case history. The tutors are at present constructing a list of those patients in their practice who can be included in such teaching sessions.

The general practitioner with a list of 2,500 patients has approximately 1,500 consultations with children each year and refers only about 5% of his child

patients to hospital. A teaching course that is the result of planned collaboration between general practice and the hospital can thus give the student a wider and more realistic view of the nature and extent of childhood illness and the importance of the home and the family which was stressed by Mitchell (1973). Such teaching however, cannot be left to chance; with a structured approach the broad aims of the teaching can be achieved.

Conclusion

Despite the short duration of this course it is widely accepted by students, tutors and hospital paediatricians. The evaluation has detected one area, i.e. handicap and disability which has been stressed less than had been hoped. A case record has been devised to record this, under the following headings:-

Specific handicap.

Age of onset and causation

How and when handicap detected?

What were parents told ?

Precise nature and degree of handicap

now ?

Nature of child's disability - detail how

child is affected by handicap.

Detail all treatments now available for child.

Comments of probable prognosis.

Suitability of home environment.

Affect on others in family.

Parents' opinion of child's future.

Medical opinion of child's future.

One afternoon is now spent with a handicapped patient. This teaching now forms a useful addition and compliments the teaching in hospital.

Age	Male	Female
0 - 1	53 (20.6%)	51 (19.5%)
2 - 5	102 (39.7%)	105 (40.2%)
6 - 9	56 (21.8%)	56 (21.5%)
10 - 15	46 (17.9%)	49 (18.8%)
TOTAL	257 (100%)	261 (100%)

TABLE 1 : AGE / SEX OF PATIENTS
1 - FIRST TWENTY WEEKS OF STUDY

Organic component only	349 (67.4%)
Psychological component present	102 (19.7%)
Social component present	78 (15.1%)
Both psychological and social component present	11 (2.2%)

TABLE 2 : ORGANIC, PSYCHOLOGICAL AND SOCIAL
 COMPONENTS - 1

Cough	110 (23.1%)
Rashes	63 (13.2%)
Spots and sores	36 (7.6%)
Pain in throat	35 (7.3%)
Disturbance of gastric function	29 (6.1%)
Pain in ear	25 (5.3%)
Disturbance of bowel function	22 (4.6%)
Pain in abdomen	18 (3.8%)
Pain in head	17 (3.6%)
Others	121 (25.4%)
TOTAL	476 (100%)

TABLE 3 : SYMPTOMS IN NEW CONSULTATIONS - 1

	Log Books	(National Survey) As % of all new paediatric consultations.
Otitis media	44 (26.0%)	(28%)
Tonsillitis	32 (18.8%)	(20%)
Catarrh (includes U.R.T.I. and pharyngitis)	18 (10.6%)	(4%)
Measles	14 (8.3%)	(3%)
Asthma	10 (5.9%)	(2%)
Enteritis	8 (4.7%)	(8%)
Chickenpox	8 (4.7%)	(2%)
Rubella	4 (2.4%)	(2.3%)
Glandular fever	4 (2.4%)	(0.2%)
Mumps	3 (1.8%)	(0.8%)
Others	24 (14.4%)	(-)
TOTAL	169 (100%)	

TABLE 4 : SPECIFIC DISEASES - 1

	Log Books	National Survey
Respiratory	95 (38.6%)	56.8%
Skin & subcutaneous tissue	52 (21.1%)	19.7%
Gastro-intestinal	16 (6.5%)	6.0%
Ears	13 (5.3%)	not given
Trauma	8 (3.2%)	not given
Genito-urinary	8 (3.2%)	4.0%
Others	54 (22.1%)	-
TOTAL	246 (100%)	

TABLE 5 : SYSTEMS - 1

Age	Male	Female
0 - 1	37 (22.7%)	30 (20.0%)
2 - 5	62 (38.0%)	61 (40.7%)
6 - 9	33 (20.2%)	30 (20.0%)
10 - 15	31 (19.1%)	29 (19.3%)
TOTAL	163 (100%)	150 (100%)

TABLE 6 : AGE / SEX OF PATIENTS - 2
2 - SECOND TWENTY WEEKS OF STUDY

Organic component only	171 (54.6%)
Psychological component present	64 (20.4%)
Social component present	93 (29.7%)
Both psychological and social component present	15 (4.7%)

TABLE 7 : ORGANIC, PSYCHOLOGICAL AND SOCIAL
COMPONENTS - 2

Cough	39 (19.2%)
Rashes	32 (15.5%)
Spots and sores	16 (7.8%)
Pain in throat	26 (12.7%)
Disturbance of gastric function	9 (4.4%)
Pain in ear	18 (8.8%)
Disturbance of bowel function	9 (4.4%)
Pain in abdomen	15 (7.3%)
Pain in head	10 (4.9%)
Others	31 (15.0%)
TOTAL	205 (100%)

TABLE 8 : SYMPTOMS IN NEW CONSULTATIONS - 2

	Log Books	(National Survey) As % of all new paediatric consultations
Otitis media	14 (18.4%)	28%
Tonsillitis	15 (19.7%)	20%
Catarrh	8 (10.8%)	4%
Measles	13 (17.1%)	3%
Mumps	10 (13.1%)	0.8%
Impetigo	4 (5.3%)	Not given
Others	12 (15.6%)	-
TOTAL	76 (100%)	-

TABLE 9 : SPECIFIC DISEASES - 2

	Log Books	National Survey
Respiratory	41 (40.6%)	56.8%
Skin & subcutaneous tissue	18 (17.8%)	19.7%
Gastro-intestinal	10 (9.9%)	6.0%
Ears	3 (3.0%)	Not given
Trauma	8 (7.9%)	Not given
Genito-urinary	5 (5.0%)	4.0%
Others	16 (15.8%)	-
TOTAL	101 (100%)	-

TABLE 10 : SYSTEMS - 2

CHAPTER XI

CHAPTER XI

COLLABORATIVE TEACHING - MEDICINE, SURGERY,
PSYCHOLOGICAL MEDICINE AND GERIATRICS

The World Health Organisation (1963) thought that hospital wards gave excellent opportunities for teaching family practice although the success of such a venture would be dependent on the clinical teacher. The British Medical Students Association (1968) considered that contact could occur between general practitioners and students on hospital ward rounds. Todd (1968) envisaged group teaching at ward level and thought that a general practitioner should form part of the group: the aim of this teaching being "to ensure that students are properly educated in the fundamentals of clinical methodology." Later in the report it was suggested that students might follow certain patients from the out-patient department through the hospital and back to the home. In the section on Behavioural Sciences, the report noted that "the social aspects of medicine

should be integrated with the clinical work of the student during the undergraduate course. The student has to be made aware in the hospital ward and in the home, as well as in the class room, why patients and families behave as they do in situations of illness."

MEDICINE

Joint teaching with the University Department of Medicine began in 1973 and has expanded to involve one other medical unit. Two members of the University Department of General Practice take part in this teaching and each has one clinical session per week throughout the academic year.

The teaching in the Department of Medicine is a joint session involving the Professor of Medicine and the Professor of General Practice. Each makes his individual contribution to the teaching and broaden the discussion of management problems with active student involvement.

In the other medical unit the consultant physician and the general practitioner have a short

introductory tutorial on the teaching, after which each takes one half of the class for a bedside teaching session. The sections are alternated and each student is thus exposed to the differing views of the specialist and the general practitioner. During this teaching the students complete four case histories and visit one of the patients at home two weeks after discharge from hospital. For this case study two students have an interest in the same patient in the ward and carry out the follow-up visit as a pair. The students are given firm guidelines for the follow-up visit so that they can obtain the relevant information in the time available.

Discussion

This teaching has been evaluated subjectively using feedback from all concerned. The students enjoy this teaching and appreciate the emphasis that is placed on the patient rather than on the disease. The concept of continuity of care for patients becomes more apparent and the students appreciate that the in-patient period is

but a short stage in the patient's life. For many students boundaries seem to have been drawn between hospital and the community and it must be emphasised that there should be integration between the two.

Anderson et al. (1972) described the contribution that an experienced teacher in general practice could make to bedside teaching. He felt that this teaching, because of the general practitioner's inevitable involvement in attitudes, would encourage the students to maintain the humanistic drives which had brought them to study medicine. Drury (1976) reported on integrated teaching by consultants and general practitioners: the patient's own practitioner came to the hospital and this arrangement held true for over 75% of all teaching sessions. Seventy-five practitioners took part in the teaching and this, occurring on average once each year, was well accepted by students and practitioners.

The students' follow-up to the patient's home was appreciated by the students. They were able to see the patient's home circumstances and appreciate how little some patients seem to know about the illness and follow-

up care. The lack of communication between both hospital and the community was one of the most striking features of the exercise. Miller et al. (1975) carried out a similar study. They felt that it supplemented the students' knowledge of the natural history of disease and emphasised the importance of communication and the use of community services.

The members of the Department of General Practice enjoy this teaching. They feel that they can add a further dimension to the teaching already given and their presence in hospital presents the important concept of integration of which the student should be aware. Marinker (1974) would say that this was the 'hidden curriculum' - that which has not yet been brought to the level of consciousness and reason.

SURGERY

Collaborative teaching with both University Departments of Surgery has taken place since 1975. This takes place once each week throughout the academic year and there are two separate formats. In the first

the general practitioner teaches on patients present in the ward; the class is divided into two sections, one of which is taught by the general practitioner, the other being taken by one of the surgeons.

In the other format pairs of students visit a patient at home who is awaiting admission either for elective surgery or further investigation. When the patient is admitted the students follow his progress and present their findings to the other students, the Professor of Surgery and the Professor of General Practice. The management is then discussed by all, each viewing the problems from their own perspective.

Discussion

This teaching has been evaluated by comments from all concerned. Both approaches seem to be successful but the second format in which students visit the patient at home, would seem to be the more successful because of the students' active participation.

PSYCHOLOGICAL MEDICINE

Joint teaching between the Departments of General Practice and Psychological Medicine was introduced in 1976, and is organised in two distinct formats. There is a family centred study which is the subject of a fourth year project in Psychological Medicine while those students attending the Southern General Hospital and Gartnavel Royal Hospital have one or two clinical teaching sessions in general practice.

The project culminating in a dissertation of about four thousand words is carried out in the students' teaching practice: the tutor chooses for each pair of students, a patient with a mental disorder, who has been treated by the general practitioner, by the hospital consultant or by both. The psychiatric element concerns the patient's mental health, past and present, the emotional interaction between the patient and his family, and the social consequences of the illness. It also includes indications of precipitating events of the illness and methods of management and the community

implications of the condition. The dissertation contributes to the student's professional examination.

Discussion

The first year of this project led to criticism especially from the general practitioner tutors involved. They felt that a project of this dimension required a complicated case and that the student at the beginning of term was too inexperienced to deal with such a problem. The general practitioners also felt that the patient's relatives were under considerable strain and felt threatened by discussion of their reactions to the patient's problem. As a result of these comments this teaching is to be re-considered before being re-introduced.

In contrast the clinical teaching sessions have been well received. The consultant comes into the practice situation, psychiatric cases are brought to the surgery and joint discussion takes place with the practitioner and the students.

GERIATRICS

Teaching in general practice has been arranged for students attending Stobhill General Hospital since 1975. The students attend Woodside Health Centre on one occasion and the aim of this teaching is to give experience of the assessment of elderly patients with complex medical and social problems living in the community, assessing the services that are appropriate to maintain the patient at home and the roles of the doctor, health visitor and social worker. Visits are also arranged to elderly patients with acute illness to demonstrate the therapeutic approach that is necessary for the management of the elderly patient at home.

A typical teaching session begins with a short tutorial on the problems of the elderly with an introduction to the assessment. The students are shown the structured case record and complete an assessment of a patient at home. The visit is followed by a case presentation and a free discussion about the care of the elderly patient in the community.

Discussion

The students enjoy visiting the geriatric patients in their own home: it complements their hospital teaching. With this approach the students are more aware of the real problems of the elderly. While in hospital the patients always have someone to care for them, whereas often at home the main problem is of a social or nursing nature. The geriatric problem is increasing and is greater than the facilities available. Students must be aware of these problems and this teaching increases this awareness.

CHAPTER XII

CHAPTER XII

THE ELECTIVE

An elective period in general practice has taken place in Glasgow for a number of years but until 1976 was arranged during the student's Easter vacation, (Chapter III).

In the summer term of 1976 students in the fourth year of the new curriculum were given the opportunity of choosing a senior elective in general practice as a formal part of their course. Forty practices in rural, semi-rural and urban areas, ranging from the borders to the outer isles, were willing to be involved for a four week period. Some were single-handed dispensing practices but the majority worked in groups or from health centres. All offered a wide range of experience in general practice.

Casewell (1963) conducted a survey for the British Medical Students Association to determine the pattern of elective periods. He found that nine schools

had no elective and fifteen made one available to a greater or lesser extent. Student opinion was in favour of all schools having periods of two to three months, probably at the end of the fifth year - to be clear of the final examination - and with a completely free choice of experience. 74% of students felt that general practice should be available as an option. The students who had participated in electives said they had gained most in factual knowledge, intellectual experience, experience with patients and learning to take responsibility. Arnold (1964) described the elective scheme at Charing Cross Hospital, London, which had been in operation for twelve years. The elective in general practice had been given favourable comments by students, consultants and general practitioners.

Todd (1968) recommended that the clinical part of the undergraduate course should contain an elective period of ten weeks. The report noted that this was not a new proposal but that its value was often reduced if it was followed by a major examination. Todd thought that the elective should be freed from the examination system, the student should be able to choose from a wide variety of topics and that it would become a valuable educational experience.

O'Connell (1969), writing as a student after an elective, felt he had become more acquainted with the life of a general practitioner and saw many conditions that he had rarely seen in hospital. He thought that this system of visiting general practitioners was essential and worthwhile for all medical students.

In 1976 twelve students from 128 (9.3%) chose to do their senior elective in general practice. This figure is abnormally low because of administrative problems and it is hoped that the numbers of students electing to study general practice will increase.

The aims of the elective are to enable the student to gain experience of general practice as a way of life and to participate as actively as possible in the work of the practice. As part of this involvement the students are asked to carry out a small research project as a service to the practice concerned. It is possible for the same research topic to be pursued by several different practices thus minimising the preliminary work and maximising the value of comparative data. All students are given assistance by the

Department of General Practice in all aspects of the preparatory work relating to the study.

The elective is structured so that the student spends the mornings with the practitioners in the practice. Two afternoons are spent on follow-up visits to observe the natural history of common conditions and the response of different illnesses and different patients to treatment. During these same sessions the student is given chronic patients in the practice so that they can be reviewed. Two afternoons are spent on the project and the student has the fifth afternoon free.

Certain themes are mentioned to the tutors so that the students can be given experience in some of the following aspects of general practice :-

1. The natural history of common illnesses.
2. The convalescence of patients after serious illness or discharge from hospital.
3. The care of the dying patient.

4. The care of the infant in the first week of life.
5. The work of the district nurse, health visitor and the social worker.

Twelve students took the senior elective in general practice in 1976. The students working in practices in Arran, Barra and Fort William had as their project a hypertension screening programme for all males aged 30 - 65 who were attending the surgery for any reason. The students who were attached in Dornoch, Lewis and Callander studied the workload of temporary residents and compared this with that caused by permanent residents. The extent of hospital referrals was studied in Hawick, Tain and Wick, bearing in mind the extent of the local specialist, diagnostic and treatment facilities.

The two students attached to Edinburgh practices studied the use of contraceptives and the final student studied the family relationship of patients with disseminated sclerosis.

Developing Methods of Evaluation

A structured questionnaire was sent by post to all students and a further questionnaire to all tutors (Appendices 13 and 14). These questionnaires were moderately structured but allowed a degree of freedom.

The project reports were used to evaluate that part of the elective.

Results

Ten tutors (83%) and eight students (67%) completed the questionnaires. One tutor commented that his student was uncommunicative and unenthusiastic but all others thought that their students had enjoyed the attachment, appreciated the personal approach and the aspects of continuing care in practice.

All tutors had enjoyed the elective, the stimulus of having a student being specially remarked upon by a few. Two did remark that they thought a month was a long time and wondered if the period should be shortened. All tutors except one appreciated the project and felt that this should be continued.

The tutors felt that the students enjoyed the opportunity of talking to patients and meeting them as people rather than cases. The student was able to apply his theoretical knowledge to the practical situation and to see many conditions not seen in hospital. The tutors who had the appropriate facilities thought that the students enjoyed seeing a country practice with the back-up of a cottage hospital.

Seven of the eight students found the attachment 'very interesting' and the eighth considered it 'quite interesting'. The general practitioner's diagnosis, management, and way of life, were the concepts the students found most interesting. The students learned that diagnosis and treatment were more empirical than they were used to in hospital and that a great number of diagnoses were made from the history alone. In the management of illness the students found the majority were treated at home with the help of relatives and the practice team and that management must involve the patient as a whole. The students thought that they learned little about the prevention of disease and the use of

the hospital services. In prevention they recognised that the G.P. had an almost unparalleled opportunity to alter the patient's life style for the better.

All students commented on the variety of illness seen and the great volume of minor and psychiatric problems. The students felt that the practitioner knew his patients well and treated them as individuals. The patients seemed to hold the practitioner in great trust and expected him to solve all their problems. The students found the social aspects interesting and often saddening: one noted that no amount of social work seemed to be able to help the most needy.

The students commented that a full day in practice was long but with appointment systems and sharing tasks, the general practitioners seemed to have adequate time off. The students appreciated the concept of the practice team and emphasised how important good communication was in this situation. Two students stressed the importance of good receptionists.

The students were surprised at the workload generated by the elderly and the chronically sick and

considered that this seemed to be the most difficult part of the practitioner's work. However, regular visits to the elderly did raise morale and provided social and psychological support. The attachment altered all the students' vocational plans towards general practice.

Six of the eight students found the project worthwhile whereas the other two were less interested. The six students thought it useful especially after the novelty of home visiting and surgery consultations wore off.

One student thought that a month was too long, while another suggested spending two weeks in one practice and two weeks in another. One student considered the elective to be "one of the most important experiences of my life".

The projects on hypertension and disseminated sclerosis failed because of lack of patients to make the studies meaningful. Those on temporary residents, practice referrals and family planning were successful and the students provided good reports. The data on the family planning has been submitted for publication and others are at present being prepared.

Discussion

The first senior elective in general practice has been successful. Both students and tutors have appreciated the structured approach although a few have wondered if a month is too long. It was realised early that one month with a practitioner might be excessive especially if the student and the tutor were to be together throughout all of each working day. The practical research project was introduced so that a balance could be achieved between too structured an approach on one hand and too passive a holiday on the other. In addition to placing some responsibility on the students, the project would also relieve the tutor of having someone with him all the time.

Prior to their elective the students were not keen to carry out a project because of the preparatory work that would be involved. This opinion was reinforced when they learned that none of their colleagues in the elective were expected to carry out a project in other disciplines. There was, however, a definite shift in their opinion after their project. One of

the students said that the most valuable result of the whole exercise was to highlight the difficulties of carrying out such a project. One of the students who was prevented from completing his project, in hypertension, felt he should have had a back-up project and thus would have avoided the need for constantly trailing after the general practitioner.

The students were given an insight into the doctor/patient relationship and were more appreciative of the concept of continuity of care, particularly in respect of the care of the dying. The theory of these aspects are taught to the students in the formal part of their course but the most effective way of appreciating these in a continuing manner is during an elective period.

The undergraduate course in Glasgow is non-vocational and the elective does allow the student to consider the attractions and drawbacks of general practice as a career. An appreciation of the uncertainty in diagnosis and treatment that is inevitable in general practice, with the variety of cases presenting, is another valuable aspect of the elective.

Electives in general practice have been present in a number of medical schools for many years but remarkably little has been written about these attachments. In the present elective a semi-structured approach was used so that the student learning could be maximised and the dependence on the general practitioner minimised. The encouraging remarks from students and tutors suggest that this format should continue. The disinterest in a project cannot be allowed to prevent a student choosing general practice for his senior elective. The project will in future be optional but the students will be encouraged by the experiences of the students in the previous year to undertake the project.

CHAPTER XIII

CHAPTER XIII

THE GENERAL PRACTITIONER TUTORS

When the teaching in general practice began in 1972 twenty-six general practitioners were invited to form the tutor group. They had previously shown interest in teaching and after the nature and content of the teaching course had been explained to them they agreed to participate. The group met regularly to prepare the content and method of the teaching. Most of the original tutors are still involved in teaching, the group has grown and there are now fifty-two general practitioner tutors. Thirteen take part in the third year teaching, seven in final year with the remainder in the fourth year. These numbers exclude all tutors who take students for elective studies.

The growth in the number of tutors has been gradual, a desire to teach being one of the most important attributes. If any practitioner expresses a desire to teach he is visited by one of the members of the Department of General Practice, the aims and objectives of the

teaching are explained and the fact that the teaching is non-vocational and separate from normal practice work is stressed. If the practitioner is happy with the teaching strategy he becomes a tutor. The majority of the tutors are recommended by their peers as someone suitable for teaching, and if they express an interest then they are visited as described previously.

The number of tutors willing to teach has always been enough to cope with the demand but there has never been an excess. There are two main reasons for this; firstly general practitioners are self-employed and their income is to a large extent dependent on the number of patients registered with them. Undergraduate teaching is poorly paid by commercial standards and only those doctors who are well-motivated would undertake it. However, even with motivation there is a definite limit on the amount any practice can do. Secondly, many practitioners, who would be excellent teachers are unsure of themselves and the academic content of general practice, and for this reason never become involved.

The World Health Organisation (1963) discussed the choice of general practitioner tutors. They thought that it was not always easy to find family doctors who had the clinical calibre and technical competence demanded by a medical school; they also noted that it was difficult to arrive at a universally accepted policy with regard to both what should be taught and the methods of teaching. They felt that family doctor tutors should be well qualified and their clinical performance should be such as could stand up to the close and critical scrutiny of both students and specialist staff of the teaching hospital medical school. In their main recommendations they thought that family doctors should be trained in teaching methods in order to render their instruction more effective.

The majority of the tutors practise within the area of the city of Glasgow but as the teaching has expanded, tutors in the surrounding areas have become involved: in East Kilbride, Paisley, Old Kilpatrick and Kirkintilloch. The teaching in the third year is from 9 until 11 a.m. and since the students have another class at 11.30 a.m.

it is necessary to use tutors practising near the teaching hospitals. The teaching in fourth and final years occupies a whole afternoon and the students are thus able to travel further afield.

Developing methods of evaluation

When a new teaching programme was initiated each tutor was visited in his surgery. Two meetings at Woodside Health Centre were arranged during the time of the evaluation period for both third year and final year teaching. The meetings were held separately, evaluation data was presented to the tutors and a general discussion about the teaching then took place.

The tutors for the fourth year students had three meetings during the period of study, evaluation data was presented and the computer-assisted learning techniques demonstrated. A general discussion about the teaching took place at each meeting.

A summative evaluation was carried out by visiting each tutor in his surgery at the end of the period of study. A structured questionnaire was used

(Appendix 15) and the interview took between thirty and forty minutes. In this type of evaluation the interview is usually taped but since the practitioners may have found this threatening and may have been more guarded with their answers, notes were kept at the time of interview and a report was recorded immediately thereafter.

Results

The meetings at Woodside Health Centre between the staff of the academic department and the tutors were productive. These meetings were semi-social, semi-business and the tutors appreciated learning about the evaluation data which they had helped to collect. This led to a discussion with the tutors, a few describing how they carried out certain sections of their teaching. Many tutors remarked at a later date how valuable they found these meetings: in their relative isolation they often worried about the standard of their teaching. When they saw the overall range of morbidity and the way in which their figures corresponded to this, they felt more secure.

All tutors were visited in the summative evaluation. The tutors involved in third year teaching were happy about the overall content. Two mentioned the difficulty of adhering to the format that had been advised: at a busy reception desk a patient who did not have a new illness occasionally was booked in by mistake but the tutors overcame this by asking the student to go back to the beginning of the present illness. One tutor thought that even two students affected the doctor/patient relationship and that the ideal group in this situation would be one student. All tutors felt that the structuring was essential and they thought that their role had been well defined.

The arrangement whereby a student 'sat-in' on the normal consulting session did not appeal to the tutors and one pointed out that the presence of a third person prevented the consulting session from being typical. All tutors remarked on the students' inexperience of medicine; especially at the beginning of the first term, and several wondered if students could be shown video-tapes before their teaching sessions to give them some idea of what to expect. A few remarked on how poor the students

were at eliciting physical signs especially since this was emphasised in the hospital component of their course at that time.

The fourth year tutors have the longest experience of teaching. Overall the introduction of recording booklets was successful, the new tutors appreciating this most, while a few of the more senior tutors stated that they had always followed this method. Four tutors were totally against the idea of recording booklets: they considered that the course was becoming too structured and was taking away some of the tutor's initiative. A few remarked that they did not like the idea but saw the necessity for this approach, noting that the quality of the case discussion in the latter part of the afternoon was better when the recording booklets were used. Four cases were thought to be a good balance in the number of afternoons available, with the student having each case marked and returned on the following week. Two remarked that the students had great difficulty in being succinct but that the booklets provided good guidelines. None of the tutors complained about completing the master copies.

All tutors were confident about what they should teach in this part of the course, a great number were worried about their ability in marking students' case histories, but all were keen that there should be a degree of standardisation.

With the two years (old and new curriculum) having their general practice teaching in the one academic year and the emphasis of both being long-term chronic illness, a number of tutors said they were over-using certain patients for teaching. They did emphasise however, that none of the patients had complained.

The tutors were not keen that the student should sit-in but a number suggested that this may be useful on one occasion. A few tutors remarked that they found the students in the new curriculum shyer and less willing to speak out. The tutors recognised that they were very intelligent but some did not warm to them as people and wondered how many would be suitable for general practice.

The small groups were commented on by a number of tutors, emphasising the variations of personality

between students, and how much easier the teaching was with a good group. One asked if the students could first be assessed and then grouped for their general practice teaching. The teaching commitment is shared in most practices and a few suggested the group would perform better if they had the same practitioner each week.

One tutor suggested that it would be useful to know the stage the student was at and the teaching that he had been given in his hospital component. In general however, the fourth year tutors thought the teaching required little changing.

The tutors in the final year teaching were happy with the format but all were concerned that they might not have enough acute clinical material in the summer months to show the student. The demonstration of chronic illness, and the effect of handicap on the family are sometimes difficult to arrange since the child would be at school during the afternoon teaching session. At the start of this teaching one tutor had a great desire to show difficult cases which he

thought would interest the students, but he later used any child that he was attending in his normal practice work, and also emphasising the need for students to see and to examine normal children.

Nearly all tutors felt that the great strength of the Glasgow system of teaching in general practice was that it was structured and could easily be followed by the tutors. The tutors were keen that the teaching content and method was standardised at all levels and most felt that there was enough contact with the Department.

A number of tutors asked at these interviews if sessions could be arranged to give them specific training in teaching. When all tutors were asked this question specifically, about half were keen and willing to participate whereas the others felt that their present guide-lines were adequate and that much of teaching was intuitive.

Discussion

The tutors are enthusiastic about their teaching commitment. They appreciate the stimulus and often remark how much they themselves learn. Once a tutor begins teaching, he can become very involved and the tutor 'wastage' rate has been very small. A major change in practice circumstances has been the only reason for tutors leaving.

General practitioners, even those working in group practices and health centres, still have a tendency to work in isolation and many tutors worried about their methods of teaching. They appreciate the firm guidelines given and also the opportunity to meet their fellow tutors at regular meetings. Reid (1977) reported on a study carried out in 1974 with twelve of the Glasgow general practitioner tutors. One third expressed a wish to see the course more vocational. In the present study this wish was not expressed; the tutors appreciated that the course was based on firm educational guidelines and they welcomed direction since they themselves had not the time to think through the educational principles involved.

The demand for seminars in teaching methods in the practitioners' free time is an indication of their commitment. This interest would have been most unlikely several years ago, but it is encouraging that the practitioners, through their own initiative, are moving towards the World Health Organisation recommendations of 1963.

When a new teaching programme is introduced the opinions of the tutors are sought at an early stage and this, with the feed-back of the evaluation data, makes all feel part of an active team. The desire to standardise teaching and marking procedures is also encouraging and there will be an attempt to do this in the Whitsun term in the present academic year (1977).

The formation of small groups has led to some comment but any change in the present system would lead to a large administrative problem. The tutors each year become more proficient at small group teaching and this problem should lessen.

The close liaison with the tutors and the University Department must continue even although many

parts of the teaching are now established. Both should continue to learn from each other.

There is one named tutor from each practice although his partners often participate in teaching. Assuming that each partner is in a group practice of three partners almost two hundred practitioners now have some involvement with undergraduate education in general practice in Glasgow. This is almost one-third of all general practitioners in the city.

CHAPTER XIV

CHAPTER XIV

VIEWS ON TEACHING

A questionnaire was constructed to determine consensus views on the undergraduate teaching of general practice among members of University Departments. Help was given by a sociologist, a psychologist, an educationalist and the members of the Department of General Practice staff in Glasgow. A number of drafts were constructed before the final copy was compiled.

The main underlying purpose of the questionnaire was to determine whether the teaching should be 'student-centred' or 'subject-centred': the latter being the vocational element. Specific questions were asked about the teacher/learning situation, the underlying concepts, the aims and objectives of teaching, the student input and content of teaching.

The survey was carried out by sending the questionnaire by post to all members of the Association of University Teachers of General Practice, excluding

those in Glasgow and to all undergraduate tutors at Glasgow University. The questionnaire was answered anonymously so that the University teachers could give their true opinions and not that particular to the teaching in their own medical school. Similarly the Glasgow tutors could give their own opinions and not those expected by the Department of General Practice.

Questionnaire with Results

Fifty out of seventy (71%) of the University teachers and thirty-eight of the fifty-two (73%) general practitioner tutors returned the questionnaire. The results were then converted to a percentage so that a direct comparison can be made between the two groups: the University teachers' results are shown on the top line.

i.e.

In the following statements could you indicate by a cross or tick, whether you strongly agree/agree/disagree/strongly disagree :-

	Strongly Agree	Agree	Disagree	Strongly Disagree	No Answer
1 Audio-visual aids have a valid place in the teaching of general practice.	29	67	-	-	4
	18	82	-	-	-
2. University departments of general practice should only aim at changing students' attitudes.	-	2	35	59	4
	6	9	55	30	-
3 University departments of General Practice should be primarily concerned with helping students to relate to patients by emphasising social background.	4	19	57	14	6
	3	24	55	18	-
4 General practice courses should aim to develop the critical thinking abilities of students.	75	23	-	-	2
	27	73	-	-	-
5 The teaching programme should adapt to feed-back from students.	48	48	2	-	2
	27	70	-	-	3
6 A University course of general practice should have specific aims and objectives.	76	24	-	-	-
	36	55	6	-	3
7 One of the most important topics of general practice teaching is preventive medicine.	13	66	17	-	4
	9	58	33	-	-
8 History-taking is the most important skill in general practice teaching.	10	60	28	2	-
	27	30	43	-	-
9 General practice should be taught in association with community medicine.	8	41	40	5	6
	3	30	46	12	9
10 A Professorial head is important to a general practice department	40	48	8	-	4
	33	58	9	-	-
11 There are certain aspects of general practice which are impossible to teach.	3	30	47	17	3
	21	58	21	-	-

	Strongly Agree	Agree	Disagree	Strongly Disagree	No Answer
12 Students should be exposed to a variety of opinions about general practice	25	70	3	-	2
	27	67	6	-	-
13 Medical sociology should not be taught by medical members of a University Department of General Practice.	-	23	61	13	3
	-	15	73	6	6
14 University departments of general practice must have a practice population for which they have sole responsibility	13	29	40	16	2
	3	36	55	3	3
15 There should not be more status attached to the teaching of general medicine than general practice.	20	68	10	-	2
	6	39	49	3	3
16 All students should have a full-time attachment to general practice as well as attending their formal G.P. course.	44	44	10	-	2
	9	73	15	-	3
17 Practice management should be taught to all undergraduates	-	8	63	27	2
	6	39	39	16	-
18 Teaching practices should have better facilities than ordinary practices.	16	48	31	2	3
	12	55	30	3	-
19 Empathy is the most important characteristic of general practitioners	10	31	53	2	4
	24	43	30	3	-
20 It is not the place of university G.P. teachers to interest students in a career in General Practice	3	31	51	13	2
	3	46	51	-	-
21 Teachers should encourage students to speak up freely and openly in class.	77	21	-	-	2
	30	70	-	-	-
22 Students would prefer to observe general practice rather than to discuss its theoretical aspects.	18	51	23	4	4
	21	43	33	3	-
23 Students are aware of the problems of general practice medicine	6	29	39	13	13
	-	6	70	24	-

	Strongly Agree	Agree	Disagree	Strongly Disagree	No Answer
24 The general practice under-graduate course is too theoretical and does not cope with the real problems of general practice.	2	10	50	25	13
	12	27	58	3	-
25 Their teaching leads students to think seriously about the meaning and purposes of general practice.	12	59	10	2	17
	6	79	15	-	-
26 Academic G.P.'s are unaware of the real problems of general practice.	2	-	27	63	8
	-	18	61	21	-
27 G.P. courses should be non-examinable	-	10	70	12	8
	3	27	61	9	-
28 Publications should be encouraged for an academic G.P. because it is the interaction of research and teaching which gives authority to the academic department.	33	54	7	-	6
	9	58	21	6	6
29 Small group teaching is the most effective way of teaching in general practice.	33	38	19	2	8
	52	33	12	-	3
30 Students do not take general practice courses very seriously.	-	7	60	26	7
	-	36	42	22	-
31 The teaching of general practice should present the student with an intellectual challenge.	61	33	2	-	4
	21	58	21	-	-
32 Continuity of care is the most important attribute of general practice.	7	47	41	1	4
	39	37	19	2	3
33 A general practice course should be a valuable aid to a student's vocational plans.	17	74	2	-	7
	45	46	6	-	3
34 Teaching performance is the most important criterion of selecting any teacher of general practice.	2	48	40	4	6
	15	40	45	-	-
35 All teachers should have attended a course in teaching methods.	22	56	16	-	6
	24	49	27	-	-

Results

The opinions of both groups were similar. The University teachers were more positive in their attitudes to developing the students' critical thinking ability, encouraging them to speak out and presenting them with an intellectual challenge. They were also more positive in the need for course aims and objectives.

One-third of the teachers and four-fifths of the tutors felt that there are certain aspects of general practice which are impossible to teach. The tutors were more aware of empathy as an important characteristic of a general practitioner and less concerned about their own teaching status. History-taking was considered more important by the teachers and the concept of continuity of care was appreciated more by the tutors. Neither group considered the vocational aspects particularly important.

In contrast to the tutors the teachers felt that the students were more aware of the problems of

general practice. Both groups felt their role was wider than simply altering students' attitudes and their ability to relate to patients by an emphasis on the social background.

Discussion

It is encouraging to find such uniformity of opinion among both tutors and teachers. The undergraduate teaching in many universities has developed in a haphazard way and the diversity of teaching methods is confusing. However, the questionnaire suggests that this diversity does not exist and most are aware of the differences between the undergraduate and post-graduate teaching of general practice.

The Glasgow tutors' opinions fit in with the broad aims of their course and on the question of small group teaching their response was in keeping with the structuring of their teaching. It was surprising that they were less concerned than were the teachers about an academic department having a practice and also about students having a full-time attachment.

The two groups showed no difference in the 'subject-centred' and 'student-centred' themes. On the specific questions the only questions in which there was a difference referred to the underlying concepts of the teaching and of what a general practitioner should be. This is probably the difference between an idealistic and a practical view.

The university teachers were more critical of some of the questions and this explains the higher number that they failed to answer. Only four categories of reply were used so that people would be obliged to answer rather than to take a middle-line.

There have been no previous reports of a similar survey and a number of questions were answered in a way which could have been anticipated. However, it is important to document these views. The most satisfying aspect is the degree in which different people agree on some of the emotive issues in teaching.

Most departments have developed their own teaching programme in general practice and published work has only recently appeared. It now seems there will be a gradual move to a more uniform system, which

can only lead to strengthening of general practice teaching in the undergraduate curriculum.

CHAPTER XV

CHAPTER XV

CONCLUSIONS AND THE FUTURE

A variety of evaluatory instruments have been used in the present study and a great number of avenues have been opened which require further study. Many areas of teaching are still at an early stage and will require further development.

One of the difficulties in this particular study was the lack of any defined agreement of what should be taught in the undergraduate course in general practice. In Glasgow an effort has been made to teach only those aspects of medicine which are best demonstrated in a general practice setting and the teaching course has been developed in parallel to the hospital component of undergraduate education.

The main impetus for the undergraduate teaching of general practice has come from the Royal College of General Practitioners and the need for this teaching has been outlined in Chapter II. The diversity in

method and content was shown in Chapter IV when the teaching in other universities was described, but the questionnaire suggests that this diversity is less than may have been appreciated.

The number of tutors has continued to grow and in the coming Whitsun term fifty tutors will be needed for the fourth year teaching. These tutors have been recruited and almost 40% of the general practitioners in the Glasgow area now have a connection with undergraduate teaching. The stimulus for the practitioners, of the teaching/learning situation, is considerable.

The teaching in third and fourth years is now an accepted part of the course and the format is unlikely to show any great change. The teaching in final year does need some further development with a greater emphasis on handicap. Further sessions could be added with the object of expanding the teaching already given in hospital on this aspect, on mental subnormality, on the work of the health visitor, developmental screening and assessment.

The educational principles involved provided difficulties for some tutors unfamiliar with the techniques but it was considered important that methods should be used which were accepted in other educational fields. Specific objectives were not used: they were thought to be restrictive since the outcomes of learning at a higher level are often difficult to assess in the short term (Beard et al., 1974). De Cecco and Crawford (1968) have drawn attention to the extent to which objectives stress convergent (scientific) rather than divergent (humanistic) learning. Irwin et al. (1976) constructing a new course for undergraduate teaching of general practice make a plea for specific teaching objectives, saying that a failure to do so leads to unclear thinking and makes it impossible for teachers to have evaluative criteria.

The present study would not support this contention since the teaching was structured within aims and the many unanticipated findings have provided valuable evaluation data. Byrne and Marinker (1975) produced a discussion document on the undergraduate

teaching in general practice throughout which they speak of educational aims. Until recently all departments have seemed to produce a list of educational objectives but none knew if these were achieved.

The undergraduate teaching of general practice at Glasgow has been built on firm foundations and the data collected would suggest this has been successful. Specific objectives can now be formulated in certain areas of the course with the knowledge that these objectives are likely to be attained. In the present study student opinion has been considered important. The World Health Organisation (1976) said that anyone who asks students to evaluate their teaching need not doubt the validity of their judgements. Many tests have shown a close correlation with objective measures.

The future

The extended Department of General Practice must now be the largest in the University. This can lead to difficulties in standardisation and in any assessment of the students' progress and ability. There

is no professional examination in general practice nor is there likely to be one, but the student must take the course seriously and see the part that it plays in their basic education. A system of continuous assessment is being devised but is likely to be a difficult task and will take some years, before it works satisfactorily.

Miller (1976) makes a plea for the distinction between continuous assessment and examinations for certification. Continuous assessment should be timed so that the student can benefit from ongoing knowledge about his performance. Certification examinations on the other hand are at longer intervals and the students should know beforehand how well they are likely to do when taking them. Meaningful learning generally begins with the personal discovery of a need to know. This discovery acknowledges that one does not know something and in a continuous assessment programme which has certification as its purpose this discovery is concealed. Therefore, continuous assessment should be used primarily to support learning.

A student booklet on the undergraduate teaching

of general practice has just been produced. This will make continuous assessment easier since both students and tutors can see the complete course and how each part fits into the whole. A student log book has also been produced which will allow the student to keep notes on each part of the course: the tutor will correct the students' work and provide him with constant feedback.

The tutor force should remain fairly static for a few years but it is difficult to envisage how large this group can become. There is an economic limit to the degree of involvement that any practitioner can have but there must still be a number who would like to participate. Regular meetings with the tutors will continue, either at Woodside Health Centre when they have the opportunity of meeting their peers or in the practitioner's surgery. A course in teaching methods will be arranged and all tutors invited to participate. A Journal Club could be another method of regular meetings: the tutors have always felt that education should be the main purpose of any meeting and the Journal

Club would fulfil that criteria and give the tutor an opportunity for discussion on teaching and an exchange of ideas.

Any major changes in the teaching programme will be in the pre-clinical course. The Behavioural Science course is at present under consideration and the general practice department may in future make a major contribution, partly in the sociology component and in an interviewing course as a specific focus of human interaction.

An involvement in the clinical methods course at the end of second year could form a link with the general clinical teaching in third year, allowing the students to be better prepared for this part of the course.

The collaborative teaching with hospital specialists will continue and could be expanded in areas such as Psychiatry, Geriatrics and Paediatrics. It may be difficult to involve the practitioner tutors to any degree in this teaching and this commitment is likely to continue to be carried out by the University Department.

The use of video-equipment will expand and

will be used both in first and third year. Considerable work is required to define how best this should be used and methods of evaluation require further development. C.A.L. will continue to be used and more elaborate branching schemes will be developed to make full use of the computer's abilities. Proper methodology has still to be worked out for the teaching of history-taking and it is likely that the computer can be used in this context. The present system of C.A.L. is restrictive in the breadth of student response and further development will allow the student to type in his own responses.

The teaching of Psychiatry and Geriatrics in the community is likely to expand so that every student will eventually have a few sessions with a practitioner in which he concentrates on each of those disciplines.

During the time of the present study the undergraduate teaching has expanded considerably from forty hours to over seventy. Each part has been evaluated on a formative basis and the principle of evaluation will continue with all innovations in the course.

This teaching is now an accepted part of the curriculum at most medical schools. Donnan (1976) sent a questionnaire to over seven hundred final year students during 1975 and then compared this to a similar survey carried out in 1966. He found that general practice which had ranked fourth in 1966 was now the second most interesting. The increase in teaching during this time must be related to this improvement in interest.

UNIVERSITY VISITS

University Practice

No. of Staff - Clinical load

Hours Teaching

Audio-visual aids

Input in each year

Teaching with other subjects, e.g. Sociology

Specific aims

Collaborative teaching with hospital

Evaluation

Future

LOG BOOK

(All cases to be recorded. (4 pages for each term, i.e. 2 x 4)

AGE	SEX	MAIN SYMPTOM	PROBLEM	PSYCHOLOGICAL COMPONENT YES / NO	SOCIAL COMPONENT YES/NO	TREATMENT	SELF-LIMITING YES/NO

HAVE YOU NOTED ANY DIFFERENCE IN THE HISTORY-
TAKING FROM HOSPITAL ?

ANY COMMENTS :-

1ST TERM

Could each part of each question be marked TRUE or FALSE (Circle the correct answer). If you are correct this will count as +2, if you are wrong then -1, if left blank then 0. If you don't know leave blank. There are 10 questions.

EXAMPLE : $2 + 2 = 5$

TRUE / FALSE

1. Patients who present at the surgery with unproductive coughs are likely to have :-

- | | | | |
|----|-----------------------------------|------|-------|
| a) | Bronchial carcinoma | TRUE | FALSE |
| b) | Chronic bronchitis | TRUE | FALSE |
| c) | Upper respiratory tract infection | TRUE | FALSE |
| d) | The common cold | TRUE | FALSE |
| e) | A lung abscess | TRUE | FALSE |

2. Patients who present at the surgery with headache - described as a "tight band right round my head" often have:-

- | | | | |
|----|------------------|------|-------|
| a) | A brain tumour | TRUE | FALSE |
| b) | Hypertension | TRUE | FALSE |
| c) | Subdural abscess | TRUE | FALSE |
| d) | Sinusitis | TRUE | FALSE |
| e) | An anxiety state | TRUE | FALSE |

3. Urinary tract infections most commonly present at the surgery in :-

- | | | | |
|----|---------------|------|-------|
| a) | Men aged 25 | TRUE | FALSE |
| b) | Women aged 25 | TRUE | FALSE |
| c) | Boys aged 6 | TRUE | FALSE |
| d) | Men aged 75 | TRUE | FALSE |
| e) | Women aged 49 | TRUE | FALSE |

4. Patients suffering from a simple anxiety state commonly present at the surgery :-
- | | | |
|--|------|-------|
| a) Telling you that they are worried about something | TRUE | FALSE |
| b) Saying that they are tired and listless | TRUE | FALSE |
| c) Giving a long list of somatic complaints | TRUE | FALSE |
| d) With dyspepsia | TRUE | FALSE |
| e) With pain in their right leg | TRUE | FALSE |
- 5) Patients who present at the surgery with diarrhoea often have :-
- | | | |
|--|------|-------|
| a) Carcinoma of descending colon | TRUE | FALSE |
| b) Ulcerative colitis | TRUE | FALSE |
| c) A mild infective upset - viral, chemical or bacterial | TRUE | FALSE |
| d) Gastro-enteritis | TRUE | FALSE |
| e) An anxiety state | TRUE | FALSE |
6. A 25 year old man presenting at the surgery for the first time with dyspepsia and no other symptoms should be :-
- | | | |
|--|------|-------|
| a) Referred to medical out-patients for specialist opinion | TRUE | FALSE |
| b) Referred for barium meal | TRUE | FALSE |
| c) Asked about diet and precipitating factors | TRUE | FALSE |
| d) Given antacid to be used as required | TRUE | FALSE |
| e) Dismissed and told there is nothing to worry about | TRUE | FALSE |
7. An early presentation of endogenous depression in the surgery situation is :-
- | | | |
|--------------------------------|------|-------|
| a) Early wakening from sleep | TRUE | FALSE |
| b) Increase in appetite | TRUE | FALSE |
| c) Tired and lacking in energy | TRUE | FALSE |
| d) Endless talking | TRUE | FALSE |
| e) Chest pain | TRUE | FALSE |

APPENDIX 4 contd.

8. Among which of the following groups is low back pain commonly seen :-

- | | | | |
|----|---------------------------|------|-------|
| a) | Young men with heavy jobs | TRUE | FALSE |
| b) | Pregnant women | TRUE | FALSE |
| c) | Adolescent girls | TRUE | FALSE |
| d) | Middle-aged women | TRUE | FALSE |
| e) | Women over 80 | TRUE | FALSE |

9. A 45 year old male who smokes 15/day presents with unproductive cough. Which of the following are likely diagnoses :-

- | | | | |
|----|--------------------|------|-------|
| a) | Tuberculosis | TRUE | FALSE |
| b) | Chronic laryngitis | TRUE | FALSE |
| c) | Cardiac failure | TRUE | FALSE |
| d) | Tracheitis | TRUE | FALSE |
| e) | Sinusitis | TRUE | FALSE |

10. Which of the following statements about watery diarrhoea are likely to be true :-

- | | | | |
|----|---|------|-------|
| a) | Of more than 1/52 duration in a woman of 28 is likely to be carcinoma of rectum | TRUE | FALSE |
| b) | In 2/12 baby is probably a feeding problem | TRUE | FALSE |
| c) | Of more than 1/52 duration requires hospital investigation | TRUE | FALSE |
| d) | Is likely to be bacterial dysentery in a slum area | TRUE | FALSE |
| e) | In elderly may be due to constipation | TRUE | FALSE |

3RD TERM

Could each part of each question be marked TRUE or FALSE - (Circle the correct answer). If you are correct this will count as +2, if wrong then -1, if left blank then 0. If you don't know leave blank. There are 10 questions.

EXAMPLE : $2 + 2 = 5$ TRUE / FALSE

1. Which of the following statements about watery diarrhoea are likely to be true :-

- | | | | |
|----|--|------|-------|
| a) | Of 10 days duration in a woman of 30 is likely to be carcinoma of rectum | TRUE | FALSE |
| b) | In 2/12 old baby is probably feeding problem | TRUE | FALSE |
| c) | When lasts over one week requires hospital investigation | TRUE | FALSE |
| d) | Is likely to be bacillary dysentery in a slum area | TRUE | FALSE |
| e) | In a man of 80 may be due to constipation | TRUE | FALSE |

2. A 42 year old man who smokes 20/day presents at your surgery with an unproductive cough. Which of the following are likely diagnoses :-

- | | | | |
|----|--------------------|------|-------|
| a) | Sinusitis | TRUE | FALSE |
| b) | Cardiac failure | TRUE | FALSE |
| c) | Chronic laryngitis | TRUE | FALSE |
| d) | Tuberculosis | TRUE | FALSE |
| e) | Tracheitis | TRUE | FALSE |

3. An early presentation of endogenous depression in the surgery situation is :-

- | | | | |
|----|-----------------------------|------|-------|
| a) | Chest pain | TRUE | FALSE |
| b) | Decrease in appetite | TRUE | FALSE |
| c) | Tired and lacking in energy | TRUE | FALSE |
| d) | Early waking from sleep | TRUE | FALSE |
| e) | Endless talking | TRUE | FALSE |

APPENDIX 5 contd.

4. Low back pain is commonly seen in the following groups :-
- | | | | |
|----|---------------------------|------|-------|
| a) | Young men with heavy jobs | TRUE | FALSE |
| b) | Women over 80 | TRUE | FALSE |
| c) | Adolescent girls | TRUE | FALSE |
| d) | Pregnant women | TRUE | FALSE |
| e) | Middle aged women | TRUE | FALSE |
5. Patients who present with unproductive cough are unlikely to have :-
- | | | | |
|----|-----------------------------------|------|-------|
| a) | A lung abscess | TRUE | FALSE |
| b) | Chronic bronchitis | TRUE | FALSE |
| c) | Upper respiratory tract infection | TRUE | FALSE |
| d) | The common cold | TRUE | FALSE |
| e) | Bronchial carcinoma | TRUE | FALSE |
6. Urinary tract infections most commonly present at the surgery in :-
- | | | | |
|----|---------------|------|-------|
| a) | Men aged 23 | TRUE | FALSE |
| b) | Boys aged 6 | TRUE | FALSE |
| c) | Men aged 75 | TRUE | FALSE |
| d) | Women aged 47 | TRUE | FALSE |
| e) | Women aged 26 | TRUE | FALSE |
7. Patients suffering from a simple anxiety state commonly present at the surgery :-
- | | | | |
|----|--|------|-------|
| a) | Telling you they are worried about something | TRUE | FALSE |
| b) | With leg pains | TRUE | FALSE |
| c) | With dyspepsia | TRUE | FALSE |
| d) | Saying they are tired and listless | TRUE | FALSE |
| e) | Giving a long list of somatic complaints | TRUE | FALSE |
8. Patients who present at the surgery with diarrhoea often have :-
- | | | | |
|----|-------------------------------|------|-------|
| a) | An anxiety state | TRUE | FALSE |
| b) | A mild infective upset | TRUE | FALSE |
| c) | An ulcerative colitis | TRUE | FALSE |
| d) | Gastro-enteritis | TRUE | FALSE |
| e) | Carcinoma of descending colon | TRUE | FALSE |

APPENDIX 5 contd.

9. A 22 year old man presenting at your surgery for the first time with dyspepsia and no other symptoms should be :-
- | | | | |
|----|---|------|-------|
| a) | Referred for barium meal | TRUE | FALSE |
| b) | Dismissed and told there is nothing to worry about | TRUE | FALSE |
| c) | Asked about diet and precipitating factors | TRUE | FALSE |
| d) | Referred to medical out-patients for specialist opinion | TRUE | FALSE |
| e) | Given antacid to be used as required | TRUE | FALSE |
10. Patients who present with headache - described as a "tight band right round my head" often have :-
- | | | | |
|----|------------------|------|-------|
| a) | An anxiety state | TRUE | FALSE |
| b) | Sinusitis | TRUE | FALSE |
| c) | Hypertension | TRUE | FALSE |
| d) | A brain tumour | TRUE | FALSE |
| e) | Subdural abscess | TRUE | FALSE |

APPENDIX 6

ANY COMMENTS AND/OR SUGGESTIONS FOR THIS TEACHING
IN THE NEXT ACADEMIC YEAR :-

APPENDIX 7

NAME AGE SEX

(1) PRE-TEST

How have you got on in your course till now ?

Do results reflect your effort ?

the teachers ?

the methods ?

What do you find difficult ?

How do you cope with difficulty ?

How do you study ?

What part of the course do you prefer ?

What kind of "mind" does the medical require ?

Does the idea of C.A.L. appeal to you ?

Have you any idea what it would include ?

(2) OBSERVATION

Start time - actual programme

Finish time

Interference

Speed of response

Ease of getting on

Instructions -

Errors in answers - medical

- carelessness
- typing
- inadequate instruction
- student confusion

(3) POST-TEST

How did you like it ?

What did you think you learned ?

How does it fit in with the rest of your work ?

Any criticisms or suggestions ?

Ever unsure of what you were supposed to be doing ?

APPENDIX 7 contd.

Any difficulties - typing

- layout
- interference
- speed
- notation

Decision-making ever before ?

ANSWER ALL QUESTIONS

EXAMPLE - $2 + 2 = 5$

TRUE FALSE

You are a general practitioner: in your practice -

1. Woman of 65. Urinalysis reveals 2% glycosuria with no acetone. Bl. sugar is 304 mg%. Would you :-
 - a) Admit to medical ward as emergency YES NO
 - b) Arrange a glucose tolerance test YES NO
 - c) Commence chlorpropamide 250 mg daily YES NO
 - d) Commence soluble insulin 40 i.u. b.d. YES NO
 - e) Commence chlorpropamide 250 mg t.i.d. YES NO
2. In hypoglycaemia coma, would you :-
 - a) Admit immediately to hospital YES NO
 - b) Administer glucagon 1 ml. I.M. YES NO
 - c) Give 30 ml of 50% glucose I.V. YES NO
3. An adult diabetic should have an annual E.C.G. TRUE FALSE
4. A G.P. with 2500 patients will have approximately 60 patients with diabetes mellitus in his practice TRUE FALSE
5. A patient in acute pulmonary oedema should be given:-
 - a) Morphine 5 mg I.V. then 10 mg I.M. TRUE FALSE
 - b) Frusemide 40 mg orally TRUE FALSE
6. In Type IV Hyperlipoproteinaemia, it is useful to :-
 - a) Prescribe cholestyramine TRUE FALSE
 - b) Prescribe clofibrate TRUE FALSE
 - c) Advise a low cholesterol diet TRUE FALSE
 - d) Screen all relatives TRUE FALSE

APPENDIX 8 contd.

7. An 82 year old patient with angina, found at home to have a P.B.I.¹²⁷ of 1.6 uG/100 ml with clinical suspicion of myxoedema (126n.mol/l). Would you :-
 - a) Refer to out-patient department
for I¹³¹ studies YES NO
 - b) Commence thyroxine 0.1mg daily YES NO
8. In the early treatment of pernicious anaemia, i.e. when the patient is receiving daily B₁₂ -
 - a) The marrow is normoblastic by 48 hours TRUE FALSE
 - b) Maximum reticulocyte response is 6% TRUE FALSE
 - c) Maximum reticulocyte response in 6 days TRUE FALSE
 - d) Haemoglobin rises 1G every week TRUE FALSE
9. A young man has sudden onset of acute back pain after lifting, which radiates down (R) sciatic nerve. Straight leg raising is restricted to 30° on that side - there is no motor loss. A likely diagnosis is :-
 - a) Tumour of cauda equina TRUE FALSE
 - b) Tumour of spinal column TRUE FALSE
10. Examination of a patient reveals (a) loss of ankle jerk; (b) weakness of plantar flexion of foot; (c) definite sensory loss over outer border of the foot.

This suggests a lesion at

(a) L3	TRUE	FALSE
(b) L4	TRUE	FALSE
(c) S1	TRUE	FALSE
11. In an acute asthmatic attack in a 6 year old, would you give :-
 - a) 125 mg aminophylline over 30 sec. YES NO
 - b) Adrenaline (1/1000) subcutaneously 0.3 ml. YES NO
 - c) Disodium cromoglycate 2 capsules stat. YES NO
 - d) 100 mg hydrocortisone I.V. YES NO

APPENDIX 8 contd.

12. A common feature of hypertension in a young man is :-
- | | | |
|---------------------------|------|-------|
| a) Finger clubbing | TRUE | FALSE |
| b) R.V. hypertrophy | TRUE | FALSE |
| c) Delayed femoral pulses | TRUE | FALSE |
13. A commencing treatment of hypertension B.P. 180/120 in a woman of 42 could be :-
- | | | |
|-----------------------------|------|-------|
| a) Bethanidine 5 mg B.D. | TRUE | FALSE |
| b) Methyldopa 500 mg Q.I.D. | TRUE | FALSE |
14. During the first few weeks of diabetic treatment the urine should be checked every second day at noon
- | | |
|------|-------|
| TRUE | FALSE |
|------|-------|
15. Serum enzymes on the 4th day after a myocardial infarction show :-
- | | | |
|--|------|-------|
| a) Elevated serum aspartate amino-transferase (S.G.O.T.) | TRUE | FALSE |
| b) Normal lactic dehydrogenase (L.D.H.) | TRUE | FALSE |
| c) Normal serum creatine phosphokinase (S.C.P.K.) | TRUE | FALSE |
16. Blood checks on an untreated pernicious anaemia (Hb 7.5G%) show :-
- | | | |
|-------------------------------------|------|-------|
| a) A decreased platelet count | TRUE | FALSE |
| b) A normal W.B.C. | TRUE | FALSE |
| c) An elevated lactic dehydrogenase | TRUE | FALSE |
| d) A lowered folic acid level | TRUE | FALSE |
17. A man with recurrent backache who loses little time at work has a recurrence after lifting a heavy weight. A likely diagnosis is :-
- | | | |
|---------------------------|------|-------|
| a) Acute back strain | TRUE | FALSE |
| b) Ankylosing spondylitis | TRUE | FALSE |
18. In a screening procedure for hypertension, i.e. diastolic greater than 100mm.Hg. in a middle-aged population, you expect to find an incidence of :-

APPENDIX 8 contd.

- | | | | |
|--------------------------------------|--|------|-------|
| a) | 15% at first reading | TRUE | FALSE |
| b) | 5% at 2nd reading six weeks later | TRUE | FALSE |
| 19. In acute myocardial infarction - | | | |
| a) | 40% of all deaths occur in the first hour | TRUE | FALSE |
| b) | Myocardial infarction accounts for 25% of all deaths | TRUE | FALSE |

APPENDIX 9

ANSWER ALL QUESTIONS

EXAMPLE : $2 + 2 = 5$

TRUE / FALSE

You are a general practitioner: in your practice :-

1. In acute myocardial infarction:-
 - a) Myocardial infarction accounts for 25% of all deaths TRUE FALSE
 - b) 40% of all deaths occur in first hour TRUE FALSE
2. In a screening procedure for hypertension, i.e. diastolic greater than 100 mm.Hg., in a middle aged population, you expect to find an incidence of :-
 - a) 15% at 1st reading TRUE FALSE
 - b) 5% at 2nd reading 6 weeks later TRUE FALSE
3. A man with recurrent backache who loses little time at work has a recurrence after lifting a heavy weight. A likely diagnosis is :-
 - a) Acute back strain TRUE FALSE
 - b) Ankylosing spondylitis TRUE FALSE
4. Blood checks on an untreated pernicious anaemia (Hb. 7.5G%) show:-
 - a) A normal platelet count TRUE FALSE
 - b) A low W.B.C. TRUE FALSE
 - c) A normal lactic dehydrogenase TRUE FALSE
 - d) A high folic acid level TRUE FALSE
5. Serum enzymes on the 4th day after myocardial infarction show:-
 - a) Normal serum aspartate aminotransferase (S.G.O.T.) TRUE FALSE
 - b) Elevated lactic dehydrogenase (L.D.H.) TRUE FALSE
 - c) Normal serum creatine phosphokinase (S.C.P.K.) TRUE FALSE

APPENDIX 9 contd.

6. During the first few weeks of diabetic treatment the urine should be checked four times daily before meals TRUE FALSE

7. A commencing treatment of hypertension B.P. 180/120 in a man of 42 could be :-
 - a) Methyldopa 125 mg BD TRUE FALSE
 - b) Bethanidine 10 mg Q.I.D. TRUE FALSE

8. A common feature of hypertension in a young man is :-
 - a) Finger clubbing TRUE FALSE
 - b) R.V. hypertrophy TRUE FALSE
 - c) Delayed femoral pulses TRUE FALSE

9. In an acute asthmatic attack in a 6 year old would you give :-
 - a) 100 mg hydrocortisone I.V. YES NO
 - b) Disodium cromoglycate 2 capsules immediately YES NO
 - c) Adrenaline (1/1000) subcutaneously 0.3 ml YES NO
 - d) 125 mg aminophylline intravenously over 30 secs. YES NO

10. A woman of 58 reveals 2% glycosuria with no acetone. sugar is 304 mg%. Would you :- Bl.
 - a) Commence chlorpropamide 250 mg T.I.D. YES NO
 - b) Admit to medical ward as emergency YES NO
 - c) Commence chlorpropamide 250 mg daily YES NO
 - d) Commence soluble insulin 40 i.u. I.M., B.D. YES NO
 - e) Arrange a glucose tolerance test YES NO

11. In hypoglycaemic coma would you :-
 - a) Give 30 ml of 50% glucose I.V. YES NO
 - b) Admit immediately to hospital YES NO
 - c) Administer glucagon 1 ml. I.M. YES NO

12. An adult diabetic should have an annual E.C.G. TRUE FALSE

APPENDIX 9 contd.

13. A G.P. with 2,500 patients will have approximately 60 patients with diabetes mellitus in his practice. TRUE FALSE
14. A patient with chest pains in acute pulmonary oedema, should be given :-
 a) Frusemide 40 mg orally TRUE FALSE
 b) Morphine 5 mg I.V. then 10 mg I.M. TRUE FALSE
15. In Type IV hyperlipoproteinaemia, it is useful to :-
 a) Prescribe cholestyramine TRUE FALSE
 b) Prescribe clofibrate TRUE FALSE
 c) Advise a low cholesterol diet TRUE FALSE
 d) Screen all relatives TRUE FALSE
16. An 82 year old patient with angina, found at home to have a PBI₁₂₇ of 1.6 ug/100 ml. (126 n.mol/l) with clinical suspicion of myxoedema. Would you :-
 a) Commence thyroxine 0.1 mg daily YES NO
 b) Refer to out-patients department for I₁₃₁ studies YES NO
17. When an untreated pernicious anaemia (Hb. 7G%) commences daily B₁₂ intramuscularly :-
 a) Haemoglobin rises 1G every week TRUE FALSE
 b) Maximum reticulocyte response is 8% TRUE FALSE
 c) Maximum reticulocyte response in 12 days TRUE FALSE
 d) Marrow is normoblastic by 48 hours TRUE FALSE
18. A young man has sudden onset of acute back pain after lifting which radiates down (R) sciatic nerve. Straight leg raising is restricted to 30° on that side, there is no motor loss. A likely diagnosis is :-
 a) Prolapsed intervertebral disc TRUE FALSE
 b) Tumour of spinal column TRUE FALSE
19. Examination of a patient reveals (a) a loss of ankle jerk; (b) weakness of plantar flexion of foot; (c) definite sensory loss over outer border of the foot.
 This suggests a lesion at (a) L3 TRUE FALSE
 (b) S1 TRUE FALSE
 (c) L4 TRUE FALSE

APPENDIX 10

PRACTICE DETAILS

NAME OF TUTOR

NUMBER OF PARTNERS

NUMBER OF PATIENTS

ANCILLARY STAFF EMPLOYED

.....

ANCILLARY STAFF ATTACHED

.....

SPECIAL CHARACTERISTICS OF PRACTICE

.....

.....

DESCRIPTION AND COMMENTS ON AFTERNOON WHEN

RECORDING BOOKLET WAS NOT USED :-

AGE	SEX	COMPLAINT	NEW/ OLD	HOME/ SURGERY	PROBLEM	PSYCHOLOGICAL COMPONENT	SOCIAL COMPONENT	TREATMENT
-----	-----	-----------	-------------	------------------	---------	----------------------------	---------------------	-----------

APPENDIX 13

UNIVERSITY OF GLASGOW

(041-332-9977 Ext.295)

Department of General Practice
Woodside Health Centre,
Barr Street, Glasgow G20 7LR

INTEREST VALUE -

- | | | | |
|---------------------|--|------------------------------|--------------------------|
| (1) | Was your attachment | Very interesting | <input type="checkbox"/> |
| | | Quite interesting | <input type="checkbox"/> |
| | | Not interesting | <input type="checkbox"/> |
| (2) | Please rank in order of interest (1-6) | | |
| Patient's illnesses | <input type="checkbox"/> | Patient's home conditions | <input type="checkbox"/> |
| G.P.'s diagnosis | <input type="checkbox"/> | G.P.'s management | <input type="checkbox"/> |
| G.P.'s way of life | <input type="checkbox"/> | Other aspects (detail below) | <input type="checkbox"/> |

EDUCATIONAL VALUE -

What did you learn from this attachment ?

- (a) About diagnosis
- (b) About the management of illness
- (c) About the prevention of disease
- (d) About the use of hospital services
- (e) About workload in general practice

APPENDIX 13 contd.

(f) About patients' attitude to the G.P.

(g) About the G.P.'s attitudes to his patients

(h) About the use of nurses and other members of the
G.P.'s team

PLEASE COMMENT ON -

(a) Types of illnesses seen

(b) The social aspects of illness

(c) The psychological aspects of illness

(d) The care of the elderly

(e) Your project

(f) The care of children

APPENDIX 13 contd.

(g) The care of the chronically sick

VOCATIONAL

Has this attachment altered your views of medicine
in general practice -

Favourably
Unfavourably

PLEASE GIVE A BRIEF DESCRIPTION OF YOUR PRACTICE

PLEASE ADD ANY OTHER COMMENTS

Thank you.

APPENDIX 14

UNIVERSITY OF GLASGOW

(041-332-9977)

Department of General Practice
Woodside Health Centre
Barr Street, Glasgow G20 7LR

REPORT ON STUDENT ATTACHMENT

STUDENT'S NAME

Year Student : Dates - from / / to / /

STUDENT'S REACTION TO THIS ATTACHMENT -

DID THE STUDENT APPEAR TO LEARN FROM THE ATTACHMENT ? IF
'YES' PLEASE STATE IN WHAT AREAS -

PLEASE GIVE YOUR OWN REACTION TO THIS ATTACHMENT -

DID YOU THINK THE PROJECT VALUABLE ?

OTHER COMMENTS -

Doctor's Name

Address

.....

PRACTICE, i.e. TUTOR'S VISITS

Number of Years Teaching

Any suggestions ?

Any criticisms ?

Strength of Glasgow system ?

Weakness of Glasgow system ?

More place for sitting in ?

Should tutors have specific training ?

Should teaching be standardised ?

Feed-back sessions ?

More contact with Department ?

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