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AN INFORMATION SYSTEM IN GENERAL PRACTICE

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M.D.

UNIVERSITY OF GLASGOW

GENERAL PRACTICE, DUNDEE

MARCH 1979

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An Information System in General Practice

Summary

In the introduction, consideration is given to defects in existing general practice records and to reports which express the need for radical change. Criteria for an improved system are enumerated and a description is given of the problem oriented medical record system of Lawrence Weed, 1969 (1). The suitability of this system for general practice and for computerisation is examined.

The essential element in the linkage of medical records is a unique patient identification system. The Tayside master patient index is described and details are given of the practice A4 size medical record and the computer file of patient contact data.

Population denominators are determined each year from a computer practice register rather than rely on the figures from the primary care division which are inaccurate. The age/sex distribution of the practice population compares favourably with local and national populations.

Consultation rates provide a useful measure of the practice work load. The figures show that the overall demand of female patients is one and a half times that of male patients. The work load is also much greater in the 75 years and over age group in both sexes, but especially in males whose overall demand is twice that of the average of all ages of men. In contrast to the experience of other practices, consultation rates have not fallen significantly in the past five years. In fact, when the contribution of ancillary staff is included, consultation rates are on the increase. This reflects the expanding role of the primary care team. Home visits are considered by some to be the cornerstone of general practice, yet in the past twenty years, home visiting rates have fallen dramatically in many practices. In our practice, rates have remained constant and this reflects both

demand and practice policy. The importance of the place of contact to the illness encountered is considered later. The practice team believes it is important to reach out to patients in need rather than always waiting for them to make contact. Analyses of consultation rates show that 10% of the practice population (250 patients, of which $\frac{2}{3}$ are female) provide 37% of the work load.

Consultation rates and patient consulting rates for the principal categories of diseases and conditions, I.C.D. 1965 (32), show that over 80% of the total illness encountered is included in 10 of the 23 categories listed. In the rank order of frequency, symptoms and ill-defined conditions are top of the list and account for 17% of all consultations. Symptoms referred to the gastro-intestinal tract cause the greatest diagnostic difficulty. The pattern of disease in the practice population is different from that found in other regions. This is due to differences in morbidity and practice circumstances but it is also due to differences in the way doctors perceive and classify disease. The prevalence rates for the various disease categories were determined and the results confirm the importance of symptoms and ill-defined conditions and diseases of the respiratory system which occupy first and second place respectively, in the rank order of diseases. The former accounts for 1 in 4 of all patients consulting. The categories of disease most likely to be encountered at home visits were psychosis, infective diseases, diseases of the respiratory and circulatory systems and neoplasms.

An attempt was made to explore the diagnostic pathways from "undiagnosed" symptom to confirmed diagnosis using a computer link. The results show that over 90% of all such symptoms remain undiagnosed which has implications for prognosis and treatment. The symptoms that patients present provoke a wide range of diagnostic activity. In this practice, over the past five years, the use made of X-ray

and laboratory facilities has increased and that of hospital in-patient and out-patient facilities has decreased. A detailed analysis is given of the bacteriological investigation of two specific symptoms, frequency of micturition and sore throat.

The problem list is an essential element in the patient's medical record. It is a summary of all his illnesses which is easily understood and greatly reduces the risk that significant problems will be forgotten.

Few activities are more worthy of scrutiny than drug prescribing. Over the past five years repeat prescriptions accounted for 27% of all prescriptions and of the total repeat prescriptions, 18% given to males and 31% given to females, were for psychotropic drugs.

Antibiotics accounted for 43% of all prescriptions in the under 1-14 years age group, analgesics for 13% of all prescriptions in the 15-64 years age group, and hypnotics, anti-depressives and tranquillisers for 23% of all prescriptions in the 65 years and over age group. This latter group were also given 64% of prescriptions for insomnia and 93% of prescriptions for heart failure. The importance of drug analysis is that doctors are made aware of their prescribing habits and can take steps to modify them, e.g. diuretics given to patients with ankle oedema and antibiotics to patients with upper respiratory tract infection. Awareness alone, however, will not necessarily motivate doctors to make changes.

The practice records, the problem indexing system, the data on morbidity and prescribing, are readily available sources of information about the quality of medical care. Medical audit can be limited to a single case record or include all the case records of a particular disease. When the focus is on the patient and the pattern of care remediable problems are more readily detected.

The information system in the practice provides a wealth of material for undergraduate teaching and is also a source of learning and research for all the practice team.

AN INFORMATION SYSTEM IN GENERAL PRACTICE

Details of the Practice Team

Dr. Frederick B. Proudfoot, M.B. Ch.B. M.R.C.G.P. Date of birth 1.5.24.

21 Inverary Terrace, Dundee DD3 6BR.

Principal in General Practice since May 1953.

Dr. Elizabeth M. Proudfoot, M.B. Ch.B. Date of birth 3.6.25.

Principal in General Practice since October 1963.

Both Principals are Tutors in the Department of General Practice in the University of Dundee and the senior partner (Dr. F.B. Proudfoot) is a Trainer in the Vocational Training Scheme for General Practice in Tayside.

Dr. F. B. Proudfoot is also a part-time Regional Medical Officer and a member of the Boarding Panel of the Department of Health and Social Security.

Dr. Elizabeth M. Proudfoot is a Clinical Assistant in the Department of Surgery, Ninewells Hospital, Dundee.

During each year of the study a trainee practitioner has been in post.

Additional members of the practice team include an attached Health Visitor, an attached District Nursing Sister, one full-time Audio Typist, one full-time Coding Clerkess and two part-time Secretary/ Receptionists.

Organisational features of the practice include an appointment system and a rota for off-duty care with a neighbouring group practice of three principal practitioners.

Introduction

1. The existing medical record system.
2. The criteria for an improved medical record system.
3. The problem oriented medical record system.
4. The computer assisted medical record system.
5. The Tayside Master Patient Index.

1. The existing Medical Record System

"During the last fifty years, medical knowledge has advanced more rapidly than at any other period in its history. New understandings, new treatments, new diagnostic procedures and new methods of prevention have been, and are being, introduced at an ever increasing rate. Procedures that can safely, and conscientiously be applied to both sick and healthy human beings are being devised in profusion, with the result that certainty and understanding in medicine are increasing apace." Annual report of the Medical Research Council 1963.

Despite this unprecedented advance in clinical knowledge the vast majority of General Practitioners are still using a 7" x 4" Medical Record Envelope virtually unchanged from that first proposed by an Inter-departmental Committee in 1920 (2) under the National Insurance Medical Service. Complimentary to the advancements in clinical practice has been an information explosion. Mitchell 1969 (3). Information on patients has accumulated to such an extent that an increasing proportion of medical record envelopes bulge at the seams with a plethora of record cards, letters and reports many of which require to be folded twice to fit within the envelope. Retrieving relevant items of information can be a daunting and time consuming task even when the records are adequately maintained. As the Royal College of General Practitioners emphasised in its evidence to the Royal Commission on the National Health Service in January 1977 we need to find the way to unscramble the muddle of the record folder contents so that important information can be identified quickly. (4).

The need for change has been expressed time and time again in publications and reports of working parties.

The Gillie Committee in their report on the Field of Work of the Family Doctor 1963 expressed dissatisfaction with the format of the documents used for General Practice records in the National Health Service. (5).

The Tunbridge Committee reporting on the Standardisation of Hospital Medical Records in England and Wales, 1965, expressed the hope that General Practitioner Organisations would continue to give serious study to the purpose and best use of existing documents as well as to their improvements. (6).

Studies in 1970 and 1971 by Cormack (7) and (8) criticised the medical record envelope in regard to both form and content as being inadequate for the needs of modern medical practice.

Gruer and Heasman in 1970 (9) believed that the ultimate objective was a standard size folder used by all branches of the service.

Pinsent 1971 (10), in a scathing comment, stated that the existing medical record envelope was antiquated and obsolete and that many years of use of small medical record envelopes had given General Practitioners a 7" x 4" mentality.

In 1971 the Annual Conference of Representatives of Local Medical Committees resolved that as a matter of policy the future medical record should be of a size to contain unfolded paper of A4 size and should be made available to those doctors who wished to use it. (11).

Few would disagree that the format of the medical record envelope is a positive disincentive to good recording. Yet it is clear that simply to change the format of the record will not by itself improve the contents. In seeking to devise an improved record system for General Practice the purpose of keeping records needs to be kept constantly in mind.

2. The Criteria for an improved medical record system.

The short comings of the existing medical record system has resulted in a number of publications that provide the criteria by which any improved medical record system can be judged.

A report published in 1967 by the Scottish Health Services Council (12) stated that any medical record system must be shown to be of immediate value to the care of the individual patient or to be directly

of help in improving the technique and standard of care and to be of value in research in all its forms.

Noble 1976 (13) believed that the medical record system should serve as a mechanism for organising and storing all relevant information in a manner that permits prompt retrieval.

Cormack 1971 (14) acknowledged that medical records were important clinical tools in the management of individual patients. He considered their primary purpose in the field of general practice must be to provide a link between the patient and the practitioner in enabling the constant establishment and re-establishment of the relationship which is central to the provision of all medical care.

Ridsdill-Smith, 1977 (15) stated that for the medical record to be useful to both doctor and patient the doctor must use it at every contact with the patient, and any results must be recorded in a logical and predetermined manner.

The Royal College of General Practitioners in their written evidence to the Royal Commission on the National Health Service in 1977, (4) considered that there were two compatible objectives concerning records; firstly, to provide an efficient record for every day use; secondly, to provide a system whereby simple information can be collated and compared with information from other practices without loss of patient confidentiality.

A system which more than satisfies all these criteria was proposed in 1969 by Lawrence Weed (1). His system, the vehicle for which he called the Problem Oriented Medical Record (P.O.M.R.), differs significantly from traditional medical record systems. As Metcalf pointed out in 1972 (16) the current standard way of keeping medical records can be described as "Source oriented". This makes putting information in easy, but getting it out more difficult. Those writing the record tend to focus down on one or two problems and the patient can get lost sight of as a whole person.

The problem oriented medical record has been developed to correct these failings.

3. The Problem Oriented Medical Record.

The multiplicity of problems which patients present is a challenge to the most experienced physician and is often a shattering revelation to the novice in general practice. Complaints of being tired, aches and pains, mental and social problems, lumps in the breast, suicide attempts, alcoholic spouses are all part of the doctor/patient relationship.

Weed in his book "Medical Records, Medical Education and Patient Care" 1969 (1) outlines a system for recording all the patient's health problems in a consistent and logical way. He describes four phases of medical action to provide the basic elements of the patients record.

Data base - information about each patient.

The Problem list - a list of all the patients problems.

The Initial Plan - diagnostic and therapeutic plans for each problem.

Progress Notes - follow-up on each problem.

The data base is the initial collection of information about the patient. It consists of six basic elements: chief complaint, patient profile, present illness or illnesses, past history and systems review, physical examination and baseline laboratory examination. Weed takes it as a principle that the initial collection of data should be as complete as possible. He accepts, however, that it is up to each doctor, or group of doctors, to define the content of the data base he proposes to collect and the group or groups of patients from whom such data will be collected. Thus data base does not refer to total information but to defined information.

As Tait pointed out in 1974 (17) Professor Weed has challenged British General Practice to define the essential minimum range of information that we should have for all our patients.

In order to obtain a consensus of the views of General Practitioners

on the minimum content of data base, Berkeley and Richardson 1975 (18) sent a questionnaire to a one in three sample of all principals in Scotland asking them to record how essential they considered certain items of information to be on a general practice medical record. These items are listed below.

Administrative	Past History	Current Episode
Name	Drug Sensitivity	Current Diagnosis
Up-to-date address	Serious illness	Date & place of consultation
Sex	Operations	Drugs
Date of birth	Immunisations	Presenting of Symptoms
Marital state	Summary x-ray findings	Examination findings
N.H.S. number	Summary laboratory findings	
Name of doctor		
Date of Registration		
Occupation		

Three out of four of the doctors who returned the questionnaire considered it desirable to record all the items of information listed above with the exception of occupation. This omission is surprising since many occupations carry health risks and a job description is essential when decisions require to be made about a return to work after illness or injury. Only a small percentage of doctors considered it necessary to record any of the additional 20 items of information listed on the questionnaire. One out of five doctors never recorded information about family or social history, smoking habits, height or weight.

In the hurly-burly of a 5 to 10 minute consultation obtaining a data base of even minimum content may appear unrealistic. Yet it should be recognised that the data base need not be completed in one consultation, for having been defined it may be completed over a period of time. Some/

Some of the information can be obtained from existing records but there is also scope for the collection of data base information by para-medical staff and the use of questionnaires completed by patients. Regular checking and updating of information is essential if the data base is to be used to illuminate consultations and to provide material for teaching and research.

The Problem list is derived from the data base and is the key to the problem oriented medical record. Ideally it should appear as the front page of the record and thus form a table of contents and an index to the notes.

A problem includes anything which is relevant to the care of the patient whether it be a symptom, investigation, family or social factor. The doctor should list all the patient's problems, past as well as present, social and psychiatric as well as medical. Weed emphasised that the list should not contain diagnostic guesses: it should simply state the problems at a level of refinement consistent with the physicians understanding, running the gamut from the precise diagnosis to the isolated, unexplained finding. (1). Calling a problem something that it is not can lead to immense difficulties in thinking clearly about the problem. This is particularly relevant to general practice where episodes of illness frequently cannot be given a precise diagnostic label.

In a lecture at London University in 1973 (19) Weed stated that patients have a right to expect either in electronic form or on paper, a complete list of their problems, available at all times, no matter where they land up in the medical care system. Bjorn and Cross, 1970 (20) believed that until complete problem lists become an integral part of patient care, we cannot guarantee the patient either that he is obtaining all the care that is available or that the care he is receiving is appropriate in the light of his other problems.

Plans for problems. Having identified the problems needing attention by an examination of the data base, the next logical step is to record plans for the refinement and management of each problem on the list. When time is limited the doctor should establish priorities and direct attention to those problems having the greatest potential for moving into the acute phase. Specific plans should fall into three main categories: (a) diagnostic, which includes plans for the collection of further data in order to establish a diagnosis or facilitate management, (b) therapeutic, which includes plans for treatment with specific procedures or drugs,and (c) Education and Communication, which includes plans for the education of the patient and for communication with the doctor who is next to use the notes. Gruer 1976, in a report of a working Group (21) under the chairmanship of Professor I. M. Richardson endorsed the Weed emphasis on explicit plans being linked to individual problems on the list.

Progress notes. The fourth step is progress notes or "follow-up". Bjorn and Cross 1971 stressed that nowhere in record keeping is the problem-oriented approach a more valuable tool than in progress notes. (20).

In some problems a single consultation may suffice but where the problem is to be watched it is necessary to provide some structure to the progress notes. It is of especial importance to the 'Primary Care Team' that agreement is reached on a suitable formula for progress notes since communication between them is of vital importance if patients are not to suffer. What is being communicated should be equally intelligible to all, whether Doctor, Nurse, Health Visitor, Social Worker or Receptionist. The formula proposed by Weed is effective in practice. For each problem the progress notes are structured as follows, with the mnemonic 'SOAP' as an aid to memory.

Subjective - what the patient says about his problem.

Objective - what is found on examination of the problem.

Assessment - what is thought about the problem.

Plan - what is to be done about the problem.

It is not necessary to make notes on all problems every time a patient is seen nor is it essential to write a comment under each sub-heading. Although this method of entry takes up more space, it was the experience of Acheson in 1973 that doctors using this method wrote more but not very much more than previously (22). For examples of this see pages 25 - 28.

Weed believed that the proper numbering and titling of progress notes makes it possible to appraise, through auditing, the quality of data, analysis, and medical performance in any of the patient's problems, major or minor. Manual approaches to the problem-oriented audit of the physician are limited and impractical and computerisation of data is essential if rapid, effective audit of the physicians' performance is to be achieved.

4. The Computer assisted medical record system.

At a meeting in 1972 on "Computers in General Practice", Gruer (23) stated that the modern digital computer provided a significant advance in the handling of information with accuracy and speed and there was little doubt that it had an important part to play in the future progress of medicine.

Lindberg 1968 (24) thought that there was growing hope among physicians that computer systems could be used to cut through the bewildering mass of hand-written pages which constitute the traditional patient record and eliminate the 95 per cent of the record which is irrelevant. He was undecided, however, about the need to keep a written record.

In the Livingston Health Services Project 1973 (25) the medical record system was computer assisted with a written record held for each

individual on the list of a general practitioner.

Dinwoodie 1969/70 (26 & 27) alluded to the discipline of recording data for computer purposes which compelled the doctor to a concrete decision on diagnosis and classification in every case. Using simple computer facilities he demonstrated the benefits of continuous morbidity recording for a year in his practice.

5. The Tayside Master Patient Index.

The Scicon report, 1972 (28) stated thatan essential prerequisite of an efficient health information system in the long term is a record of every potential patient in the population served. Lindberg, 1968 (24) recognised, however, that one could not provide a patient with a true history of his illness nor study the biology of such illnesses in a population because the patients' stays in multiple hospitals could not be held together for lack of a unique identifying number.

The need for an integrated approach to information services, both in the care of the patients and in the planning of health services, was recognised by the Tayside Health Board. Early in 1973 they introduced the Tayside Master Patient Index (29) and (30) with the aim of providing a unified identification system and source of primary administrative data for the entire population of the Tayside Health Board. Central to the operation of the Tayside Master Patient Index was the allocation of a ten digit unique number to each patient, this being the key to all associated records. (31).

The number is virtually identical in structure to that used for a number of years in Sweden. This structure is indicated below:-

DD MM YY	1 2 3	5
Date of birth	Serial Number	Check digit

It can be seen that the number consists of three parts:-

(a) Date of birth. Externally the date of birth is always presented in the order day, month, year. Within the computer the order is reversed for ease of sorting in age order.

(b) Serial number. A three digit number used to distinguish uniquely between individuals born on the same day, or exactly 100 years apart. Odd numbers are used for males, even for females.

(c) Check digit. A check digit based on the Modulus 11 system completes the number.

Martin, 1976 (31) Information Services Officer, Tayside Health Board points out that the structure has sufficient capacity for Scotland but would require a preceding letter or an extra two digits for general United Kingdom use.

The Tayside Health Board wished to carry out a feasibility study of the patient identification system in one of the General Practices in Dundee. The Board was prepared to make available computer facilities for the storage and retrieval of information arising from the doctor/patient consultation. This was a unique opportunity and one likely to further our aim of an improved medical record in the practice.

The facility to link the records of primary care with those of the hospital and the community health service was particularly attractive. For too long General Practitioners have been accustomed to deliver care for most of their patients' problems, in relative isolation, largely unrecognised by their specialist colleagues. Further the Health Board was seeking to provide a service for the 'whole person' and not just for a specific problem; a concept long considered fundamental to General Practice.

The benefit to be gained could be summarised as follows:

(1) The computer would provide an index to the written records and a facility for the surveillance of 'at risk' groups of patients that would not be so easily or so effectively achieved using only a normal record system.

(2) The record linkage facility would allow the study of health care problems from the viewpoint of primary care, hospital and community and

would be a first step towards the concept of an integrated medical record for each patient.

(3) Data would be available in a form that could be processed for epidemiological, statistical and management services. It would be possible to study morbidity trends and to evaluate patterns of drug usage.

(4) Finally, and perhaps most important of all, the computer would provide a detailed analysis of the doctor/patient consultation from which the doctor could evaluate his performance and seek to improve it. As Weed pointed out, physicians will be able to govern their own professional advance to the degree that they are provided with comprehensive representations of what they have done to meet specific problems. (1).

Conclusion and Summary

For some years, the doctors in the practice had become increasingly dissatisfied with their system of recording information. The advent of the Problem Oriented Medical Record System, however, was the catalyst which stimulated them to make a complete change.

Professor Weed's book 'Medical Records, Medical Education and Patient Care' 1969 (1) was both exciting and explicit. Although his system was designed with hospital care in mind, the philosophy on which it was based, with its emphasis on the patient, his problems and his total environment, seemed particularly relevant to general practice. At the same time the opportunity to take part in a computer project, involving a unique patient identification system and a patient contact file, proved an exciting and irrestible challenge.

With the decision to introduce the problem oriented medical record or, at least, a modified version, it was thought likely that the A4 record would be easier to use and more efficient for the purpose than the existing medical record envelope, Concurrent with the changeover to A4 size records was the registration of the entire practice population

on the Tayside Master Patient Index.

The replacement of the medical record envelope with those of A4 size was then the first step taken towards an improved medical record system.

The method followed to achieve these changes is detailed in the next section.

METHOD

1. A4 folder and Regional Unique Number.
2. Patient Contact Data.

1. A4 Folder and Regional Unique Number

The existing medical record envelope was replaced with a new record folder based on the International A4 size of paper and containing appropriate inserts for the clinical notes, nurses and health visitors records, summaries of important illnesses and investigations, a record of immunisations and vaccinations, x-rays and Pathology reports and consultants letters.

The task was undertaken by two members of the practice secretarial staff working overtime over a period of six to eight weeks. Registration data forms for the Master Patient Index were also completed for each patient on the practice list. No clinical data was included but only name, address, date of birth and National Health Service number. Following registration each patient was allocated a unique number.

By 1st November 1972 all these preparations were complete and from that date standard details of all patient contacts have been included in the case records.

2. Patient Contact Data

For several years details of all house calls have been recorded on a Grundig EN3 portable tape recorder and transcribed by a practice audio-typist on to the patients' case records. At surgery consultations,

however, the clinical details were written by the doctor during the interview. With the decision to type all case notes, two Grundig Stenorette SL tape recorders of a more robust type than the EN3 were purchased for use in the surgery. Though relatively expensive these have given excellent service during the past five years. The two existing portable typewriters were supplemented by a standard Olympia model.

The following method is used. At each consultation subjective and objective data, assessment and plans for treatment, when appropriate, are recorded on tape by the doctor, nurse or health visitor. These are then typed on to the patient's case records by one of the audio-typists.

The ability to concentrate on the patients' problems rather than on writing the case notes is an advantage which is soon realised. At the surgery consultation the details are recorded on tape after the patient leaves the room and before the next one is called. The time taken is short and is accomplished more satisfactorily if a definite sequence is followed; by adopting the method outlined by Weed (1) order is achieved and a degree of discipline often lacking in our previous practice records. Medical students attached to the practice find the method of recording easy to follow. What is even more encouraging is its ready acceptance by a succession of trainee assistants. The problem for all the doctors is to be concise without loss of accuracy.

The data for the practice contact file are of defined content. Information, from the consultation, relevant to the problem or problems, the drug therapy, investigations and referrals, are linked to the unique number which identifies the patient. The practice secretary transcribes the details on to an in-put computer document.

Data is then transferred to standard 80 column punch cards by the Tayside Health Board Computer Department, who are responsible for the

computing side of the project. The computer used is an I.C.L. 1903T configuration, well within that recommended for Health Boards. See Appendix pages 154 - 155.

Problems are coded using the International Classification of Diseases Code 1965 Eighth Revision (32). Initially the index was scrutinised and problems found in primary care were transcribed on to a loose-leaf folder for easy reference. Some 1400 separate problems were listed. Many were simple varieties of the same problem, i.e. 12 codings for abscess, depending on site or type. With other problems, e.g. burns, injury, pain, to list every variety would have produced a register no less cumbersome than the original. Instead a cross reference was made to the appropriate page of the I.C.D. manual. In practice, the manual is used, on average, two or three times a day.

Drugs are coded using the Aberdeen Drug and Medicine Information Nomenclature (ADMIN) 1072 (33). Codes for drugs not in the index are easily obtained by direct reference to the Unit. In the manual record the name of the drug, dose and duration of treatment are included. In the computer file only the name of the drug is recorded. Adverse reactions are identified in both records.

Occupations are coded using the Classifications of Occupations 1970 (34) published by Her Majesty's Stationery Office. See Appendix page 156.

All input documents are checked by a senior member of the clerical staff and, on a random basis, by one of the doctors. One possible source of error concerns the patient with several problems on a number of different drugs. In some cases the problems and the drugs are incorrectly related. Illegibility leads to errors by the punch card operators. Mistakes in the occupation code and in the coding of the more common problems and drugs can be recognised by an experienced clerkess without reference to the code books. Scrutiny of the manual record is necessary but is time consuming and only possible on a random basis.

Following transfer of the data to punch cards the details are fed into the computer. Less than 2% of the data is subsequently rejected as invalid. Most errors are due to transposition of figures in a unique number or diagnosis code.

A few sheets of clinical notes now follow. They have been extracted from the case records of individual patients to illustrate some of the points referred to in the preceding paragraphs. The notes are reproduced without editing to reveal the general lay-out although the names and addresses have been altered to maintain confidentiality.

Each sheet is headed by the details which identify the patient i.e. name, address, date of birth, occupation and unique number. The date of the visit or surgery consultation is recorded in the left hand column with the initials of the doctor concerned; clinical details with problem title and I.C.D. Code occupy the centre of the sheet and drug therapy or management the right hand column.

A graphic representation of the record cycle used in the practice is given in the Appendix on page 157.

This completes the description of the method by which a new information system was introduced in the practice. The next section is concerned with the age and sex distribution of the practice population, how it is determined and how it compares with local and national populations. If meaningful comparisons are to be made in patient consulting rates and in the prevalence of disease between one practice and another then a basic requirement is an accurate age/sex register of the total practice population.

Sheet 3 MARY (Miss) GRANT

Patient number: 2201100020 13 Baffin Street, Dundee 220110

Occupation: Cashier 139

5.11.77 V/EMP/IW

PROBLEM: DYSPHAGIA (1-1) 7844
SUBJ: For past two weeks has found food sticking and on one or two occasions has had to make herself sick.
PLAN: Arrange barium swallow.
REVISIT MONDAY.
Rx*

Mucaine Susp. x 500 ml.

Barium Swallow*

10.11.77 V/CCA/IW

PROBLEM: ABDOMINAL PAIN (1-1) 7855
SUBJ: Yesterday had pain over the whole abdomen and had it all night. Colicky in type. Vomited on four occasions. Took laxatives yesterday, Senekot tablets and also prunes.
OBJ: Not ill looking. Tongue clean, not dry. Tummy soft, no tenderness at all. Bowel sounds present. Patient does not feel ill.
PLAN: To get up today and be careful about food.
NO REVISIT.
Rx*

Dorbanex x 200 ml 5/10 ml nocte

15.11.77 C/R/IW (per EMP)

PROBLEM: CARCINOMA OF THE STOMACH (3-2) 1519
OBJ: Dr. Howie, Consultant Radiologist phoned. X-ray showed extensive CA of stomach.
PLAN: Phoned Mr. Pringle, Consultant Surgeon - patient to be seen next Thursday a.m.
Letter to SOPD.

Urgent referral SOPD Ninewells*

20.12.77 V/FBP/IW

PROBLEM: CARCINOMA OF STOMACH (3-2) 1519
SUBJ: Wound feels a little sore and sleep disturbed. Tired. Appetite poor.
OBJ: Laparotomy confirmed extensive malignant disease - inoperable. Quite calm and resigned. Looks to have lost weight but abdo. still well padded and wound healing satis.
PLAN: Arrange for district nurse to visit regularly.
DOCTOR REVISIT 1/52.

Nurse to visit*

27.12.77 V/FBP/IW

PROBLEM: CARCINOMA OF STOMACH (3-2) 1519
SUBJ: Sleeping a little better. Appetite quite good. Asked me directly if she had cancer and I admitted this was the case.
OBJ: Accepted it well and understood we would stand by her.
PLAN: REVISIT EMP in 3 days + FBP in 1 week.

Sheet 1 | ANNE (Mrs) | SCOTT

Patient number: 1012400026 | 2 Caird Terrace, Dundee | 10.12.04.

Occupation: Nurse 183
(Royal Victoria Hospital)

11.5.74 C/FBP/HU

PROBLEM: VIRAL INFECTION (3-1) 0799
SUBJ: On evening of 5.5.74 on return from work felt nauseated, limbs ached and with a temperature of 101. Next day went back to work but mid week temp. rose again to 100.6. Since then has remained off work feeling nauseated and depressed.
OBJ: Temp. normal. PR 88/min. Throat and nose healthy. Abdomen soft.
ASS: Clearly a viral infection. To remain off work till fully recovered from her symptoms.
PLAN: Given National Insurance cert. for 1/52.

18.5.74 C/FBP/GC

PROBLEM: JAUNDICE (1-2) 7852
SUBJ: No improvement. Nausea and vague abdo. pain. Urine dark and stools pale.
OBJ: Yellow sclera but jaundice of skin less marked. Liver edge just palpable below costal margin.
PLAN: Blood for liver function tests. Urinalysis. Sample to Biochem*
National Insurance cert. for 2 weeks for 'Infective Hepatitis'.
Notify Tayside Health Board. Notified 20.5.74.

24.5.74 C/FBP/HU

PROBLEM: INFECTIVE HEPATITIS (3-2) 0700
SUBJ: Generally feels a little better. Stools still pale and urine remains dark.
OBJ: Skin less jaundiced but sclera still yellow. Urea and electrolytes normal. Bilirubin raised at 7 mg%. Alk. Phos 25. SGOT 150 and 5 NT's slightly at 18.
PLAN: Patient requested a few more Valium but I thought this inadvisable in view of disturbed liver function.
National Insurance cert. for 2/52.

31.5.74 C/EMP/GC

PROBLEM: INFECTIVE HEPATITIS (3-2) 0700
SUBJ: Feeling better.
OBJ: Less jaundiced: skin rash very troublesome.
ASS: Liver couldn't cope with drugs for itch.
See below.

PROBLEM: PRURITUS (1-2) 6989

Rx* Betnovate x 30 g.
Ung. Emulsificans ad 100 g.

Temporary Resident - Sheet 1.	CAROL (Miss)	BROWN
Patient number: 1712520024	c/o Jones	
Occupation: School Teacher 194.	71 Burnett Street Broughty Ferry	17.12.52

20.1.75 C/FBP/GC

PROBLEM: HEADACHE (1-1) 7910

SUBJ: Every few months since a young girl she has been troubled with headaches. Mainly in region of R. temple and accompanied by flashing lights. No assoc. nausea. Symptoms last one day but recent attack for 4 days with persistence of fog in front of the R. eye. Not on the pill.

OBJ: Pupils equal and react to light. V.A. 6/6 R. and 6/5 L. Vision fields normal. The R. optic disc less well defined than the L.

PLAN: Advised not to return to teaching job in Glasgow meantime.
Given National Insurance cert. for 1 week.
To report again in 2/3 days for reassessment.

24.1.75 C/FBP/HU

PROBLEM: BLURRING OF VISION (1-2) 7810

SUBJ: Blurring of vision worse and accompanied by black spots in front of the R. eye.

OBJ: Visual acuity R. eye less than 6/9.
Visual fields probably normal though outer half of R.H.F. may be restricted. The optic disc is very blurred and cannot be defined.

PLAN: Refer to Dept. of Ophthalmology, Dundee Royal Infirmary as an emergency.
Phoned Registrar on call and letter dictated.

Refer Eye Dept.*

14.2.75 C/AL/AT

PROBLEM: FOCAL CHOROIDITIS (3-2) 3650

SUBJ: Some improvement since starting steroids. See Dr. Haining's letter of 10.2.75. Appetite excessive. Blurring of vision persists.

PLAN: National Insurance Cert. x 2 weeks. Still attending Eye Dept.

Rx*

Tabs Prednisolone 5 mg b.d.
Atropine 1% daily
Betnesol b.d. to R. eye only.

28.2.75 C/EMP/ST

PROBLEM: FOCAL CHOROIDITIS (3-2) 3650

SUBJ: Blurring of vision still on R. side of her optic field. No diplopia.

OBJ: Both optic discs look fairly normal.
? inflammation is clearing.

PLAN: National Insurance cert x 3/52.

Sheet 2 ROBERT SIMPSON

Patient number: 1109160011 25 Dawson Terrace Dundee 11.09.16.

Occupation: Progress Chaser 139.

4.9.76 C/FBP/IW

PROBLEM: CHEST PAIN (1-2) 7837
SUBJ: Resumed work after the flu but now complaining of an aching discomfort in his chest at the mid-scapular level and to the R. No cough, spit or dyspnoea. Appetite good.
OBJ: No added sounds noted in the chest.
PLAN: Non-smoker for 8 years but arrange a routine MMR x-ray of chest this a.m. — MMR x-ray

15.9.76 C/FBP/IW

PROBLEM: CHEST PAIN (1-2) 7837 — Distalgesic tabs x 30 2 b.d.
SUBJ: Still complaining of pain in the mid-scapular level.
OBJ: Tender over 6th and 7th dorsal vertebrae. Chest x-ray satisfactory.
PLAN: Treat symptomatically. National Insurance Cert. x 1 week. — x-ray dorsal spine*.
Arrange for x-rays thoracic spine.
Rx*

6.10.76 C/FBP/ED

PROBLEM: METASTASES 7th DORSAL VERTEBRAE (3-2) 7200
SUBJ: Pain persists.
OBJ: X-ray dorsal spine - collapse with destruction of 7th vertebrae. — Refer to Radiotherapy*
PLAN: Refer to Dr. Swanson, Dept. Radiotherapy, Ninewells Hospital.

20.10.76 C/RR/VK

PROBLEM: METASTASES 7th DORSAL VERTEBRAE (3-2) 7200 — Tabs DR 118 x 60 2 tid.
SUBJ: Still in a good deal of pain. Waking him at night. Distalgesic only taking edge off it. Feels his work is too much for him.
OBJ: Tender over mid-dorsal spine. No pleural effusion. On waiting list Ninewells for deep x-ray therapy.
PLAN: Given National Insurance Cert. for 2 weeks. Write to hurry his admission. Rx for stronger analgesic.
Rx*

3.11.76 C/RR/VK

PROBLEM: METASTASES 7th DORSAL VERTEBRAE (3-2) 7200
SUBJ: Feels pain is much worse. — Tabs Diconal x 50 1 x 4 hrly.
PLAN: Phoned Dr. Swanson at Ninewells who saw patient this week. Will admit him as soon as possible. Long talk with son who was quite upset and wants something done straight away.
Rx*

THE PRACTICE POPULATION

The practice population has remained relatively stable since 1969. In the quarterly notification of patients on the list provided by the Primary Care Division, the list size in January 1969 was 3139 patients and in October 1977, 3193 patients.

The figures supplied by Primary Care Divisions are generally recognised as being inaccurate. In the second National Study of Morbidity Statistics from General Practice 1970-71 (35), reference is made to a common problem, the inflation of practice lists. Details are given of a method of calculating population denominators which obviates this to a large extent. The date of entry i.e. the date on which the doctor accepts the person (or family) on to his permanent list and assumes responsibility for medical care is noted. Departure dates are taken from the list of deletions from practice registers supplied by the Executive Council. This is the method followed in our practice.

In the Autumn of 1972, following the completion of registration data for each patient, a computer printout was obtained in the form of an age/sex register. This register of the practice population was scrutinised for errors and maintained by recording and dating all the additions and deletions to the practice list as they occurred. As Hicks, 1976 (36) pointed out where additions and deletions to the survey population are not allowed for in the calculations then rates concerning the numbers of patients are likely to be overstated or understated depending on the denominator used. The practice population may also be underestimated because of patients who intend to register with the practice but have not yet done so. However, it has been argued that in a practice of stable size the latest element of potential patients should roughly balance the inflation due to those who have left the area and not yet registered with a new doctor. (35).

The population denominators for each of the years under study were obtained by calculating the period of exposure to risk of each person in the practice population and dividing the total person-days by 365, the results being expressed as whole numbers.

Table 1 - Age and Sex distribution of the practice population for all ages 1973-1977.

	1973	1974	1975	1976	1977
Male	1465	1458	1499	1498	1510
Female	1779	1780	1753	1668	1697
All	3244	3238	3252	3166	3207

The age and sex distribution of the practice population shown in Table 1 confirms that over the past five years the practice population has remained relatively stable.

Each age group was counted separately and the figures reveal a slight but steady decline in the population in the age range 0-14 years and a corresponding increase in the age range 15-24 years. Similarly in the age range 25-64 years the population fell slightly but also increased slightly in the age range 65-75 years and over.

In Table 2 the practice population is compared with the populations of the City of Dundee, of Scotland, of England and Wales and with the estimated home population of Tayside.

Table 2 - The proportional representativeness of the practice population in the survey compared with the City of Dundee, Scotland, England and Wales and Tayside.

Age Groups	A. Proudfoot Practice 1973-77		B. Dundee		Scotland		England & Wales		C. Tayside	
			1971						1976	
	M	F	M	F	M	F	M	F	M	F
0-4	6.4	4.3	8.7	7.5	9	8	8.4	7.6	6.9	6.0
5-14	18.6	14.6	17.9	16.1	18.6	16.4	16.5	14.9	17.5	15.2
15-24	17.4	14.4	16.8	14.9	15.7	14.2	15.1	13.8	16.6	14.4
25-44	24.6	24.5	23.6	22.1	24.1	23	25.1	23.3	25.1	23
45-64	22.2	22.8	23.8	22.8	22.8	23.7	24.1	24.4	22.2	23.1
65-74	8.2	11.5	6.7	9.8	7.0	9.3	7.4	9.7	8.2	10.9
75 +	2.6	7.9	2.5	5.8	2.8	5.4	3.1	6.3	3.4	7.4
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
M/F Rates	0.9	1	0.9	1	0.9	1	0.9	1	0.9	1

Source A Practice Register

B Population Census 1971, His Majesty's Stationery Office

C Estimated Home Population for Tayside June 1976, Registrar General for Scotland (37).

Although age and sex breakdown of the 'Proudfoot' practice population is available for each of the years 1973-77, only average figures for the five years are shown in Table 2.

The correlation between the population is good, particularly in the age range 25-64 years in both sexes. The male to female ratio is constant at 0.9 to 1 for all populations except the practice population in the years 1973 and 1974 when it is 0.8 to 1.

Having considered the practice population in some detail the morbidity experience in the practice is likely to be reasonably representative of Dundee as a whole, but regional differences in morbidity, in the pattern of illness found in urban and rural communities, in the availability of medical services and in the perceived needs of the population, obviate against its application, except in general

terms, to other regions of Scotland and to England and Wales.

Now that the practice population has been defined the next item of information to be analysed is the consultation. As Hicks, 1976 (36) pointed out the consultation and the reason for it are the basic items of information in general practice.

CONSULTATION RATES

The consultation rate per patient is a simple measure of the work load of the practice. It is determined by dividing the number of consultations in a specified period e.g. a year, by the practice population at risk. The rate can also be expressed per 100 or per 1,000 patients and separately, for home visits and surgery consultations. The calculation is represented as follows:

$$\frac{\text{Number of consultations (Numerator)}}{\text{Practice population (Denominator)}} = \text{Consultation rate per patient}$$

In our practice, every face to face contact between doctor and patient, in the consulting room and in the home, is recorded. A record is also kept of the patients who consult the nursing sister and the health visitor and who contact the practice receptionist for a repeat prescription. All doctor, nurse and receptionist contacts are coded for computer filing. Health visitor consultations with ill patients are also coded but the remainder, which are mainly preventive activities, are recorded only on the manual record. Data stored in the computer provide the information on which consultation rates, morbidity patterns and drug analyses are based.

In recent years the ancillary staff of the practice team have played an increasing role in the delivery of primary medical care. As Elston emphasised in 1977, the development of primary care as a speciality concerned with the whole patient in his social environment and the changing standards of practice have involved the doctor in closer association with health visitors, community nurses and social workers, clerical and reception staff. (38).

Consultation rates for 'doctors' and for all the 'practice team' were determined separately to provide an estimate of the work load of ancillary staff in the combined care of patients.

Initially, however, we consider consultation rates for doctors only. These rates were calculated for each year of the study but

only the average rate for the period 1973 to 1977 is used in Table 3. During the five years there was an overall reduction of approximately 14% in the consultation rates for doctor/patient contacts although the rate fluctuated both up and down during this period.

Table 3 - Consultation rates per patient - Doctors only.

	1973-77	
Age	M	F
0-4	4.8	4.5
5-14	1.5	1.9
15-24	1.9	4.2
25-44	2.1	4.2
45-64	3.1	3.8
65-74	3.4	4.1
75 & over	5.0	5.4
All ages	2.5	3.9
All sexes	3.2	

Comparing the work load, females received on average 54% more attention than males with a mean variation from this figure of less than 3% during the five year period. The difference in the work load between males and females was, on average, greatest in the 15-44 year age group. There was little difference in the work load between the sexes in the 75 years and over age group but the overall demand by this age group during the five year period was much greater than the average for all ages of males or females. In male patients 75 years and over, the demand was 100% more than the average for all ages of men and in females 75 years and over the demand was 39% more than the average for all ages of women.

During the five year period of the study females in all age groups, apart from 0-4 years, required more attention than males.

The doctor/patient consultation rate during the period 1973-77 was on average slightly higher, at 3.2 per person per year than the rate of 3.0 per person per year in the second national morbidity study 1970-71. (35). The years being scrutinised differed but this apart,

the second national morbidity study involved a large population from England and Wales of some 300,000 persons, with 115 doctors in 18 practices both urban and rural. The vast difference in the scale and composition of the two studies should be borne in mind when comparing the results.

A number of surveys (39-45) have been carried out, in General Practice, in the past twenty years to determine the doctor/patient consultation rate. The populations involved have varied from several hundred practices representing a large area of the country to a random sample from the population of a limited area. Thus the results listed on Table 4 can be compared only in very general terms. They reveal a trend towards a reduction in the consultation rate per patient but with considerable fluctuations during the period covered.

Table 4 - Consultation rates per patient from surveys in General Practice 1951-1977.

Consultation Rate	
5.1	Hill 1951, Gt. Britain & N. Ireland (39)
3.8	Logan 1951/52, England & Wales (40)
3.8	Logan and Cushion 1955/56, England & Wales (41)
4.0	Wright 1964/65, S.W. England (42)
5.4	Williams 1965/66, S. Wales (43)
3.0	Ashford & Pearson 1966/67, City of Exeter (44)
3.9	Gruer 1970, Livingston, Scotland (45)
3.2	Current study 1973-77, City of Dundee

A report (46) from the Royal College of General Practitioners in 1973, summarised the records of short term (1 year) consultation rates. The consultation rates per patient for 9 Scottish practices were higher, on average, than the 16 English and Welsh practices. The surveys were done at different times, so that an exact comparison cannot be made, but the figure for Scotland was 6 consultations, on average, per person per year while that for England and Wales was 4.2.

From the data published in 1972 by Fry, (47), the long-term average consultation rate in 14 practices in England and Wales was 3.7 (c.f. Second National Morbidity Study 1970/71 of 3.0 per patient per year.) Fry attributed the variation in the rates of consultation to the size of the practice. The higher the number of patients the lower the annual consultation rate, and the fewer the number of patients, the more the doctor tends to see his patients. A study by Richardson et al in 1973 also showed that practices with larger lists tend to have lower consultation rates (48) while Cobb and Baldwin 1976 observed that variations between doctors in availability and in accessibility have important and in some ways profound effects upon consultation patterns (49). What is more pertinent is the relationship which may exist between consultation rates and the quality of medical care in general practice. Clearly, consultation rates will rise when doctors adopt any or all of the following:

1. Assessment and investigation of patients' problems in the practice setting rather than in hospital Outpatient Departments.
2. Management of acute illness at home rather than in hospital.
3. Routine surveillance of chronic disease, e.g. rheumatoid arthritis, diabetes, hypertension, cardiac disease, asthma by the practice team instead of, or in association with the Specialist in the hospital outpatient clinic.
4. Screening of the elderly or the 'at risk' often pin-pointed by the Health Visitor or the practice Nursing Sister.
5. Supportive and social visits to the elderly, the inadequate or the handicapped.
6. Shared antenatal care and the developmental screening of infants.
7. The care of the dying at home rather than in institutions.
8. The on-going care of the patient discharged 'early' from hospital.

What is arguable is whether these and similar trends in general

practice which influence consultation rates, also improve the quality of medical care. Many of us believe that they do but the problems involved in the assessment of quality of medical care are considerable not least because firm criteria have still to be established. As Buchan and Richardson, 1973, emphasised it is against the whole background of the family doctor's job that the question of quality of care has to be set. (50).

When comparing consultation rates in different practices, it is important to know whether contacts with ancillary members of the practice team are included in the figures. Marsh and McNay in a paper published in 1974, (51) described the work load in a practice of 3,137 patients, part of a 5 partner practice in the Teeside conurbation. They found that the doctor, nurse and health visitor together had an average of 3.1 consultations per patient per year while the doctor himself had an average of 2.3 consultations per patient per year. The figures given in Table 5, from our practice, lend support to the proposition that the pattern of work of the general practitioner has changed and that the care of his patients is now shared with other members of the practice team. When the contribution of ancillary staff is included in the consultation rates then the trend is likely to be one of increased contact of patients with the Primary Care Team.

Table 5 - Total consultation rates - Primary Care Team

Age	1973-77	
	M	F
0-4	5.8	5.5
5-14	1.7	2.4
15-24	2.2	5.0
25-44	2.7	5.6
45-64	4.8	7.9
65-74	7.3	9.1
75 & over	12.1	15.7
All ages	3.8	6.5
All sexes	5.2	

The consultation rate per patient for the practice as a whole is increased by 60% when the contribution of ancillary staff is included. This reflects the change from the doctor working in relative isolation to the concept of a primary care team with its enhanced capacity to provide medical care in the community. The impact of the attached paramedical staff on the work load of the doctors in this practice is considerable. This is most striking in the 65 and over age group when more than half and in the case of elderly women over 75 years, up to $\frac{2}{3}$ of the contacts are made by ancillary staff.

Although, as we have noted, consultation rates provide a useful measure of the practice work load, Logan and Cushion 1958 (41) thought that consultation rates were unsatisfactory measures of morbidity in different practices because of differences in practice circumstances and organisation. A doctor in an area of relatively low morbidity who sees his patients more often will give as many consultations as a doctor in an area of high morbidity. They considered that a truer guide to morbidity is given by patient consulting rates.

The next section is devoted to an examination of this important aspect of morbidity recording.

PATIENT CONSULTING RATES

Patient consulting rates are determined by dividing the number of persons who consult at least once, in the period under review, by the practice population and the result expressed as a percentage. The rates of patient/doctor consulting and patient/practice team consulting have been calculated each year from 1973 to 1977 using this method. The rates obtained in these years were very similar, however, and only average rates for the period 1973 to 1977 are used in Table 6.

Table 6 - Patient consulting rates as a percentage of the population in males and females 1973-1977. Doctors only.

Age	1973-77	
	M	F
0-4	99	100
5-14	58.5	66.7
15-24	63.5	84.5
25-44	59.5	79.8
45-64	64.7	75.1
65-74	68.8	72.8
75 & over	97.7	84.8
All ages	66.2	78.3
All sexes	72.7	

Table 6 shows that almost all patients in 0-4 years and 75 years and over age groups consulted the doctor at least once during the year. The 5-14 years age group is least likely to consult the doctor with an average 41% males and 33% females not doing so.

In the second National Study of Morbidity Statistics from general practice 1970-71 (35) patient consulting rates include only face to face contacts between doctor and patient and not contacts with ancillary staff. The average patient consulting rate in the national study was 63% of males and 71% of females whereas in the Dundee practice for the year nearest to the study (1973) it was 67% of males and 79% of females.

The practices in the National Study from South West England came nearest to the Dundee practice with 69% of males and 76% of females.

The patient/doctor consulting rate over the five years was 72.7% and the patient/practice consulting rate was 77.8%. Thus on average 5% of patients consulted only ancillary staff during the course of the year. This figure rose from 3.7% in 1973 to 6.2% in 1976 and then fell again in 1977 to 4.7%. However, these figures do not include contacts made with the health visitor during her routine health visiting.

Home visits by doctor, nurse or health visitor are an important aspect of the work load of the primary care team and are considered separately in the next section.

HOME VISITING RATES

Fry (47) in a review of twenty-three years of work in his practice, showed that his home visiting rates had fallen dramatically in the period 1949-1971. In 'Present State and Future Needs of General Practice', Third Edition, 1973 (46) other practitioners with records extending over many years, noted a similar but less dramatic trend. The mean trend reduction in the home consultation rate for these practitioners was 75% and the home visiting rate for 1971, expressed as a percent of the total contacts (surgery consultations plus home visits) was 14%. This rate for home visits is lower than that noted in the Second Morbidity Study 1970/71 (35) of 16.6% and a good deal less than the average for the doctors in this practice of 25.9%.

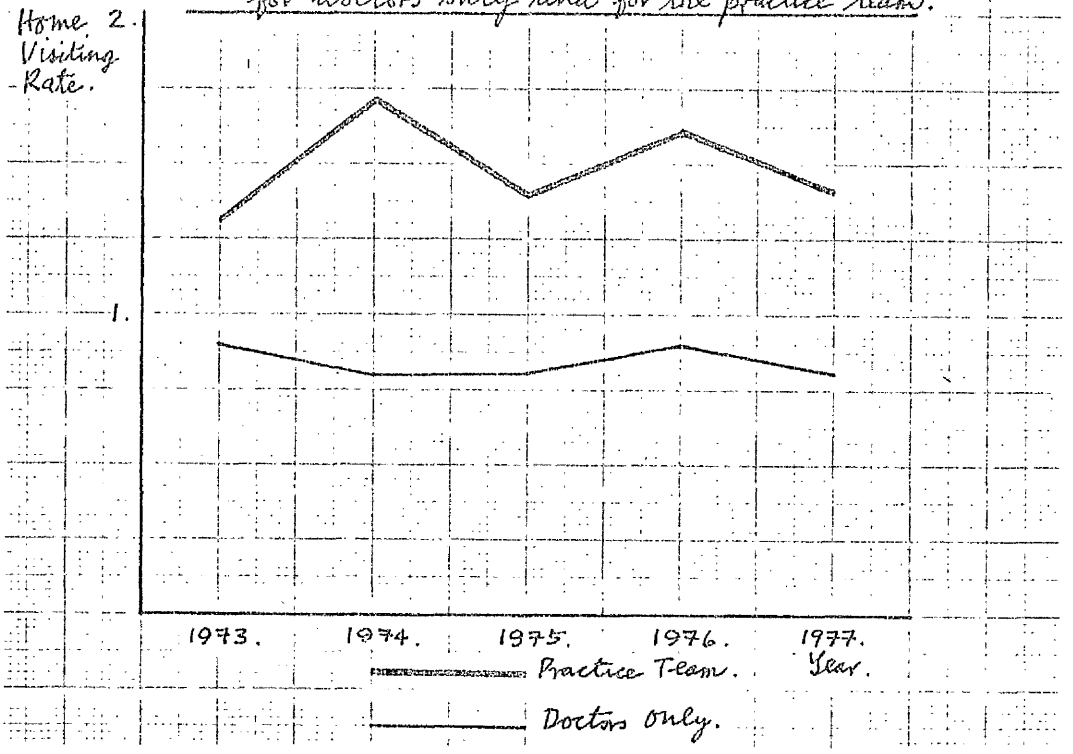
The differences in these rates may reflect, in part, the different views held by doctors in regard to the relative importance of home visits.

The policy in our practice is to visit patients who are ill and confined to bed and to encourage patients who are ambulant to attend for consultation at the surgery. However, we try to adopt a flexible approach to home visits, recognising that, apart from the acutely ill, many elderly patients, mothers with young children living at a distance from the surgery, the chronic disabled and the handicapped, may find it difficult to attend the surgery.

Although appreciating that home visits are wasteful of doctor's time, or as Buchan and Richardson expressed it in 1973 - the lowered efficiency inherent in house calls (50), we believe they provide a valuable opportunity to see the patient and his family in their own environment. The patient is likely to feel less threatened in his own home and a rapport between patient and doctor is often achieved more easily than in the clinical atmosphere of the surgery. Doctors have 'open access' to the homes of their patients, a privilege afforded to few outside the family circle. Home visits can be a very rewarding part of general practice and should not be pruned too rigorously on

the grounds of efficiency.

Table 7. Home visiting rates per patient 1973–1977 — for doctors only and for the practice team.



The graph in Table 7 shows that home visit rates, for the doctors and for the practice, have remained fairly constant from 1973-1977 despite some fluctuation in the intervening years. It may be that the downward trend, noted by other practices in earlier years, has now begun to level off. In our practice the burden of work was greatest with the 75 years and over age group, especially in women, with a significant proportion of this being carried out by ancillary staff.

The large number of visits to elderly patients is due partly to the high level of demand as Noble, 1976, expressed it, the elderly and disabled patients require more time, make more visits, and usually present more medical problems than younger individuals. (13). The practice team recognises, however, that screenings of the elderly or "sifting", as Professor Knox, 1978, so aptly described it (52) produces positive results as Barber and Wallace confirmed in 1976. (53). Some of the visits to the elderly by a member of the practice team - not necessarily the doctor, were for this purpose. The method used, was to examine the case records of all those in the practice Age/Sex Register who were 75 years and over. Any patients who had not made

contact with the practice in the previous six months were visited by the health visitor in the first instance and any significant problems noted by her were referred to the doctor for further assessment. The importance of preventive medicine is emphasised by Alpert and Charney 1974 in their description of primary care. They include, as part of the proper domain of primary medicine, such preventive medicine as can be practised at the family level - an activity which will involve out-reach and follow-up efforts rather than always waiting for the patient to make the contact. (54).

Practice consultation rates both in the consulting room and in the home are likely to increase when the practice team move from "on demand" to a positive out-reach to selected patients.

Although the consultation rate per patient for the practice team is 5.2, the number of consultations made by individual patients can vary in any one year from 0 to 50 or more. The details are given in the next section.

RANGE OF THE NUMBER OF CONSULTATIONS

During each of the five years under review, on average, 23% of the patients had no consultation with the practice. Of the remainder, 90% made between 1 and 14 contacts and 10% between 15 and 50 or more contacts. This 10% accounted for 250 patients about $\frac{2}{3}$ being female. They provided 37% of the work load with an average of 25 consultations per patient, (24.3 for males and 25.5 for females). Some 50% of them were over 65 years.

As an illustration of the excessive demands made by certain patients, details are given of the consultation rate per year of a woman aged 35 years, who has suffered from anorexia nervosa since 1963. She is single, lives with her parents and is unable to cope with steady employment.

The figures show that during the five year period from 1973-77 her average consultation rate per year was 35. However, during this period she made innumerable additional contacts with the practice receptionists by telephone and in person at the surgery outwith normal consultation hours. Of these contacts only those which involved a repeat prescription or which had a direct bearing on the management of her illness were noted in her case records. It is estimated that less than half were recorded but this still amounts to a further 21 contacts on average per year.

Although this case is unusual, the involvement of the receptionist in the care of patients is not. As has already been emphasised, studies of the work load in general practice which do not take account of the contribution made by ancillary staff are misleading.

In 1973, 29.1% of males and 17.6% of females had no consultation with the practice, a much smaller proportion than the 39.8% males and 32.4% females in the Second National Study of General Practice 1970-71. (35).

Although drug prescribing is analysed later, when considering doctor/patient consultation rates it is of interest to note the number of consultations where drugs are prescribed and where no drugs are prescribed. During the years under review, on average, 32% of males and 24% of females who consulted, at any one time, had no drugs prescribed. The 15-24 years age group were least likely to be given a drug at the consultation, and the 65-74 years age group were most likely to be given a drug. No drugs were prescribed at one in 3.6 of all consultations.

From 1973-1977, almost without exception, female patients in the 5-75 years and over age groups were more likely to be prescribed a drug or drugs than male patients. The difference between the sexes in this respect was particularly marked in the 45-64 year age group for the years 1974-77.

The number of drugs prescribed at any one consultation varies from 1 to 5 or more drugs. An analysis of the number of drugs prescribed for all age groups shows that at relatively few consultations are more than 2 drugs prescribed. In the past five years there has been a gradual increase in the percentage of consultations at which only one drug is prescribed and approximately 90% of all consultations are limited to one or two drugs. A similar pattern emerges if the analysis is restricted to the 65 years and over age group.

The elderly are least able to deal with multiple drug prescribing. It is encouraging to note that, at least in the context of each consultation, the doctors in the team are aware of the need to limit the number of drugs prescribed. This does not preclude any patient from being given several drugs to take at the same time as a result of repeated visits to the doctor. In this respect we consider it important to record all drugs prescribed in a separate column in the patient's manual record so that all members of the practice team can see clearly what drugs, if any, have been given to the patient.

Crooks Shepherd & Stevenson 1975, remind us that the elderly often complicate the picture further by obtaining drugs from repeat prescriptions or from sources other than their doctor. (55).

This initial examination of the consultation has provided a broad picture of the total volume of sickness encountered in the practice. In the next section we probe deeper and analyse the problems which patients present at the consultation.

THE PATTERN OF CONSULTATIONS BY MORBIDITY

As stated earlier, the decision was made, at the outset, that the doctor or an ancillary colleague would record at every consultation, both on the manual record and on computer file, the problem or problems presented by the patient. The aim was to understand the problem and define it honestly, no matter how elementary the terms required. It was found that at some consultations it was possible to classify the problem as a 'diagnosis', e.g. hypertensive heart disease or acute tonsillitis. However, at other consultations, especially the initial contact in a new illness, a symptom or physical finding, e.g. dyspnoea, headache or oedema of the legs or a laboratory finding e.g. glycosuria, was the only appropriate definition. If the problem was a social one then an attempt was made to define it no less honestly or precisely, e.g. marital breakdown, truancy or bereavement. Thus, at any one time, a list of the patients problems reveals a varying degree of diagnostic resolution from the symptom or finding of unknown aetiology to the precise diagnosis. As Metcalfe stated in 1973, (56) because patients have a very low threshold to get into care, people come with very small deviations from normal health which are undiagnosable - it is important that these things should not, however, be buried under the increasing pile of paper. Accordingly the problem list can take symptoms and signs which are not yet part of a diagnosis.

Despite the constraints of the 'International Classification of Diseases Code', particularly with regard to social problems, the problem or problems at each consultation are coded as accurately as possible. Table 8 shows the number of consultations for the principal categories of diseases and conditions listed in the I.C.D. Manual. Although the figures for each year of the study are known, only these for 1974 and 1977 are used in this tabulation.

Table 8 - Number of consultations in the various categories of diseases for males and females, 1974 and 1977.

I.C.D. Categories of Diseases and Conditions	1974		1977	
	M	F	M	F
Infective & Parasitic diseases*	290	332	239	309
Neoplasms	94	296	105	178
Endocrine, Nutritional & Metabolic Diseases	90	340	105	381
Diseases of blood & blood-forming organs	67	472	130	378
Psychosis	32	147	25	169
Neurosis *	449	1836	413	1556
Mental Retardation	0	1	0	0
Other Diseases of C.N.S.	223	194	101	258
Diseases of the Nerves	74	184	58	165
Inflammatory Diseases of the Eyes	88	267	170	258
Diseases of the Ear	161	241	137	213
Diseases of the Circulatory System*	1052	2121	880	1705
Diseases of the Respiratory System*	1171	1612	1072	1205
Diseases of the Digestive System *	404	632	316	477
Diseases of the Genito Urinary System*	82	660	107	629
Complications of Pregnancy	-	291	-	269
Diseases of the Skin *	566	899	591	688
Diseases of Musculo-skeletal System*	418	1370	333	1037
Congenital Anomalies	21	36	18	50
Symptoms, ill-defined conditions *	1027	2674	1087	2874
Observation without need for further medical care.	14	7	0	0
Other ill-defined and unknown causes of morbidity & mortality	29	126	0	1
Accidents, Poisonings & Violence*	340	464	366	416
Total No. of consultations for all categories	22591		20159	
* Categories only	16768		16300	

The total number of consultations for the various diseases is greater than the total number of consultations since at any one consultation more than one disease or condition may be identified. On average, over the 5 year period, 1.2 diseases or conditions were recorded at every consultation. The highest number of consultations for all diseases and conditions was recorded in 1974 and the lowest in 1977 with a variation of only 11% in the 5 years of the study. Of the 23 categories listed in Table 8, 10 of them (identified with an asterisk) account for 82% of the total problems in the practice with a mean variation of 1.2% in the 5 years.

In Table 9 the top ten categories of diseases and conditions are listed in rank order of the number of consultations in each category.

Table 9 - Total number of consultations for the 10 principal categories of diseases and conditions in rank order of frequency 1973-77.

Categories of Diseases & Conditions	Total Consultations	Rank Order	Percentage of all consultations
Symptoms and Ill-defined Conditions	18101	1	17.3
Diseases of the Circulatory System	14068	2	13.4
Diseases of the Respiratory System	13157	3	12.6
Neurosis, Personality Disorders etc.	10363	4	9.9
Diseases of the Musculo-Skeletal System	7595	5	7.3
Diseases of the Skin	6579	6	6.3
Diseases of the Digestive System	4699	7	4.5
Accidents, Poisonings etc.	3875	8	3.7
Diseases of the Genito Urinary System	3765	9	3.6
Infective and Parasitic Diseases	3012	10	2.9
All remaining categories & conditions	19518	-	18.5
All categories and conditions	104732	-	100.0

The classification of symptoms in Section XVI of the International Classification of Diseases makes it possible to label episodes of illness in terms of patients' complaints or symptoms rather than diagnoses. The frequency with which this category is used to label patients'

problems is well illustrated in Table 9. Symptoms and ill-defined conditions occupy first place in the rank order and account for 17.3% of all consultations. Examples from the case records of the practice emphasise the value of this aspect of morbidity recording. The clinical notes provided are those dictated at the consultation and have not been amended in any way.

FEMALE, aged 83 years

PROBLEM: HAEMATEMESIS I.C.D. Code 7845

SUBJ: Painless vomiting of fresh blood and coffee grounds. No melaena. No previous history of ulcer.

OBJ: Extremely pale but not clinically shocked. Pulse 80/min. B.P. 130/70. Freshly vomited blood with clots seen (500 ml). Abdominal examination: recent weight loss. No hepatomegaly. No masses felt. Abdomen firm but not especially tender.

PLAN: Admit hospital.

NOTE: Subsequent investigation revealed a benign gastric ulcer.

MALE, aged 23 years

PROBLEM: CHEST PAIN I.C.D. Code 783.7

SUBJ: Stitch-like pain in the L. chest anteriorly with some discomfort around the diaphragm of two weeks' duration. Sudden onset but no history of injury. Not aware of any breathlessness. Pain distinctly worse on deep breathing. Occasional cough with scanty mucoid sputum. He is a student and smokes 20 cigarettes per day. No previous illness of any significance.

OBJ: Looks well although somewhat apprehensive. No abnormal sounds noted in the chest.

ASS: The history is a little suggestive of a spontaneous pneumothorax.

PLAN: Arrange for an MMR x-ray at the Chest Clinic.

NOTE: Report from Chest Clinic confirming the presence of a spontaneous pneumothorax. A few days later he became acutely dyspnoeic and was admitted to hospital.

MALE aged 60 years

PROBLEM: WEIGHT LOSS I.C.D. Code 788.4

SUBJ: Since February 1974 has lost more than 1 stone in weight. Easily tired. Appetite reasonable. Some nocturnal frequency.

OBJ: Mildly cyanosed. B.P. elevated 136/112. Weight 8 st. Minimal tenderness in mid epigastrium. Firm swelling in right renal angle almost certainly a kidney. Urinalysis negative.

ASS: Calcification in right kidney noted in March 1974. Continues to smoke ++.

PLAN: Check urea and electrolytes, full blood count and repeat chest x-ray.

NOTE: X-ray of chest 7 days later revealed multiple metastases throughout both lung fields. On further investigation a clear cell carcinoma of the kidney was discovered. The patient died at home 5 months later.

FEMALE, AGED 15 YEARS

PROBLEM: GIDDINESS I.C.D. Code 780.5

SUBJ: In the early summer of last year she had 2/3 episodes of giddiness, nausea and mild headache. None for the next 7 months and then for the past 2 weeks, 2 or 3 each week. Episodes usually brief but on one occasion lasted $\frac{1}{2}$ hour. During them she feels dissociated from her surroundings and in a dream like state and there are some visual hallucinations.

OBJ: Well built, healthy looking young girl. B.P. 100/80. Pulse regular 80/min. Fundi appear normal. Previous history of a fractured skull at the age of 7.

PLAN: Discussed her school performance and her hopes for the future; decided to observe meantime and review in one week.

NOTE: Over the next 2 months she was seen on 3 occasions to talk about her problems and her attacks of giddiness receded. She had been symptom free for a year when contact was lost with her leaving the area for University.

MALE, aged 3 years

PROBLEM: VOMITING I.C.D. Code 784.1

SUBJ: Frequent bouts of vomiting and diarrhoea since 1 a.m. Retained fluids initially but not now.

OBJ: Quite lively, colour good but became rather pale after an episode of vomiting. Tongue reasonably moist, skin elastic. Faint smell of acetone on the breath.

ASS: Dehydration mild as yet.

PLAN: Given 2.5 mg Maxolon by injection. To be given small amounts of boiled water by mouth. Contact mother later this evening and if condition not settling, revisit. Otherwise, revisit tomorrow.

NOTE: Slow but steady progress and in 3 days had almost fully recovered.

MALE, aged 53 years

PROBLEM: TIREDNESS I.C.D. Code 796.0

SUBJ: Since the death of his sister at the end of last year has not been feeling well. Appetite poor but weight steady. Easily tired but coping with his work on the nightshift. Shivery turns. Admits to being depressed.

OBJ: Looks pale and anxious. Difficulty in sustaining a conversation. Breathing rather rapidly and his body is trembling. Pulse

OBJ: regular 100/min. Temperature sub-normal. No abnormality noted in chest and heart. Abdomen soft. No ankle oedema. Mucous membranes a little pale.

ASS: Possibly suffering from a depression but necessary to exclude organic disease.

PLAN: To attend surgery next week for tests and x-rays. Meantime insurance certificate for one week for 'Nervous Exhaustion'. Rx - Valium 2 mg (30) 1 t.i.d.

SAME PATIENT TWO DAYS LATER

PROBLEM: COLLAPSE I.C.D. Code 782.5

OBJ: In a state of collapse. Skin cold and pallid. Tongue dry. Pulse and B.P. unrecordable. Respiratory rate rapid at 40/min. Patient restless and confused but rousable. Scanty specimen of urine obtained. Positive for blood and protein ++. Negative for glucose. Dextrostix estimation of blood glucose 130 mg. Rectal temp. 97.

ASS: This man is gravely ill possibly with uraemia.

PLAN: Urgent admission to hospital.

NOTE: The patient died in hospital the next day from Uraemia.

On further consideration of Table 9, it is perhaps not unexpected that a large percentage of the work load of the doctor and the practice team should be attributable to diseases of the circulatory and respiratory systems. There is also, a large number of consultations for neurosis, personality disorders and other non-psychotic mental disorders. By relating the number of consultations to the practice population, it is clear that females in the age group 25-75 years with these problems made, on average, 3.3 times as many consultations as their male counterparts. This ratio was maintained almost exactly for each year of the study.

By restricting the analysis to the 65 years and over age group the ratio of females to males in the consultation rates for neurosis and

personality disorders fell only slightly to an average of 3.1 during the period 1973-1977.

Another useful measure of the load that the care of the recorded diseases impose upon patients and doctors is provided by the consultation rates per 1,000 of the practice population for the principal diseases and conditions. By placing them in rank order the relative importance of different diseases in providing the work load in the practice is revealed. The results obtained are similar to those in Tables 8 and 9 with the same categories of diseases occupying the top ten places in the rank order. See Table 10 on page 55.

This tabulation is also of value because it shows clearly which categories of disease, if any, are related to an increase or a decrease in consultation rates over a specified period. In our practice, over a five year period, there was no change or only a slight change in the rank order of the consultation rates for many of the disease categories.

Table 10 - The principal categories of diseases and conditions, in rank order of the consultation rates per 1,000 of the practice population, for males and females, in 1973-1977.

I.C.D. Categories	1973 Rank	1974 Rank	1975 Rank	1976 Rank	1977 Rank
Infective and Parastic Diseases	10	10	10	10	10
Neoplasms	18	15	13	15	16
Endocrine, Nutritional & Metabolic Diseases	12	12	11	11	12
Diseases of Blood & Blood Forming Organs	11	11	12	16	11
Psychosis	19	19	20	19	19
Neurosis	4	4	4	4	4
Mental Retardation	23	23	23	23	23
Other Diseases of C.N.S.	15	13	16	13	14
Diseases of the Nerves	17	18	18	18	18
Inflammatory Diseases of the Eyes	13	16	14	12	13
Diseases of the Ear	14	14	15	14	15
Diseases of the Circulatory System	1	2	2	3	2
Diseases of the Respiratory System	2	3	3	2	3
Diseases of the Digestive System	7	7	7	7	7
Diseases of the Genito-Urinary System	9	9	8	9	8
Complications of Pregnancy	16	17	17	17	17
Diseases of the Skin	6	6	6	6	6
Diseases of the Musculo-Skeletal System	5	5	5	5	5
Congenital Anomalies	22	21	21	20	20
Symptoms & Ill Defined Conditions	3	1	1	1	1
Uraemia	24	24	24	24	24
Observation without need for further medical care	21	22	22	22	22
Other ill-defined	20	20	19	21	21
Accidents, Poisonings etc.	8	8	9	8	9

Symptoms and ill-defined conditions which, with the exception of the first year of the study, occupied the first place in the rank order of frequency can be further subdivided into ten more limited categories and these are listed in Table 11.

Table 11 - Symptoms and ill-defined conditions in rank order of consultation rates per 1,000 of the practice population, 1973-1977.

	1973 Rank	1974 Rank	1975 Rank	1976 Rank	1977 Rank
Certain Symptoms referable to Nervous System & Special senses. I.C.D. Code 780 and 781	7	7	8	7	8
Symptoms referable to Cardio Vascular & Lymphatic Systems. 782	3	3	5	6	6
*Symptoms referable to Respiratory System. 783	2	2	2	1	2
*Symptoms referable to the Upper & Lower Gastro-intestinal tract. 784 &785	1	1	1	2	1
Symptoms referable to the Genito-Urinary System 786	4	4	3	5	5
Symptoms referable to limbs & joints 787	6	5	4	3	3
Other general symptoms 788	8	8	7	8	7
Abnormal Urinary Constituents of unspecified cause 789	10	10	10	10	10
Nervousness & Debility 790	5	6	6	4	4
Headache 791	9	9	9	9	9
All symptoms	-	-	-	-	-

This tabulation shows the consistency with which certain symptoms* are the most frequent causes of diagnostic difficulty during a five year period.

Further information on the work load of the practice can be obtained by relating consultation rates not only to the diseases causing them but also to the age group and sex of the patients concerned. The tabulation is simplified if the results obtained are placed in rank order. See Table 12.

Table 12 - Rank order of the consultation rates per 1,000 of the practice population by diagnosis, age group and sex, in the period 1973-1977. Total consultations 90,422* (Males 28,241, Females 62,181).

Categories of Diseases	0-14		15-64		65 & over	
	M	F	M	F	M	F
Infective & Parasitic diseases	3	4	9	10	10	12
Neurosis, Personality disorders	9	10	5	2	5	4
Inflammatory diseases of the eye and diseases of the ear & mastoid process	5	5	8	12	8	9
Diseases of the Circulatory system	12	11	3	4	1	1
Diseases of the Respiratory system	1	1	1	3	3	6
Diseases of the Digestive system	6	7	6	9	6	5
Diseases of the Genito-Urinary system	8	6	10	5	11	11
Diseases of the Skin	4	3	4	7	7	8
Diseases of the Musculo-Skeletal system	11	8	7	6	4	3
Symptoms & ill-defined conditions	2	2	2	1	2	2
Diseases of the blood & blood forming organs	10	12	12	11	9	7
Endocrine, Nutritional & Metabolic diseases	7	9	11	8	12	10

*During the years 1973-77, 90,422 (86%) of the 104,736 problems identified, were included in twelve categories of diseases or findings as listed in Table 11.

If each age group is considered in turn, in the 0-14 years age group, in both males and females, the most frequent causes of morbidity are diseases of the respiratory system, which account for 3,023 out of the 10,191 consultations (30%) symptoms and ill-defined conditions (21%), diseases of the skin (13%) and infectious diseases (11%). In the age range 15-64 years, there is less consistency in the pattern followed in males and females. Diseases of the respiratory system, symptoms and ill-defined conditions and diseases of the circulatory system are included in the first four places in the rank order for both sexes but the sequence is different. Neurosis, personality disorders and diseases of the genito-urinary system occur more frequently in women than in men.

In the age range 65 years and over, diseases of the circulatory system, symptoms and ill-defined conditions, diseases of the musculo-skeletal system, diseases of the respiratory system, diseases of the digestive system and neurosis are included in the top six places for both sexes but again the order is different and the consultation rates in females is greater than in males in all but diseases of the respiratory system.

When we come to consider the doctor's prescribing habits, it would seem reasonable to expect that the differences in morbidity related to age and sex, will be reflected in the pattern of drugs prescribed.

In order to compare the relevant significance of the consultation rates for the various categories of diseases in the Dundee practice, comparison is made with similar rates for Craigshill Health Centre - Livingstone in Scotland, in England and Wales (Second National Morbidity Study) and in a practice of comparable size in Teeside (3,137 patients); see Table 13.

Craigshill Health Centre is situated in Livingstone, a new town planned to grow by the early 1980's to a population of 50,000 to 70,000 people. In 1971 a little over 7,000 patients were registered with the practice. The population was a young one with 40% less than 15 years of age, 70% less than 30 years of age and 90% of the population less than 45 years of age. It is not surprising with a much younger population at risk that the percentage of consultations for infective and parasitic disease in the Craigshill practice is more than twice that in the Dundee practice. A similar explanation may account for the Craigshill practice having almost twice the percentage of consultations for diseases of the respiratory system and a relatively low percentage for neoplasms, circulatory disease and diseases of the musculo-skeletal system compared with the Dundee practice. However, such a simple explanation can not account for the Teeside practice also having twice the percentage of consultations for respiratory disease compared with the Dundee practice and yet with very similar percentages for neoplasms, circulatory disease and musculo-skeletal disease.

Table 13 - Consultation rates per 1,000 of the patient population by diagnoses as a percentage of all consultations.

I.C.D. Categories of diseases & conditions	* A 1973-77	B 1970	C 1970/71	D 1974
1. Infective & Parasitic Disease	2.9	7.7	3.7	5.0
2. Neoplasms	1.5	0.3	1.4	1.3
3. Endocrine, Nutritional & Metabolic Diseases	2.2	2.2	2.2	-
4. Diseases of Blood & Blood Forming Organs	2.4	1.3	1.0	2.0
5. Mental Disorders	10.7	8.5	9.8	14.4
6. Diseases of Nervous System & Sense Organs	6.6	6.6	6.8	10.2
7. Diseases of Circulating System	13.4	3.4	8.4	11.6
8. Diseases of Respiratory System	12.5	21.6	18.7	24.8
9. Diseases of Digestive System	4.5	4.6	4.0	8.0
10. Diseases of Genito-Urinary System	3.6	7.3	5.1	5.9
11. Complications of Pregnancies, Childbirth & Puerperium	1.4	0.8	2.0	-
12. Diseases of Skin & Subcutaneous Tissues	6.3	6.0	6.4	7.2
13. Diseases of Musculo-Skeletal System etc.	7.2	3.3	6.8	8.0
14. Congenital Anomalies	0.3	0.5	0.1	0.3
15. Certain causes of Perinatal morbidity & mortality	0.02	0.1	-	0.0
16. Symptoms & Ill-defined conditions	17.3	10.1	8.0	0.8
17. Accidents, Poisonings & Violence	3.7	5.4	5.2	5.4
18. Supplementary classification	3.1	10.5	10.4	-
	100.0	100.0	100.0	100.0

* A - Proudfoot Practice, Dundee

B - Craigshill Health Centre (44)

C - England & Wales (34)

D - Teeside (48)

It is possible that a classificatory variation accounts for the low percentage of consultations for respiratory disease and the high percentage of consultations for circulatory disease in Dundee. Allowance should also be made for random variation (an unusually large or small result in any one year) when comparing results.

The percentages given for mental disorders, diseases of the nervous system and diseases of the digestive system are similar in all the studies with the exception of Teeside. The only category in which almost full agreement is reached is in diseases of the skin. Apart from the lack of uniformity in the way general practitioners classify morbidity, differences in the age/sex register of the population, regional differences in morbidity and in the intensity of use of the medical care system may account to a greater or lesser extent for the variation in the percentage rates of many of the disease categories.

The low rate given in the Teeside practice for symptoms and ill-defined conditions is not an isolated finding. In a further study by Marsh, Wallace and Whewell in 1976 of 4,733 ill-patient consultations in North East England and in the State of Iowa, U.S.A. (57) the consultation rate for symptoms and ill-defined conditions, as a percentage of all diagnoses made, was 1.3% in England and 1.5% in Iowa. The comparable figure in the Dundee practice in 1976 was 18.8%.

In the Anglo-American study diagnostic categories were coded according to the classification of the Royal College of General Practitioners (58) and in the Dundee practice according to the International Classification of Diseases (32). The different classification systems used accounts, at least in part, for the different rates for diagnoses of a symptomatic nature since as Bentsen pointed out in 1976, in the British Standard Classification (the R.C.G.P. version of the I.C.D.) too many of the symptomatic diagnoses are related to organic or aetiological diagnostic groups and one may find the same symptom codes under

two or three different groups (59).

Rakel, 1977, in a statement on the same subject expressed the view that approximately one fourth of all patients seen will never be assigned a final, definitive diagnosis, because the resolution of a presenting symptom or complaint will come before a specific diagnosis can be made. He considers that pragmatically this is an efficient method that is less costly and achieves high patient satisfaction - even though it may be disquieting to the purist physician who feels that a thorough work-up and specific diagnosis should always be obtained. (60).

As we have seen, consultation rates when related to the diseases causing them, provide a measure of the work load of individual practices. Reference has already been made to the views of Logan and Cushion, 1958 (41) who believe that consultation rates are unreliable as a guide to morbidity because of differences in practice circumstances and organisation. Hicks, 1976 (36) suggested, however, that in total, it is likely (although it cannot be proved) that practice variations tend to cancel each other out.

In their study, Logan and Cushion, 1958 (41) suggested the most useful indicators for the measure of the prevalence of disease are the patient consulting rates which are also affected by practice circumstances but to a smaller extent, and then mainly only for minor conditions. Their advice is followed in the next section when we consider the prevalence of disease in the practice population.

THE PREVALENCE OF DISEASE

In the manner of Logan and Cushion, the prevalence of disease in the practice is measured by the number of patients per 1,000 of the practice population who consult a member of the practice team, at least once, during the year with the disease in question, irrespective of when the illness began, how long it lasted or how many consultations are involved.

Table 14 - see page 64.

The prevalence of disease was determined each year from 1973 to 1977. From the results obtained there was no evidence that the prevalence rate for any of the disease categories increased or decreased markedly during the five years. For this reason only the average results for 1973 to 1977 are used in Table 14. The prevalence rates for each disease category, in males and females, were then placed in rank order and again, because of the consistency of the results obtained, only the overall rankings are presented in Table 15.

In both sexes symptoms and ill-defined conditions and diseases of the respiratory system occupy the first two places in the rank order. For most of the remaining disease categories, the prevalence rates in males and females reveal only minor differences. However, neurosis and diseases of the genito-urinary system are more prevalent in women and infective diseases and accidents are more prevalent in men. Psychosis, mental retardation and congenital anomalies all take low places in the rank order in both males and females.

These findings support the view expressed by Greene, 1976, that the pattern of disease in primary medicine includes a high incidence of transient illness (acute self-limited disease), a high prevalence of chronic illness and a high incidence of emotional illness. (61).

Minor illness and the early manifestations of more serious disease often present the general practitioner with difficulties in problem definition.

Different doctors may give the same set of symptoms a different name but provide essentially the same treatment. This is especially true of the acute self-limited episodes of illness so common in general practice.

If an accurate diagnosis is difficult to achieve in general practice how often do general practitioners use a symptom or an ill-defined condition as a diagnostic label?

The prevalence with which this occurs, in the day to day workload of general practice, can be measured from the patient/consulting rates for symptoms and ill-defined conditions and subsequently analysed in a number of different ways. Tables 14 and 15 are two examples and in another in Table 16 the prevalence of symptoms and ill-defined conditions is expressed as a percentage of all categories of diseases and conditions. Then in Table 17 the prevalence of symptoms and ill-defined conditions is related to the age category of the patient consulting. It should be emphasised that Tables 14-17 do not refer to all symptoms encountered at the doctor/patient consultation but only to those which remain "undiagnosed."

Table 14 - Patient consulting rates per 1,000 of the population in males and females for the principal categories of diseases and conditions diagnosed from 1973-1977.

I.C.D. Categories of Diseases and Conditions	1973-1977	
	M	F
Infective & Parasitic Diseases	105	112
Neoplasms	10	14
Endocrine, Nutritional & Metabolic diseases	21	55
Diseases of blood & blood forming organs	11	43
Psychosis	2	11
Neurosis	66	201
Mental retardation	0	0.2
Other diseases of C.N.S.	14	22
Diseases of the Nerves	15	36
Inflammatory diseases of the eyes	45	59
Diseases of the Ear	65	68
Diseases of the Circulatory System	85	147
Diseases of the Respiratory System	293	320
Diseases of the Digestive System	81	100
Diseases of the Genito-Urinary System	22	158
Complications of Pregnancy	-	37
Diseases of the Skin	154	187
Diseases of the Musculo-Skeletal System	94	141
Congenital Anomalies	7	7
Symptoms & Ill-defined conditions	357	659
Observation without need of further medical care	6	5
Other ill-defined conditions	5	5
Accidents, Poisonings etc.	112	120

Table 15 - Rank order of prevalence rates, in Males and Females, in the principal categories of diseases and conditions diagnosed from 1973-1977.

I.C.D. Categories of Diseases and Conditions	1973-1977	
	M	F
Infective & Parasitic Diseases	5	9
Neoplasms	17	18
Endocrine, Nutritional & Metabolic Diseases	13	13
Diseases of blood & blood forming organs	16	14
Psychosis	21	19
Neurosis	9	3
Mental Retardation	22	22
Other Diseases of C.N.S.	15	17
Diseases of the Nerves	14	16
Inflammatory diseases of the Eyes	11	12
Diseases of the Ear	10	11
Diseases of the Circulatory System	7	6
Diseases of the Respiratory System	2	2
Diseases of the Digestive System	8	10
Diseases of the Genito-Urinary System	12	5
Complications of Pregnancy	-	15
Diseases of the Skin	3	4
Diseases of the Musculo-Skeletal System	6	7
Congenital Anomalies	18	20
Symptoms & Ill-defined Conditions	1	1
Observation without need of further medical care	19	21
Other ill-defined & unknown causes of morbidity & mortality	20	21
Accidents, Poisonings & Voilence	4	8

Table 16 - The prevalence of disease in males and females as a percentage of all categories of disease and conditions, 1973-1977.

I.C.D. Categories	1973-1977	
	M	F
Infective & Parasitic Diseases	7	4
Neurosis	4	8
Diseases of the Circulatory System	5	6
Diseases of the Respiratory System	19	13
Diseases of the Digestive System	5	4
Diseases of the Genito-Urinary System	1	6
Diseases of the Skin	10	7
Diseases of the Musculo-Skeletal System	6	6
Symptoms & ill-defined conditions	24	26
Accidents, Poisonings & Violence	7	5
Other ill-defined conditions	12	15
Total	100%	100%

The prevalence of symptomatic and ill-defined conditions on average, during the five years was 25%, i.e. 1 in 4 of all patients consulting.

Table 17 - Prevalence of certain categories of disease in various age groups as a percentage of the total prevalence in 1973.

Age	Resp.	Circ.	Symp.	Skin	Neurosis
0-14	31	1	15	28	3
15-44	37	18	34	41	39
45-64	20	37	25	18	33
65 +	12	44	26	13	25
	100%	100%	100%	100%	100%

Each disease category was considered in turn but to simplify the tabulation only five categories from 1973 are shown here. Even in this amended form the results confirm what has been previously noted (Table 12) that the pattern of morbidity is different for the young,

for those in middle life and for the elderly.

This broad picture of morbidity in the practice population is a useful guide for trainee practitioners who have little idea, initially, of the probabilities of disease in general practice. Visiting patients in their homes is also a new experience which many of them find enjoyable. They may not be fully aware, however, that the place of contact can have an important bearing on the morbid events encountered in the community. This aspect of home visits will be considered in the next section.

HOME VISITS RELATED TO MORBIDITY

Marsh, McNay and Whewell, in a study of home visiting in North East England in 1972 among 190 general practitioners, were of the opinion that home visiting is one of the corner stones on which British general practice has been built, - many of the dramatic episodes in general practice are encountered in the patient's home. (62).

This theory was examined in Dundee by relating home visits and surgery consultations to the morbid events encountered by the doctor. Patient/consulting rates for home visits and surgery consultations by the general practitioner were expressed as a percentage of the total doctor/patient consulting rate for diseases in the categories specified. Table 18 - see page 69.

The figures for the years 1974, 1975 and 1976 were also obtained but being similar to 1973 and 1977 are not included here. By using the figures available for each year of the study a table can be prepared in the rank order of the prevalence of disease encountered on home visits and compared with a similar tabulation for surgery consultations. The relative importance of the place of contact to the morbid event can then be considered.

Although both tables are available only the one which relates to home visits is included here - see Table 19. However, the rank order of surgery consultations to morbidity is easily determined by placing the ranking in Table 19 in reverse order, i.e. psychosis which ranks 1 for home visits becomes 21 for surgery consultations and so on.

Table 18 - Patient consulting rates for home visits (H.V.) and for surgery consultations (S.C.) as a percentage of the total doctor/patient consulting rate for the categories of diseases specified.

I.C.D. Categories of Diseases and Conditions	1973		1977	
	%H.V.	%S.C.	%H.V.	%S.C.
Infective & Parasitic Diseases	39.6	60.4	39.5	60.5
Neoplasms	33.3	66.7	44.1	45.9
Endocrine, Nutritional & Metabolic diseases	21.3	78.7	23.3	76.7
Diseases of blood and blood forming organs	23.2	76.8	33.7	66.3
Psychosis	69	31	61.1	38.9
Neurosis	25.6	74.4	25.5	74.5
Other diseases of C.N.S.	26.7	73.3	25	75
Diseases of the Nerves	20	80	14.8	85.2
Inflammatory diseases of the Eyes	18.7	81.3	15.2	84.4
Diseases of the Ear	22.2	77.8	17.5	82.5
Diseases of the Circulatory System	34.2	65.8	30.1	69.9
Diseases of the Respiratory System	35.4	64.6	35.9	64.1
Diseases of the Digestive System	31.3	68.7	31.1	68.9
Diseases of the Genito-Urinary System	18.2	81.8	16	84
Complications of Pregnancy	22.2	77.8	14.1	85.9
Diseases of the Skin	13.3	86.7	12.3	87.7
Diseases of Musculo-Skeletal System	29	71	21.2	78.8
Congenital Anomalies	21.7	78.3	21.1	78.9
Symptoms and ill-defined conditions	29.9	70.1	27.2	72.8
Other ill-defined conditions	22.4	77.6	-	-
Accidents, Poisonings etc.	28.8	71.2	21.3	78.7
All principal groups	27.5	72.5	25.5	74.5

Table 19 - Patient consulting rates for the categories of diseases specified for home visits (H.V.) doctors only, in rank order.

I.C.D. Categories of Diseases and Conditions	1973 Rank H.V.	1974 Rank H.V.	1975 Rank H.V.	1976 Rank H.V.	1977 Rank H.V.
Infective & Parasitic Diseases	2	5	6	3	3
Neoplasms	5	2	2	2	2
Endocrine, Nutritional & Metabolic diseases	16	21	19	16	11
Diseases of blood and blood forming organs	12	10	3	6	5
Psychosis	1	1	1	1	1
Neurosis	11	13	12	9	9
Other diseases of C.N.S.	10	3	10	10	10
Diseases of the Nerves	18	12	11	14	18
Inflammatory diseases of the Eyes	19	16	14	20	17
Diseases of the Ear	15	19	17	15	15
Diseases of the Circulatory System	4	8	5	5	7
Diseases of the Respiratory System	3	4	4	4	4
Diseases of the Digestive System	6	11	7	7	6
Diseases of the Genito-Urinary System	20	18	16	19	16
Complications of Pregnancy	14	17	15	13	19
Diseases of the Skin	21	20	20	18	20
Diseases of Musculo-Skeletal system	8	6	9	11	13
Congenital Anomalies	17	9	21	17	14
Symptoms and ill-defined conditions	7	7	8	8	8
Other ill-defined conditions	13	15	18	21	21
Accidents, Poisonings etc.	9	14	13	12	12

Although in Table 19 the rank order of diseases shows some variation from one year to another there is no consistency in the pattern over the five years to suggest a definite trend in any one disease.

Both Tables 18 and 19 show that on home visits, psychosis, infective

diseases, diseases of the respiratory system, diseases of the circulatory system and neoplasms were the most likely problems to be encountered. At surgery consultations, diseases of the skin, diseases of the ear, diseases of the genito-urinary system, inflammatory diseases of the eye and endocrine and nutritional diseases were much more prevalent.

The place of contact in patients suffering from psychotic illness is clearly of importance with 67% of all patient consulting taking place in the home.

The importance of this aspect of primary care can be illuminated further with examples taken from the practice records. Although the case notes have been summarised the basic dctails remain unaltered.

FEMALE aged 31 years. Home visit. Temporary resident in an acutely agitated state. Flown home with a nervous breakdown while on a camping holiday in Nice. On examination abusive and unco-operative. Hyperactive. Rambling speech with flights of ideas. Previous history of post natal depression. In-patient treatment with E.C.T. and Lithium Carbonate. Refer to Psychiatric Hospital for emergency admission. Diagnosis: Hypomania.

Patient subsequently absconded from hospital and was readmitted under certificate (Section 31 of the Mental Health Act 1960).

MALE aged 3 years. Home visit. Generally unwell for 2-3 days. Listless. Not eating. Rash appeared on trunk yesterday. On examination, face flushed with circumoral pallor. Strawberry tongue. Tonsils inflamed with exudate present. Cervical lymphadenopathy. Punctate erythematous rash on trunk, tops of arms and legs. Throat swab taken. Diagnosis: Scarlet Fever. Plan: notify as such. Treat with oral Penicillin.

Subsequent progress uneventful. Full recovery within 10 days.

FEMALE aged 27 years. Home visit. Severe attack of abdominal pain and persistent vomiting of 24 hours duration. Jaundiced. Urine dark, apyrexial, furred tongue, no tachycardia. Whole upper abdomen very tender. Bowel sounds present. Previous history, recurrent dyspepsia of six months' duration. Oral cholangiogram revealed numerous calculi. On waiting list for operation. Now obstructed. Arrange emergency admission.

Cholecystectomy was performed and a satisfactory recovery made.

MALE aged 72 years. Home visit. Two months history of diarrhoea with slime and flatus. No blood present. Slight abdominal pain. Nausea. Generally listless and tired. Rectal examination revealed a hard craggy mass, presumed to be a carcinoma. Domicilary visit by Surgical Specialist who agreed with the provisional diagnosis and arranged admission for biopsy and appropriate treatment.

Laparotomy performed 4 weeks after initial visit and rectal carcinoma found to be inoperable. Patient died 10 days later.

FEMALE aged 53 years. Home visit. A few days history of pain in the chest aggravated by deep breathing. Feels feverish, sweating and her muscles ache. On examination, tachycardia. Temperature 101. Few scattered crepitations noted in left mid zone. Possible diagnosis: Influenza with respiratory tract involvement. Rx Ampicillin. Chest x-ray arranged and blood taken for full blood count and film. Previous history, carcinoma of colon resected one year previously.

Symptoms improved. Chest x-ray normal. Blood film - abnormal with 80% lymphocytes and distorted red cells. ? cause. Refer to hospital for investigation and admitted three weeks after initial visit. Diagnosis of liver metastases.

Patient died at home 4 months' later.

The consultation and the morbid events encountered in general practice have been considered in some detail. It is now necessary to return to the point of contact of doctor and patient and retrace those all important pathways that link patient complaint and diagnosis.

PATHWAYS TO DIAGNOSIS

In a paper published in 1971 on 'Symptoms in General Practice', Morrell, Gage and Robinson stated that the presenting of symptoms by the patient in general practice is the logical point at which to start prospective studies into the natural history of illness and of the diagnostic method in general practice. (63).

Certain symptoms are recognised, at the initial consultation, as being part of a specific diagnosis. What is of greater interest are the many symptoms which do not fit readily into a diagnostic framework. As Noble, in 1976, emphasised common ills remain undiagnosable in the conventional sense. (13).

The frequent necessity to use vague terminology worries many doctors during their early years in general practice. The reason for their anxiety is that in their undergraduate training emphasis is placed on the need to establish a precise diagnosis for every episode of illness. As Cochrane suggested in an essay in 1972 Doctors are trained for the most part in intervention. The dangers of non-treatment and non-diagnosis are seen as greater than the dangers of treatment and over-diagnosis. (64).

Some doctors feel threatened by problems which do not fit neatly into a diagnostic framework and are tempted to make a diagnosis by guess work or intuition. In many instances this does not matter since the symptoms and findings are features of minor illness which resolves spontaneously and irrespective of the label given to the incident, the outcome is not affected. The danger arises when the problem persists and is more serious. Colleagues who treat the patient may be unaware of the tentative nature of the initial diagnosis and fail to take active steps to resolve the problem. On the other hand, problems which are labelled as a symptom or finding and remain undiagnosed provide the incentive to further action.

Perhaps the most difficult decision a general practitioner is required to make concerns the unexplained symptom; whether to investigate or to adopt a 'wait and see' policy. In serious disease undue delay could be fatal - in less serious disease and where spontaneous resolution is likely, unwarranted investigations may harm the patient and cause unnecessary expense. At the outset the doctor is anxious to exclude serious disease. A further history, a more detailed examination, information from laboratory and x-ray procedures, may all assist in establishing a diagnosis. As new evidence accumulates and with the changing pattern of the illness, the diagnosis may become apparent. There is no doubt that this pattern of events is followed in some cases - but how often does it occur in the daily workload of general practice? In other words, how frequently can the unexplained symptom be identified as an essential element in a diagnostic pathway?

The following study is an attempt to provide the answer.

METHOD

At each consultation the problem or problems presented by the patient are defined in terms of a diagnosis, a symptom or finding. The initial consultation in an episode of illness is recorded as a 'new' problem and subsequent consultations, considered part of the same episode of illness, are recorded as an 'ongoing' problem. The linkage between an unexplained symptom and the ultimate diagnosis can then be analysed.

This was the theory but in practice, initially at least, it was much less successful. When a patient had both diagnoses and unexplained symptoms 'on-going' at the same time - as was quite often the case - and when diagnoses changed as sometimes happened, then it proved difficult to link the appropriate diagnosis and the symptom to which it referred. In the initial computer print-out the linkage of symptoms and diagnoses was, in some instances, bizarre and inappropriate. However, the programme was rewritten to exclude confirmed diagnoses

previously recognised and to limit the period of scrutiny to 8 weeks in any one episode of illness. The adoption of the 8 week link was decided after a trial run using a 6, 8 and 12 week link. The 8 week link provided the best analysis.

A list of symptoms and findings was prepared as follows

1.	Cough	8.	Nausea & Vomiting
2.	Rash	9.	Dizziness
3.	Abdominal Pain	10.	Dyspnoea
4.	Back Pain	11.	Debility
5.	Chest Pain	12.	Frequency of micturition
6.	Headache	13.	Pain referable to Urinary System
7.	Dyspepsia	14.	Pain in limb

It is important to emphasise that symptoms which were recognised at the outset as being part of a confirmed diagnosis or where the presumptive evidence was sufficiently strong, were excluded from the analysis, e.g. the morning cough of a chronic bronchitic, the epigastric pain of a patient with an active duodenal ulcer or the tension headache of a patient with anxiety neurosis. A symptomatic finding was recorded only in those cases of illness in which it was not possible, either from the history, the examination or investigation, for the doctor to make a firm diagnosis. Thus, the frequency of symptom presentation in this anaylsis bears no relationship to the frequency with which any one symptom may present in the sum of all the morbid episodes in the practice. Least of all does it attempt to measure the total prevalence of symptoms in the practice population since as Johnson reminds us in his essay in 1977 on 'Patients, receivers or participants', - people with symptoms do not automatically declare themselves ill and take to their beds nor do they necessarily consult a doctor. There is an enormous pool of tolerated illness in the population in any one time which has been ignored, normalised or left to develop. (65). This argument was substantiated by the investigations of Morrell and Wale in 1976 who reported that only

a minority of symptoms (1 in 37) are taken to the doctor and that patients are highly selective in deciding which symptoms are appropriate for medical care. (66).

The number of consultations for 'undiagnosed' symptoms in different age groups in males and females from 1973 to 1977 is given in Tables 20 and 21.

Table 20 - The number of consultations for undiagnosed symptoms in different age groups. MALES.

Symptoms	0-4	5-14	15-24	25-44	45-64	65 +	Male Total Number
	No.	No.	No.	No.	No.	No.	
1. Cough	129	108	32	45	54	78	446
2. Rash	56	22	16	23	15	15	147
3. Abdominal Pain	17	58	47	58	52	29	261
4. Back Pain	0	3	41	69	69	29	211
5. Chest Pain	1	18	23	54	70	60	226
6. Headache	1	12	19	23	14	14	83
7. Dyspepsia	0	0	20	37	33	16	106
8. Nausea & Vomiting	52	37	32	27	29	17	194
9. Dizziness	0	3	9	12	15	21	60
10. Dyspnoea	1	1	3	1	15	11	32
11. Debility	4	2	7	10	18	14	55
12. Loss of weight	1	0	0	0	2	1	4
13. Oedema	2	0	0	2	3	8	15
14. Frequency of Micturition	3	1	3	17	11	26	61
15. Pain referable to Urinary System	8	5	2	9	5	7	36
16. Pain in limb	2	12	27	42	56	44	183
17. Palpitation	0	0	1	3	3	0	7
18. Haematuria	1	1	0	0	0	3	5
	278	283	282	432	464	393	2132

Table 21 - The number of consultations for undiagnosed symptoms in different age groups. FEMALES.

	0-4	5-14	15-24	25-44	45-64	65 +	Female Total Number
	No.	No.	No.	No.	No.	No.	
1. Cough	122	115	46	99	109	119	610
2. Rash	31	31	46	55	36	41	240
3. Abdominal Pain	14	77	115	105	65	53	429
4. Back pain	0	2	44	134	111	91	382
5. Chest pain	0	7	30	62	79	98	276
6. Headache	2	28	58	89	57	41	275
7. Dyspepsia	0	1	8	30	45	38	122
8. Nausea & Vomiting	42	48	63	87	66	94	400
9. Dizziness	0	6	19	33	40	83	181
10. Dyspnoea	2	2	4	5	16	23	52
11. Debility	1	9	30	87	67	66	260
12. Loss of weight	0	0	1	2	0	2	5
13. Oedema	0	1	0	9	15	26	51
14. Frequency of Micturition	23	14	73	155	95	115	475
15. Pain referable to Urinary System	10	3	27	56	41	41	178
16. Pain in limb	0	16	28	74	108	101	327
17. Palpitation	0	0	1	5	5	2	13
18. Haematuria	0	1	0	7	7	7	22
	247	361	593	1094	962	1041	4298

The data given in Tables 20 and 21 indicate the symptoms (or findings) most likely to cause the doctor difficulty in interpretation in the various age groups, in males and females. E.g. in males and females under the age of 5 years, the most common symptoms are cough, nausea and vomiting and rash. Frequency of micturition is a perennial problem in women of most ages whereas in males it is an infrequent symptom until the age of 65 years and over when the incidence begins to rise. However, even in this age group the rate in males per 1,000 of the practice population is only half that of females. Headache is also more commonly presented in females than males especially in the age range 15-44 years where the incidence in females is three times that of males.

It is interesting to compare these results with those of Morrell et al published in 1971 (63). In their study, 24% of the total consultations in 1971, were classified as new patient-initiated. At each of these consultations both the diagnosis and the main presenting symptom were recorded. It is these symptoms which form the basis of their paper. They provide data on consultations (per 1,000 of the patients classified by age and sex) for the 10 most common symptoms (8 of which are included in my list.) Despite the difference in the selection of consultations for analysis, the results are broadly compatible and in some instances the correlation is good. In the age range 0-5 years for males and females, the most common symptoms were cough, disturbance of bowel function and rashes. Headache and abdominal pain were most common in the age group 5-24 years and pain in the back, pain in the chest and pain in the joints (limbs) became increasingly common with increasing age. These results are similar to mine. The differences between the sexes in the presentation of symptoms appeared to be greater in my study.

Morrell et al also related the most common symptoms to diagnostic certainty expressed as symptomatic, provisional or presumptive. The diagnosis was recorded as symptomatic or provisional at 42% of all new patient-initiated consultations but this varied between 11% and 88% in the symptoms studied in detail. In concluding their discussion of the results, Morrell et al said, It is necessary now to study those symptoms in which greater difficulty was experienced and relate them to the final diagnoses and the diagnostic pathways by which they are reached. (63).

The results of my own study into the relationship between unexplained symptoms and confirmed diagnoses for 6,309 consultations, 2,102 in males and 4,207 in females is given in Table 22. For the reasons already given the computer analysis of related symptomatic and confirmed diagnoses was limited to an 8 week link. No attempt was made to reassess all contacts during this period but only those who chose to

return or were invited to do so by the doctor. Nevertheless, it is a not unreasonable assumption that in most of the cases which did not return spontaneous resolution occurred.

Table 22 - Percentage of confirmed diagnoses linked to undiagnosed symptoms or findings from 1973 to 1977.

	Symptom or Finding		Confirmed Diagnosis		Percentage of Confirmed Diagnoses	
	M	F	M	F	M	F
1. Cough	446	610	17	22	3.8	3.6
2. Rash	147	240	8	12	5.4	5
3. Abdominal Pain	261	429	16	23	6.1	5.4
4. Back Pain	212	382	9	22	4.2	5.8
5. Chest Pain	226	276	18	22	8	8
6. Headache	83	275	1	13	1.2	4.7
7. Dyspepsia	106	122	6	11	5.7	9
8. Nausea & Vomiting	194	400	10	11	5.2	2.8
9. Dizziness	60	181	6	12	10	6.6
10. Dyspnoea	32	52	7	3	21.9	5.8
11. Debility	55	260	3	12	5.5	4.6
12. Frequency of Micturition	61	475	3	47	4.9	10
13. Pain referable to Urinary System	36	178	4	13	11.1	7.3
14. Pain in limb	183	327	10	17	5.5	5.2
Totals	2102	4207	118	240	6%	

The figures given in Table 22 show that in this study only a small percentage of unexplained symptoms provide the link to a confirmed diagnosis in an 8 week period. For the vast majority of the symptoms the precise cause remains obscure.

The average percentage of confirmed diagnoses was 6%, ranging from 1.2% to 21.9% in males and 2.8% to 10% in females. However, the discovery of significant disease in even a small percentage of unexplained symptoms has important implications for treatment and prognosis.

In Tables 23 and 24 a list of diagnoses with the frequency of occurrence is given for two of the unexplained symptoms, chest pain and

abdominal pain. Certain recognised pathways are demonstrated but others are less convincing. An analysis of all the symptoms listed paints a similar picture. The fault may lie in the design of the computer programme or it may simply reflect the process of becoming ill which Mechanic, 1961 called 'Illness Behaviour' and defined it as the way in which given symptoms may be differentially perceived, evaluated and acted (or not acted) upon by different kinds of person. (67).

Table 23 - Symptom - CHEST PAIN M 226
F 276

Subsequent Diagnosis	0-14 years		15-64 years		65-75 +	
	M	F	M	F	M	F
Herpes Zoster				1		
Alkaptonuria			1			
Neuralgia				1		
Ac. myocardial infarction			3	1	5	2
Chronic ischaemic heart disease				1		
Angina				1		
Fracture of rib(s) closed			1	2		
Disorders of heart rhythm						1
Acute upper respiratory tract infection						1
Pneumonia				2		1
Chronic Bronchitis			1	1		
Chronic Sinusitus			1			
Pleurisy					1	
Spontaneous pneumothorax			1			
Spondylitis						1
Diseases of respiratory system			1	3	1	
Appendicitis		1				
Cellulitis of upper arm			2			
Osteoarthritis				1		1

Table 24 - Symptom - ABDOMINAL PAIN M 261
F 429

Subsequent Diagnosis	0-14 years		15-64 years		65-75 +	
	M	F	M	F	M	F
Anxiety Neurosis			2			
Epilepsy				1		
Haemorrhoids				1		
Chronic Bronchitis					1	1
Ulcer of duodenum			3	2		
Acute appendicitis	1	2	3	1		
Diverticula of colon			1			
Peritonitis				1		
Cholecystitis			2	1		
Urinary tract disease	1	5		2		1
Pregnancy				3		
Carbuncle of hand			1			
Jaundice		1				
Retention of urine					1	
Dermatitis				1		

It would seem important to recognise that if a large percentage of symptomatic presentations of this nature are not the precursors of significant disease then we would be well advised not to over treat the patient in the meantime. This argument is well supported by Thomas, 1978, in his study of the consultation and the therapeutic illusion. (68). At 45 general practice surgery sessions 200 patients in whom no definite diagnosis could be made were randomly selected for one of two procedures. Either they were given a symptomatic diagnosis and medication or they were told they had no evidence of disease and therefore they required no treatment. No difference in outcome was found between these two methods.

Reference was made earlier to the study of Morrell et al (63) in which they recorded both the diagnosis and the presenting symptom at all new patient-initiated consultations in their practice for a year. The data obtained was examined further by Morrell in 1972 in a paper entitled 'Symptom Interpretation in General Practice' (69). Morrell dealt with each of the commonest symptoms separately, noting the diagnoses most

often recorded. His figures show that a large number of diagnostic categories were used by the doctors for each of the presenting symptoms.

A comparison can be made between the number of diagnoses used by the doctors in the Morrell study, for several of the common presenting symptoms and the number of diagnoses used by the doctors in the Proudfoot study for the same presenting symptoms.

Table 25 - Number of diagnoses used for certain presenting symptoms.

Symptoms		1.	2.	3.	4.	5.	6.	7.	8.
Number of diagnoses	A.	23	31	44	26	35	31	28	20
	B.	18	12	15	19	19	11	15	8

A = Morrell, 1972

B = Proudfoot study 1973-1977.

Symptoms

1. Cough
2. Rashes
3. Abdominal pain
4. Back pain
5. Chest pain
6. Headache
7. Giddiness
8. Dyspnoea

The number of diagnoses used especially with symptoms of pain in the abdomen and pain in the chest, underlines the uncertainties of diagnoses at the primary level. This is particularly striking in study A where the diagnosis was made at the initial consultation and much less so in study B where the diagnosis was made in the course of repeated consultations. As Morrell et al observed - through a series of consultations, modification of the diagnosis was common and was often accompanied by an upgrading in diagnostic certainty. (63).

It is not easy to illustrate the intermediate but often critical steps in the diagnostic pathway from initial contact to final diagnosis without references to the manual records of individual patients. For this reason extracts from the records of three patients with chest pain are given overleaf.

Mrs. Eliza D. age 72 - a widow

Consultation 1

PROBLEM: CHEST PAIN 783.7

Subjective: Tightness in the chest and shortness of breath on exertion. Some loss of weight.

Objective: Pulse irregular at 90. B.P. 160/100. Moist sounds at both bases.

Assessment: Possibly angina with early C.C.F.

Plan: Treat symptomatically with Glyceryl Trinitrin, oral iron (Ferrograd C) and a diuretic (Neo Naclex K.)

Consultation 2

PROBLEM: CHEST PAIN 783.7

Subjective: No improvement in chest pain and breathlessness. Loss of appetite and weight. Sore tongue.

Objective: Pale. Mass felt in the epigastrium. ? enlarged liver. F.B.C. and film. Delay request for a barium meal x-ray.

Consultations 3-6

PROBLEM: PERNICIOUS ANAEMIA 281.0

Subjective: A bit better. No further chest pain.

Objective: Colour has improved. B.P. 180/95. Pulse rate regular 88/min. Chest clear. Haemoglobin now 10.4 gms%. (71%).

Assessment: 4 weeks ago H.B. 7 gms% (48%). Red cells macrocytic with some megaloblasts present. Within two weeks improved to 8.8 gms% (60%).

Plan: Continue treatment with Neo-Cytamen 1,000 mcg/1cc ampoule each week.

Clearly the patient has benefited from this diagnostic activity but so has the doctor. In a practical way he has experienced for himself a diagnostic pathway - a learning process less easily forgotten than those read about in text books.

The next two patients illustrate the same presenting problem but the pattern of illness is different.

JOHN B age 46 - Storeman

Consultation 1

PROBLEM: 1 CHEST PAIN

Subjective: Recent onset of chest pain which radiates down his right arm. Precipitated by exercise and clears with rest. No other symptoms apart from a smoker's cough.

Objective: Sitting up in bed. Looks pale. P.R. 80/min. Occasional ectopic beats. B.P. 180/100. H.S. closed. No ankle oedema. A few rhonchi in both lungs. Wt. $8\frac{1}{2}$ stone.

Assessment: Probably mild angina.

Plan: P.H. Gastrectomy so R/O anaemia. Also chest infection. Prescription given for tabs. Glyceryl Trinitrate 0.6 mg x 30.

Consultation 2

PROBLEM: 2 ANGINA

Subjective: Still troubled with chest pain especially when he leaves the warm atmosphere of his work to go into the yard. Also on going up hill e.g. to the surgery. Obtains symptomatic relief from his tablets.

Objective: Haemoglobin 15 gms% (100%). B.P. 155/98.
Chest x-ray shows a stable focus in the right mid zone and evidence of emphysema.

Plan: Unable to stop smoking. Agreed to attend the Anti-smoking Clinic.
Start treatment with beta-blocker - Trasicor 40 mg t.i.d.

MRS. MARY B. age 48 - married woman

Consultation 1

PROBLEM: CHEST PAIN 783.7

Subjective: Tight pain in the chest on exertion associated with breathlessness of a few weeks duration.

Objective: Pale mucous membranes. Slight ankle oedema. Heart sounds closed. PR 80/min. B.P. 140/90. Lung bases clear. Wt. 10 st.

Assessment: Symptoms probably due to anaemia. N.B. Nine months ago haemoglobin 10.2 gms%. (70%).

Plan: Blood taken for F.B.C. and film. Treat with Feospan Spansules 2 daily. Rest off work meantime.

Consultation 2

PROBLEM: IRON DEFICIENCY ANAEMIA 280

Subjective: Ankle swelling has disappeared but chest pain on exertion persists.

Objective: H.S. regular. B.P. 140/90. No ankle oedema. Slight tenderness in mid-epigastrium. Haemoglobin 7.4 gms% (51%).
Film: Hypochromic, microcytic anaemia ? blood loss.

Assessment: Periods a full 7 days every 28 with occasional clots. Negative gynaecological investigation 3 years ago but probable source of blood loss.

Plan: Rule out other sources of blood loss. Arrange for barium meal, chest x-ray. Check M.S.S.U. Re-check Hb. Add Vitamin C to therapy.

Consultation 3

PROBLEM: IRON DEFICIENCY ANAEMIA 280

Subjective: Only occasional slight substernal discomfort. Breathlessness has gone.

Objective: Haemoglobin 9.1 gms% (62%). Barium meal, chest x-ray, M.S.S.U. all negative.

Assessment: Despite steady improvement cannot R/O minor degree of coronary artery disease.

Consultation 4

PROBLEM: IRON DEFICIENCY ANAEMIA 280

Subjective: Feeling much better, only occasional headaches. Slightly breathless when running up stairs.

Objective: B.P. 160/98. Mild ankle oedema. Wt. 11 st. 2 lb. Haemoglobin now 12 gms% (84%). E.C.G. within normal limits.

Plan: Advised to lose weight. Continue with maintenance iron therapy. Treat mild hypertension.

PROBLEM: MILD HYPERTENSION 401

Plan: Tabs. Moduretic 1 daily

These cases illustrate the importance of defining a problem in diagnostic terms only when there is sufficient symptomatic and objective evidence to justify doing so. Not only is diagnostic guesswork liable to mislead colleagues and delay a proper assessment but the doctor's own efforts to investigate and treat the problem are likely to be expended in the wrong direction.

When seeking an explanation for a patient's illness the doctor relies heavily on probability. He makes a mental list of all the possible causes and assembles them in the order of probability. Each probable cause is then rigorously tested and accepted or rejected on the basis of further information. As Weed points out (1) - "rule out" or "probable" should not be employed in the problem list. To "rule out" is a diagnostic plan and "probable" also is a signal that further data should be obtained.

Diagnostic plans are discussed in the sections which follow under two headings, diagnostic activity and investigations and referrals.

DIAGNOSTIC ACTIVITY

The diagnostic activity in response to unexplained symptoms, which will contribute to more accurate primary diagnosis, needs to be explored. The multiplicity of presenting symptoms in general practice, and the limited time available for each consultation, makes it inevitable that the doctor will investigate those symptoms which, in his opinion, indicate serious underlying pathology or are the precursors of significant disease. However, as Rakel points out at this stage of disease there are often only very subtle differences between the early symptoms of serious disease and those of self-limited, minor ailments. (60).

It is, therefore, not always easy to decide which symptoms require fuller investigation. Few doctors will ignore dysphagia or persistent hoarseness, haemoptysis or rectal bleeding, nocturnal frequency or dyspnoea, but with headache, tiredness, dyspepsia, giddiness, pain in chest or abdomen, the decision to investigate or await resolution is often difficult. "The painful young belly" is a typical example. As an editorial in the British Medical Journal, 1978, stated, when a child presents with recurrent abdominal pain the problem for the doctor is twofold; how to detect the minority (5-10% of those reaching hospital) who have organic disease and how to manage the majority whose pain tells of emotional stress. (70).

Other writers view diagnostic problems such as these, in different ways. Elston, 1977, expresses his concern that heroic procedures cause undue suffering to patients without any tangible benefit and divert scarce resources from other patients. (38). Weed, 1969, however, recommends that if the doctor's time is limited he should establish priorities and divert attention to those problems having the greatest potential for moving in to the acute phase, (1) and Greene, 1976, suggests that in large areas where a rational basis for decision making does not exist, providers must rely on personal judgement and assume the risks of its uncertainty. (61).

The investigations and referrals carried out in pursuit of diagnoses in our practice, reflect, to some extent, this uncertainty. For details see Tables 26 and 27

The word 'contact' needs to be defined at the outset. In the context of this study it means 'patient contact'. At each consultation the patient may present with more than one symptom. When related to the same illness the doctor choses the symptom of greatest significance but in other cases he may decide to identify each symptom separately. In addition, the same symptom may be presented on more than one occasion by the same patient. Thus, in respect of the symptoms listed, the total number of doctor/patient contacts is likely to be greater than the number of patients consulting.

Altogether 6,430 symptoms were analysed in respect of the diagnostic activity they evoked. The bacteriology laboratory was involved in the greatest degree of diagnostic activity. Altogether 687 specimens were submitted and of these 95% were in response to five of the eighteen symptoms listed, i.e. abdominal pain, backache, frequency of micturition, pain referable to the urinary system and haematuria. In the majority of these contacts the suspected diagnosis was urinary tract infection.

Conybeare's Text Book of Medicine (1970) states that infection of either the bladder or the kidney may be accompanied by marked systemic disturbance with malaise and high fever, and also by local symptoms of pain and dysuria. (71). Davidson's Principals and Practice of Medicine (1975) states that symptoms arising from the urinary tract, however, may also be present (in chronic pyelonephritis) and include frequency of micturition, dysuria and occasionally aching lumbar pain. (72).

Although these extracts are taken out of context they suggest a correlation between symptom and diagnosis which is frequently not realised in general practice. In the investigation of 536 doctor/patient contacts with frequency of micturition, 65% of cases had mid-stream samples of urine screened for pathogens at the laboratory.

Table 26 - Investigations and referrals of 6,430 contacts from 1973-1977, with a presenting symptom from the list of 18 symptoms given below.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	T
Bacteriology	2	3	133	40	2			14	4		4	1	1	349	118	3	1	12	687
Biochemical Medicine	2		4	1	4			4	2		11	2		3	3	5	1		42
Haematology	1	1	5	2	14	2	3	4	10	2	52	3		2		6	2	1	110
X-ray	37		33	66	74	8	28	8	8	7	5	2	1	4	2	67	1	2	353
Sideroom	1		9	2	2	3		5			6		1	9	4	1			43
Serology				1				6	1					1					9
Hospital In-patient			23	2	23	1		4	2		1			3					59
Out-patient Clinic	5	11	41	8	18	5	5	10	4	1	3		1	5	3	37		1	158
Nurse	1		4	2	3			4			1			3	3	2		1	24
Health Visitor	2	2	2	1	1	2	1	10	1		2			4		6			34
Domiciliary Visit			3	1				1											5
	51	17	257	126	141	21	37	70	32	10	85	8	4	383	133	127	5	17	1524

List of symptoms with the number of contacts for each, (in brackets).

1. Cough (1056)
2. Rash (387)
3. Abdominal Pain (690)
4. Backache (594)
5. Chest pain (502)
6. Headache (358)
7. Dyspepsia (228)
8. Nausea & Vomiting (594)
9. Dizziness (241)
10. Dyspnoea (84)
11. Debility (315)
12. Loss of weight (9)
13. Oedema (66)
14. Frequency of Micturition (536)
15. Pain referable to urinary system (214)
16. Pain in limb (510)
17. Palpitation (19)
18. Haematuria (27)

Table 27 - Patients referred to hospital, as In-patient or Out-patient from 1973-1977, as a percentage of the total contacts with a presenting symptom, from the list of 18 symptoms given below.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	T
Hospital In-patient	-	-	3.3	0.3	4.6	0.3	-	0.7	0.8	-	0.3	-	-	0.6	-	-	-	-	10.9
Hospital Out-patient	0.4	2.8	5.9	1.3	3.6	1.4	3.9	1.7	1.7	1.2	1	-	1.5	0.9	1.4	7.3	-	3.7	44.7

List of symptoms with the number of contacts for each (in brackets).

1. Cough (1056)
2. Rash (387)
3. Abdominal Pain (690)
4. Backache (594)
5. Chest pain (502)
6. Headache (358)
7. Dyspepsia (228)
8. Nausea & Vomiting (594)
9. Dizziness (241)
10. Dyspnoea (84)
11. Debility (315)
12. Loss of weight (9)
13. Oedema (66)
14. Frequency of Micturition (536)
15. Pain referable to urinary system (214)
16. Pain in limb (510)
17. Palpitation (19)
18. Haematuria (27)

In the 349 tests carried out, computer analysis revealed that only 10.6% gave positive evidence of urinary tract infection. Similarly, of 214 contacts with dysuria, specimens of urine from 118 (55%) produced only 12 positives (10%) and in 594 contacts with backache, 40 had urine specimens cultured with positive results in 5 (12.5%). These computer results appear to contradict the opinion of Asscher, 1978, of the Kruf Institute of Renal Disease, Cardiff, who states that half of the women who present with frequency and dysuria have bacteriuria (73). However, an investigation of our manual records, revealed that not all patients with bacteriuria had the test result or the 'confirmed' diagnosis entered on the computer file. Errors, such as these, have now been eliminated by recording the results on both the manual and the computer files irrespective of any subsequent contact with the patient.

A more accurate estimation of the results of bacteriological investigations was obtained by an analysis of the manual records for one year (September 1977-October 1978). During the year 293 MSSU's were submitted to the laboratory for culture. A total of 35 were either lost in transit, discarded because of leakage, or were contaminated. 31 were submitted for screening purposes following treatment. Of the remainder, 109 (48%) were culture positive. These results are very close to the estimate given by Asscher, (73) and support his view that clinically culture-positive and culture-negative patients are indistinguishable.

The seriousness with which doctors in the practice view certain symptoms can be gauged from the frequency that patients with these symptoms are referred to hospital for admission or for out-patient assessment.

From the results given in Table 27, the symptom of pain in the chest provides the highest percentage of admissions to hospital (4.6%) and abdominal pain is in second place at 3.3%. The admission rate for all

other symptoms in this group is less than 1%. Analysis of out-patient referrals shows that 5.9% of contacts with abdominal pain, 3.6% of contacts with chest pain, 3.9% of contacts with dyspepsia and 3.7% of contacts with haematuria were referred to hospital out-patient departments. In the 7.3% of out-patient referrals for pain in limbs the general practitioner is often seeking facilities such as physiotherapy rather than a specialist opinion.

The total contacts for all symptoms in this study amounted to 6,430 and consultations with a specialist was considered necessary on 222 occasions, i.e. 3.5% of all patient contacts.

In discussing the place of the general practitioner in medical care, the working party, appointed by the Second European Conference on the Teaching of General Practice, stated in May 1977, that patients need a doctor - who is able to recognise and define their problems, and to deal with most himself. (74). The analysis of hospital referrals given above illustrates the view that the function of the general practitioner and that of the specialist are complementary.

The use made by general practitioners of extra-mural x-ray facilities to recognise and define patients problems is shown in Table 26. 133 patients with musculo-skeletal disorders producing pain in limb and back were referred for x-ray from a total of 1,104 contacts (12%). 61 patients out of 818 contacts with abdominal pain or dyspepsia (7.5%), 37 patients out of 1,056 with cough (3.5%) and 74 patients out of 502 with chest pain (14.8%) were also x-rayed. Clearly, when open access to Departments of Radiology is limited or its use restricted to hospital doctors only, then the additional burden on out-patient departments is likely to be considerable.

The very low figure given for sideroom tests - mainly urinalysis - requires some explanation. In many cases, the routine screening of urine, e.g. in contraceptive services or in the practice ante-natal clinic, was recorded in the manual record but not transcribed to the

computer in-put document. In other cases, negative results were ignored.

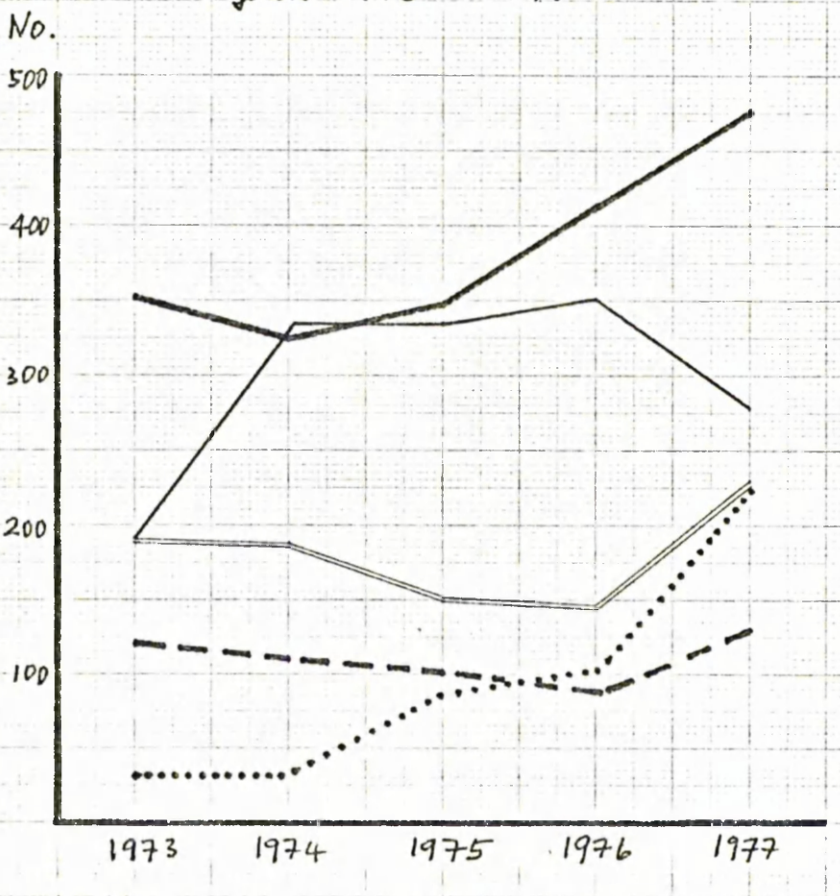
Finally, a tabulation of investigations and referrals linked to outcome, however imprecisely, provides the primary care team with a useful analysis of work done but it also highlights the areas where the delivery of care might be improved, e.g. in the greater use of simple screening procedures in the sideroom, a more frequent referral to nurse or health visitor, a more precise use of the bacteriology laboratory and so on.

INVESTIGATIONS AND REFERRALS

"At the conclusion of the clinical examination it may be possible to offer either a final or a provisional diagnosis. In the latter event consideration should be given to the further investigations which may be indicated. The scope and use of these should be regarded as logical extensions of the clinical examination." Clinical Examination, Editor, John Macleod, 1976.

The format of the problem oriented medical record is an encouragement to problem solving. The use that the doctors made of 'open access' to laboratory and x-ray facilities, in the diagnosis of disease in the practice population, is illustrated in Table 28.

Table 28 — Number of investigations in the years 1973–1977.



* Restricted access to extramural service radiography during 1976/7.

Although the total number of contacts and the size of the practice population varied only slightly in the years 1973-1977, the total number of investigations increased by over 60%. This was most apparent in the greater use made of Biochemical medicine (a six fold increase) and to a lesser extent of Bacteriology (a one third increase).

In an editorial in the journal of the Royal College of General Practitioners, 1978, it is suggested that the need for biochemical investigations in general practice is less than the need for haematology and urine tests, but it is possible that the advantages of biochemical investigations are not sufficiently appreciated by general practitioners. (75).

An attempt has been made to evaluate the use made of biochemical investigations in the diagnosis, prevention and treatment of disease in the practice by a retrospective analysis of all the relevant case records over a period of a year from October 1977 to October 1978. The investigations were classified as follows: (1) related either to establishing or refuting a diagnosis, (2) concerned with the surveillance of established disease and (3) arranged for screening purposes. The results were as follows:-

Total number of biochemistry requests = 284

191 for establishing or refuting a diagnosis	=	67%
60 for surveillance	=	21%
33 for screening	=	12%
Total		100%

These percentages are almost exactly similar to those of Acheson, 1978, who analysed the investigations arranged by general practitioners, and, in a personal communication (75), gave the following results for the same three categories; 68%, 20% and 12%.

By analysing the results obtained in more detail, the percentage of abnormal results can be estimated. See Table 29

Table 29 - The number and outcome of Biochemical investigations from 1977 to 1978.

Investigation	Total No.	Abnormal
Urea and Electrolytes	76	14
Protein, albumin, bilirubin, Alk. Phos.	75	2
Calcium, Phosphate	68	5
T4, F.T.I., T3 index, TSH	59	20
AST, HBD	34	3
Glucose	21	17
Urate	9	3
GGTP	8	0
Digoxin and Phenytoin	8	3
Others	10	4
Total	368	71

The number of specific investigations performed are, in most instances, too small to allow a meaningful comparison to be made between normal and abnormal results. However, taking all the investigations together, the percentage of abnormal results was, approximately, 20%. This result is much lower than that obtained by Marsh and McNay in 1974, who recorded 54% abnormal findings in a total of 112 biochemical investigations. (51). Marsh and McNay may have had different reasons for initiating the investigations and also the reference ranges for assays used in their area may have been different. In our practice, abnormal findings considered to be of little clinical significance were ignored and only those results reported as pathological were accepted as abnormal.

Reference has already been made to the management of patients suspected of suffering from urinary tract infection and to the difficulty in making a diagnosis on clinical grounds. The same uncertainty applies to the clinical diagnosis of the acute streptococcal sore throat. In 1975, patients who presented with sore throats were the subject of an elegant combined study carried out by the East of

Scotland Faculty of the R.C.G.P. and the Department of Bacteriology, The University, Dundee. (76). 452 patients with acute sore throats were admitted to the study and the 29 general practitioners concerned in their care, were asked to record whether they thought the infection was streptococcal in origin. In every case a throat swab was taken to provide an independent bacteriological diagnosis. The results revealed that the doctors were inaccurate in predicting streptococcal infection, but better than might be expected if prediction were a matter of pure guess work.

Most workers stress the importance of using a throat swab in the diagnosis of the acute sore throat and although it is not always practical to do so, open access to laboratory facilities and the provision of Stuart's transport medium has encouraged us in the practice, to do so more often. During the past year, 120 throat swabs were taken and the beta-haemolytic streptococcus was grown from 48 (40%). During the past three months other general practitioners in Dundee submitted 95 throat swabs and of these 12% were positive. (Parratt, personal communication). The reason for the higher 'strike rate' in this practice is not certain but one factor may be our greater use of transport medium.

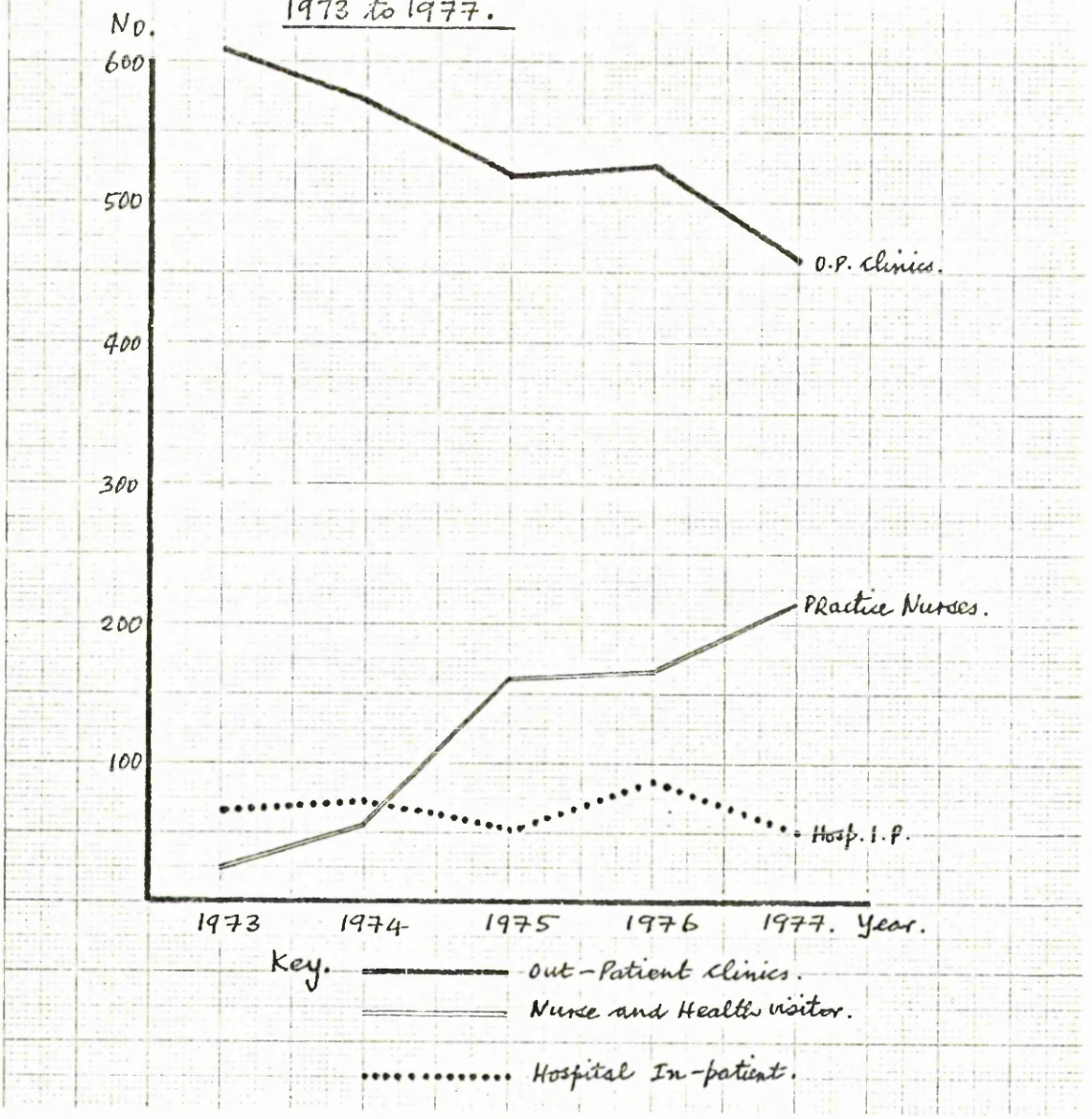
Swabs from skin lesions were taken to identify the causal organisms and of a total of 41, 83% were positive. Vaginal swabs served a similar purpose and of the 38 taken, 37% were positive.

The motivation for this diagnostic activity was an honest desire to learn more about the illnesses which present in general practice and to achieve a better quality of care. The presence of trainee practitioners, and an increasing number of medical students, was an added stimulus and the outcome for the practice team was an increase in job satisfaction.

During the five years of the study there has been a decline in the number of patients referred to hospital for emergency admission and to

the Out-patient Clinics. In the same period an increasing number of patients have been referred to the practice nurse or health visitor. See Table 30.

Table 30. Referrals to Hospital and to the practice nurses, 1973 to 1977.



In 1973 referrals to hospital of males and females for in-patient treatment were 20 per 1,000 of the practice population and for out-patient treatment, 187 per 1,000. The corresponding figures for 1977 were 16 per 1,000 and 144 per 1,000 a reduction of approximately 24% in each case. The hospital in-patient referral rate in this practice of 1.6% (1977) and the out-patient referral rate of 14.4% (1977) is compared with the rates from other studies in Table 31.

Table 31 - Referrals to hospital, as a percentage of the practice population, from surveys in general practice.

Source	In-patient Referrals	Out-patient Referrals	
A	1.8%	8.6%	A. Second National Study 1970-71 (35)
B	1.8%	10%	B. Morrell, 1971 (77)
C	-	11.3%	C. Logan, 1951/52 (40)
D	-	13%	D. Wright, 1965/66 (42)
E	1.6%	14.4%	E. Proudfoot Study, 1977

Total investigation rates (excluding side-room activities) for the practice is 42% (number of investigations as a percentage of the population at risk) and this can be compared with a rate of 11%, Second National Study (35), 20%, Morrell (77) and 38%, Marsh and McNay. (51).

The overall picture in the practice is, therefore, an increase in investigations and a fall in referrals in the five years of the study. This might be explained, simply, by stating that when more problems are investigated by the general practitioner, fewer problems need to be referred to hospital. On the other hand the more investigations that are performed routinely both as a diagnostic activity and in the screening of 'at risk' groups the greater the number of new problems that will be uncovered. A proportion of these may ultimately require the facilities of a specialist out-patient clinic. The relationship between investigations and referrals is unlikely to be a simple case of cause and effect and the link between them and problem solving needs to be more fully investigated.

This completes our examination of some of the ways in which the general practitioner attempts to solve his patients' problems. In the next section we examine the outcome of all this activity, the problem list, discuss its importance and then refer briefly to problem indexing and medical record linkage.

THE PROBLEM LIST

"A problem is anything that requires diagnosis or management or interferes with quality of life as perceived by the patient." Rakel, R.E., 1977, Principles of Family Medicine. (60).

As described earlier, in this practice the problem or problems presented by the patient are recorded on the manual record and then coded for computer storage and retrieval. All problems considered by the doctor or the patient to be of significance are dealt with in this manner, irrespective of the nature of the problem. A problem list can then be formulated from the manual record and the computer can also be programmed to provide one as a print-out.

Gruer, 1972, when discussing the use of computers in general practice stated that further assessment was required of the value of attempting to make a presumptive diagnosis or of recording the presenting symptom at every doctor/patient contact and holding such information on the computer. (23). Weed, on the other hand, emphasised that lack of understanding of much of what we deal with does not justify omission or neglect in a final tabulation. He agreed, however, that in the course of a patient's illness, minor episodes arise which the physician may hesitate to define immediately as significant problems on a master problem list. (1).

The problem list can be structured in a variety of ways. An initial problem list has been described relevant to the hospital scene and valid only for 24 hours after admission. A transient problem list for conditions likely to be of a temporary nature, e.g. upper respiratory tract infection, and a permanent problem list divided up into active problems requiring active treatment or surveillance, inactive problems unlikely to require attention or permanently resolved, and intermediate between these two categories for problems inactive at present but which may recur and become active at any time. To maintain all these different

varieties of problem lists appears unnecessarily complicated. In this practice, one possible solution would be to maintain two problem lists for each patient, one in the manual record and one in the computer file. The former would be the repository of all the patients problems including temporary problems and the latter would include only chronic or recurring problems. However, for the present, only one problem list is being maintained common to both manual and computer records. Certain problems will be shown, in time, to be transient episodes of little significance and for this reason, it will be necessary to periodically review and consolidate the computer file. Otherwise, it will be overwhelmed with information which, although it has served the purpose of day-to-day clinical care, has little relevance in future episodes of illness or in research. As Rakel points out, the problem list is a dynamic picture of the patients' health problems and is continually changed by up-dating as new problems are added or old problems are carried to a greater degree of resolution. (60).

The problem list should contain all of the patients' continuing problems and one value of this is that it provides the experienced observer with a good deal of relevant information on which decisions can be based. As Metcalfe, 1973, pointed out if you want quickly to put over somebody's medical status to somebody else, you show them the problem list and they ought to know what they are up against. (55).

When requesting a specialist opinion the general practitioner can include a copy of the patient's problem list with the referral letter. In this way the patient's total health status is brought to the attention of the specialist who will be made aware of all the patient's medical, social and psychiatric problems, as well as the problem for which the consultation was requested.

The problem list, prominently displayed at the front of the medical record also serves as a constant reminder to the practice team of on-going problems at every patient consultation.

The problem list provided by the computer at the initial print-out was a cumulative list for each patient in date order and it was both long and unweildy. However, the programme was redesigned so that the same problem occupied one line only and the total consultations for each were counted separately. It should be emphasised that the computer problem list is not a complete list of all the patient's problems since it relates only to the period of access to computer facilities since 1973. Details of previous problems are available in the manual record and suitably trained staff can extract the data for computer filing but this has not yet been accomplished.

In view of the multiple pathology commonly found in elderly patients examples of problem lists from this category of patients have been selected. These problem lists remain unrevised so that the degree of diagnostic resolution achieved by the doctors, in both new and on-going consultations, during a five year period, can best be illustrated.

GENERAL PRACTICE CONTACT RECORDS PRACTICE NO. 001

PROBLEM LIST FOR THE PERIOD 01.01.73 to 31.12.77

Patient No.	Surname	Forename	I
181004 0035	Swinton	Thomas	B

Address: 16 Elgin Park, Dundee.

Initial Contact	Latest Contact	ICD Code	Diagnosis	No. of Contacts
03.01.73	03.04.74	4550	Haemorrhoids	12
11.04.73	21.12.77	4540	Varicose Veins of lower extremeties with ulcer	216
15.04.74	04.06.74	7960	Ill-defined conditions - NEC	3
04.06.74	02.04.75	7030	Diseases of Nail	3
17.10.75	23.06.77	7805	Vertigo	2

Comment: This problem list illustrates the value of including the number of contacts for each problem. It is clear that apart from a chronic varicose ulcer which has required a good deal of attention for several years, this patient has few other problems and none that appear to be serious.

Patient No.	Surname	Forename	I
150302 0037	Tosh	Andrew	L

Address: 311 Kent Road, Dundee

Initial Contact	Latest Contact	ICD Code	Diagnosis	No. of Contacts
08.01.73	05.09.75	6929	Eczema due to unspecified cause	7
03.07.74	27.12.77	4010	Essential Benign Hypertension	36
30.07.75	27.12.77	3420	Paralysis Agitans	19
08.01.76	29.12.77	7862	Incontinence of urine	37
31.01.77	31.01.77	4550	Haemorrhoids	1
28.06.77	28.06.77	7855	Abdominal pain	1
16.09.77	16.09.77	7287	Lumbago	1

Comment: It requires only a moment to scan this problem list to appreciate that this elderly patient (his date of birth is the first six letters of the unique number) is chronically disabled with Parkinsons disease and incontinence of urine. He and his family are likely to require considerable support from the practice team.

Patient No.	Surname	Forename	I
310704 0029	Duff	Joan	T

Address: 5 Admiral Street, Dundee

Initial Contact	Latest Contact	ICD Code	Diagnosis	No. of Contacts
12.01.73	13.12.77	4900	Bronchitis - Unqualified	68
20.06.73	20.06.73	4010	Essential Benign Hypertension	1
23.10.73	10.04.74	4439	Unspecified peripheral vascular disease	6
28.01.74	22.08.77	5640	Constipation	3
06.05.74	06.05.74	3064	Specific disorders of sleep	1
31.08.74	27.12.77	7824	Acute Heart Failure, Undefined	20
11.06.77	22.08.77	5369	Disorders of Function of stomach - NEC	4
22.08.77	25.10.77	7884	Loss of weight	5

Comment: The doctor or practice nurse reading this problem list will appreciate very quickly that there are two main issues here. One concerns the patient's long standing chronic bronchitis and heart disease and the other the more recent unexplained dyspepsia and loss of weight. It should encourage them to seek an answer to the question, what is being done to clarify these symptoms?

Patient No.	Surname	Forename	I
101103 0020	Thomson	Isobel	A

Address: 153 Scott Crescent, Dundee

Initial Contact	Latest Contact	ICD Code	Diagnosis	No. of Contacts
23.01.73	05.10.77	2440	Myxoedema	35
23.01.73	05.10.77	2500	Diabetes Mellitus	46
23.01.73	05.10.77	4010	Essential Benign Hypertension	43
28.11.73	31.01.74	5990	Diseases of Urinary Tract - NEC	5
23.12.74	27.12.74	5199	Diseases of Respiratory System - NEC	2
02.07.76	16.09.77	7901	Debility and undue fatigue	11
25.10.76	05.10.77	2800	Iron Deficiency Anaemia	10
13.06.77	19.07.77	4550	Haemorrhoids	2
24.11.77	25.11.77	6295	Vaginal Bleeding	2
07.12.77	13.12.77	1800	Malignant Neoplasm of Cervix Uteri	2

Comment: This problem list again illustrates the multiple pathology of the elderly patient with her long standing myxoedema, diabetes and hypertension. More important, however, it reveals a diagnostic pathway from persistent debility and fatigue to the ultimate diagnosis of cancer of the cervix. The finding of anaemia deluded the doctor who attributed it to haemorrhoids, that is until the onset of vaginal bleeding.

Patient No.	Surname	Forename	I
030300 0015	Dunn	Peter	S

Address: 12 West Street, Dundee

Initial Contact	Latest Contact	ICD Code	Diagnosis	No. of Contacts
12.01.73	16.06.76	1621	Malignant Neoplasm of Bronchus and Lung	21
14.06.74	09.08.76	7854	Flatulence	6
27.12.74	27.12.74	6929	Eczema due to unspecified cause	1
08.09.75	08.09.75	3810	Acute Otitis Media	1
16.06.76	16.06.76	7863	Frequency of Micturition	1
23.06.76	09.08.76	6000	Hyperplasia of Prostate	2

Comment: The particular value of this problem list is that is serves to remind the family doctor and colleagues, who may be treating the patient's other problems, that carcinoma of the lung was diagnosed in 1973.

Patient No.	Surname	Forename	I
090805 0046	Kenneth	Joyce	L

Address: 4 Panmure Crescent, Dundee

Initial Contact	Latest Contact	ICD Code	Diagnosis	No. of Contacts
12.01.73	07.12.77	4010	Essential Benign Hypertension	22
12.01.73	15.03.76	7130	Osteo-arthritis	11
12.10.73	13.10.73	7860	Pain referable to urinary system	2*
16.10.73	17.03.76	4650	Acute Upper Respiratory Infection	6
04.01.74	04.01.74	7910	Headache	1*
27.02.74	05.03.76	7826	Oedema	3
08.04.74	08.04.74	7179	Muscular Rheumatism	1*
03.08.74	03.08.74	3610	Blepharitis	1*
26.02.75	16.12.77	7863	Frequency of micturition	15*
05.03.75	21.12.77	5990	Diseases of Urinary Tract - NEC	16
03.12.75	08.12.75	7089	Urticaria	3
26.03.76	29.03.76	0091	Diarrhoea	2*
26.03.76	26.03.76	3000	Anxiety Neurosis	1
03.04.76	03.04.76	7841	Nausea and Vomiting	1*

Comment: This is fairly typical of the multiple pathology found in the elderly patient. Only about half of the problems are diagnoses and when pruning the list any symptomatic findings for which there is now an explanation should be deleted. Others which have not recurred for some time and acute self-limited disease should also be deleted. I believe those marked with an asterisk could be omitted without detriment in any future list.

Weed has suggested that each problem be given a number and title but in our practice it has been nearly impossible to keep the same numbers always assigned to one problem. Neelon and Ellis, 1974, in a large teaching hospital in North Carolina had a similar experience. They chose not to use numbers at all and considered that this enabled them to add flexibility to the problem list. The absence of problem numbers allows condensation of several problems under one title when accumulated data warrant such condensation and also allows minor or temporary, self-limited problems on the working problem list to be deleted from the master problem list to avoid redundancy and triviality. (78). They also suggest that where the initial problem list may be generated by clinical trainees, it often lacks sophistication in the grouping and titling of problems. This is particularly relevant to our own teaching practice where vocational trainees and less frequently, senior medical students assist in the formulation of the problem list.

Dunea, 1978, refers to the same situation in a pungent article with the rather evocative title 'Confusion orientated medical records', He felt it was obvious, that in some teaching hospitals, the problem list was being prepared by junior students; that most patients had over 20 problems - such as 1) urinary tract infection, 2) fever, 3) white cells in the urine, etc. - and that the possibilities for future mischief were infinite. (79). Weed, 1969, had clearly foreseen this eventuality. He believed that the jumbled problem list must be recognised for what it is - a call for help and assistance - the students clear statement of difficulty that should not be ignored. If it is so recognised then the problem list may become, for instructor and student alike, the source of progress in knowledge and technique. (1).

Problem Indexing

The review of any problem requires that case records of patients with that problem be retrievable. A variety of problem indexing methods have been developed including that of Eimerl, 1969 (80) using an 'E-Book'

which places the classification in to a spiral book form or disease index card files. All that is required, however, Rakel (60) suggests, is a filing system of 3 x 5 cards that contain the names and selected other information of all patients with the designated problem, so that these can be retrieved for review at will.

The information required for problem indexing is readily obtained from the problem list. This can be done manually by scrutinising the problem lists for particular problems and transfering them to the indexing system but it would be tedious and rather laborious. By means of a suitably prepared programme the computer achieves this very simply and quickly.

Rakel enumerates the advantages of problem indexing (60). His list includes several which are particularly relevant to general practice in this country.

1. Easy retrieval of records of patients with common problems.
2. Identification of patients for whom medication must be changed when new hazards of therapy are identified, e.g. adverse drug reaction with Practolol.
3. Recall of patients with chronic problems requiring periodic evaluation, e.g. recurrent urinary infection or chronic lung disease.
4. Self-audit of physician performance to evaluate effectiveness in selected areas.
5. Collection of data for clinical investigation and other research efforts.

With these criteria as a guide a list of problems was prepared and the details are given in Table 32.

The computer provides a print-out of all patients with a given problem during the period of surveillance, identified by name and unique number. Depending on the nature of the problem the list of

patients is likely to include some who have recovered and some who have died. It should not be taken to represent the number of patients with a given problem at any one point of time.

Table 32 - The list of problems and the number of patients in each category from 1973-1977.

	I.C.D. Code	Number of Patients
Carcinoma of Stomach	1519	5
Carcinoma of Colon	1538	2
Carcinoma of Rectum	1541	4
Bronchial Carcinoma	1621	17
Carcinoma of Breast	1740	4
Carcinoma of Bladder	1880	3
Thyrotoxicosis	2422	10
Myxoedema	2440	28
Diabetes	2500	32
Gout	2740	12
Obesity	2770	222
Pernicious Anaemia	2810	31
Multiple Sclerosis	3400	5
Migraine	3460	80
Glaucoma	3751	9
Otitis Media	3810	193
Hypertension	4010	247
Hypertension with Heart Involvement	4020	25
Myocardial Infarction	4109	53
Ischaemic Heart Disease	4129	79
Angina Pectoris	4139	69
Congestive Cardiac Failure	4270	72
Peripheral Vascular Disease	4439	54
Acute Tonsillitis	4630	603
Chronic Bronchitis	4910	128
Bronchial Asthma	4930	41
Ulcer of Stomach	5319	10
Duodenal Ulcer	5329	82
Diaphragmatic Hernia	5513	32
Ulcerative Colitis	5631	6
Urinary Tract Infection	5990	343
Vaginitis and Vulvitis	6221	42
Psoriasis	6961	67
Rheumatoid Arthritis	7123	29
Osteoarthritis	7130	217
Spondylitis Osteo-arthritica	7131	63
Lumbar Disc Disease	7251	2
Depression	7902	273

MEDICAL RECORD LINKAGE

The problem list and other patient contact data held on the Tayside Health Board's general practice file can be linked by the master patient index (29) with additional data in respect of the same patient held on other computer sub-files e.g. general hospital discharge records (SMR.1), maternity discharge records (SMR.2), mental hospital admission/discharge records (SMR.4), and psychiatric service patient contact data. Although the facility exists to provide an integrated record of basic data for each patient in the practice population, such a record is not yet available, owing to the relatively low priority in programme and computer time given to this aspect of medical recording.

A Sub-committee of the Standing Medical Advisory Committee (Davis Sub-committee), in a report in 1971 on the 'Organisation of Group Practice' (81) were, in no doubt, about the importance of an integrated medical record. They believed that an ideal records system for group practice would be so designed that it is possible to link the general practice records of a patient with medical records from other sources such as hospitals, vital registrations etc.

If a medical record linkage system exists then it may enable the doctor to manage the patient more efficiently by providing access to relevant details recorded in any of his different records. There is the danger that with an integrated system of medical information it will become increasingly difficult to maintain confidentiality although as the Davis Sub-committee pointed out, the use of computers in medical records need not result in any loss of confidentiality because computers can be programmed in such a way as to restrict access to a limited number of individuals, and only selected data need be stored in computer files. (81).

An integrated record would also provide the basis for research into the pattern of morbidity at different levels of care for the same population.

ANALYSIS OF DRUG PRESCRIBING

"In medical practice, a diagnosis is a label we attach to an ill person. We use this label as a practical base for treatment, and if possible, for a prognosis." Bentsen, 1976 (59).

So far, in this study, we have been concerned with the presentation and the diagnosis of illness. The next logical step is to consider the drugs prescribed in response to the diagnoses made.

The analysis of drug prescribing that follows is divided into a number of separate but inter-related sections:

1. The total quantity of drugs prescribed.
2. The groups of drugs prescribed.
3. Drug prescribing related to age and sex.
4. Drug prescribing related to age, sex and diagnosis.
5. Drug prescribing for disease in different age groups.
6. Prescribing of psychotropic drugs.

1. The total quantity of drugs prescribed.

During the period 1973-1977 the number of prescriptions issued annually was approximately 16,000 and the average annual prescription rate was 5 items per patient on the practice list. This prescription rate is less than the prescription rate of 6 items per patient for the population of England and Wales in 1974. (82).

As stated earlier, each receptionist/patient contact involving a 'repeat' prescription is noted separately. A calculation can then be made of the proportion of the annual prescription rate due to items of medicine issued without the patient being seen by the doctor. The details are given in Table 33.

It should be noted that the term 'prescription' means 'prescriptive item' since more than one item of medicine may be included in a single prescription form. In this practice the average number of items per prescription, over the five year period, was 1.25.

Table 33 - The total number of prescriptions and repeat prescriptions with the rate per patient from 1973 to 1977.

	1973	1974	1975	1976	1977
Total number of prescriptions	16,514	16,744	15,542	16,214	16,153
Repeat prescriptions	3,781	4,376	4,394	4,532	4,784
Total prescription rate	5.1	5.2	4.8	5.2	5.0
Repeat prescription rate	1.2	1.4	1.4	1.4	1.5

Apart from minor fluctuations the total prescription rate has remained fairly constant over the five years. However, the proportion of the total prescription rate due to repeat prescriptions has risen from 23% in 1973 to 30% in 1977. This is a situation that needs careful monitoring.

Repeat prescription rates cannot readily be compared with the figures given by other practices since the criteria used to identify the 'repeat' prescription may be different. As Howie, 1977, points out the 'problem' of repeat prescriptions can equally be said to apply to many occasions on which existing medication is continued even after a consultation with a doctor. (83).

2. The groups of drugs prescribed.

As stated earlier, details of every prescription are recorded on the patient's manual record and also stored on computer file using the Aberdeen Drug and Medicine Information Nomenclature (A.D.M.I.N.) Code, 1972 (32). This information is retrieved at appropriate intervals, as a print-out using suitable programmes. One such print-out is a simple tabulation of all the drugs prescribed in descending order of frequency. This lists the variety of drugs used and indicates those most commonly prescribed. An alternative programme provides a print-out of all drugs prescribed, grouped according to their therapeutic effect. As Howie suggests examination of groups of drugs offers an alternative approach to identifying trends and problems in prescribing. (83).

Twenty-six therapeutic classes of drugs were chosen and the list of these, identified by the first two digits of the A.D.M.I.N. code, is given in the appendix on page 158.

In the five years of the study, 91% of the total prescriptions issued (74,099) were analysed. Hypnotics, anti-depressives and tranquillisers were the drugs most commonly prescribed, accounting for 21.2% of the total prescriptions and anti-infective agents were next in order at 14.7%. If topical anti-infective preparations are excluded this latter figure is reduced to 13%. Trethowan, 1975, analysed the prescriptions issued in England in 1972 and the equivalent results to those given above were 17.7% for psychotropic drugs and 14.1% for anti-infective agents. (84).

In the Dundee practice analgesics were also high on the list at 13.8% of the total prescriptions; diuretics account for 8.5% and hypertensives, broncho-dilators, haematinics and anti-tussives each account for a further 3-4%.

The groups of drugs which are most commonly prescribed are examined in more detail in the sections which follow.

3. Drug prescribing related to age and sex.

Any examination of prescribing patterns is likely to be more rewarding when related to different age groups since the pattern of morbidity in the young, the middle-aged and the elderly is different.

Another valid reason for an age related analysis is that age is one of the significant factors which modifies drug action and we need to be constantly reminded of the importance of this. As Lawrence states in Clinical Pharmacology, 1973, the very old and the very young are liable to be intolerant of many drugs, largely because the equipment for disposing of them in the body is less efficient. (85).

Lastly, a more practical reason for an age related analysis of drug prescribing, is that other investigators using national health

service prescriptions can readily separate the prescriptions into three age groups, 0-14 years, 15-64 years and 65 years and over. By using these age groups in this study, a useful comparison can be made with the prescribing patterns of other doctors.

The number of prescriptions given to males and females, for each of the therapeutic groupings, in the age groups under 1 to 14 years, 15-64 years and 65 years and over, was noted. The results were then placed in rank order with the therapeutic grouping for which the greatest number of prescriptions was issued ranking number one and so on. See Tables 34 - 36.

Table 34 - Prescriptions for 26 therapeutic groupings for males and females in rank order, 1973 to 1977.

Age under 1 - 14 years.

Therapeutic Groupings	1973		1974		1975		1976		1977	
	M	F	M	F	M	F	M	F	M	F
Hypnotics	11	15	7	8	8	10	11	10	5	9
Antidepressives	9	10	9	9	8	6	9	9	4	7
Analgesics	3	4	4	4	5	4	5	5	5	5
Antitussives	2	2	2	2	2	2	2	2	3	2
Hypotensives	-	13	16	11	-	9	15	11	14	11
Bronchodilators	5	12	7	7	9	7	8	7	7	6
Antihistamines	6	5	6	5	6	5	6	6	4	5
Drugs on heart muscles	14	0	13	16	12	-	12	14	12	10
Basoconstrictors	7	6	8	11	7	8	7	8	6	8
Vasodilators	-	-	-	-	-	-	-	-	-	-
Diuretics	-	-	14	-	15	-	14	-	11	15
Anticoagulants	-	-	-	-	-	-	-	-	-	-
Anti-migraine	-	16	-	-	-	-	-	-	-	-
Corticosteroids	4	3	3	3	4	3	4	4	2	3
Oestrogens	-	-	-	-	-	-	-	-	-	-
Progestogens	-	16	-	15	-	14	-	15	-	-
Insulin	-	-	-	-	-	-	-	-	-	-
Thyroid preps.	-	-	-	-	-	-	-	-	-	-
Vitamins	10	9	12	10	13	12	12	13	12	12
Salts	-	15	14	16	-	-	14	15	12	-
Haematinics	12	11	11	13	11	11	13	14	10	13
Antibiotics	1	1	1	1	1	1	1	1	1	1
Anti-fungal preps.	12	14	15	12	11	11	11	12	8	9
Antacids	13	-	-	16	14	13	15	15	13	-
Laxatives	11	7	10	14	10	9	10	14	9	14
Expectorants	8	8	5	6	3	3	3	3	2	4

Total number of prescriptions:- Males 3,620 Females 3,543

Table 35 - Prescriptions for 26 therapeutic groupings in males and females in rank order, 1973 to 1977.

Age 15-64 years.

Therapeutic Groupings	1973		1974		1975		1976		1977	
	M	F	M	F	M	F	M	F	M	F
Hypnotics	4	4	5	5	6	5	5	5	6	6
Antidepressives	3	1	3	1	3	1	3	1	3	1
Analgesics	2	3	2	3	2	2	2	2	2	2
Antitussives	11	11	10	11	11	12	6	9	11	13
Hypotensives	9	10	9	9	7	9	9	10	8	9
Bronchodilators	7	9	8	10	8	10	8	11	7	10
Antihistamines	12	13	12	13	15	14	11	14	13	12
Drugs on heart muscle	14	18	14	19	13	21	12	29	10	19
Vasoconstrictors	17	20	18	21	23	24	19	23	21	26
Vasodilators	13	21	13	18	12	18	13	21	14	24
Diuretics	5	6	6	6	9	6	7	6	5	5
Anticoagulents	19	19	19	17	21	20	19	22	23	23
Anti-migraine	22	22	21	20	23	22	21	18	21	20
Corticosteroids	6	7	4	7	4	7	4	7	4	7
Oestrogens	-	23	-	24	-	24	-	24	-	25
Progestogens	22	5	-	4	-	4	-	4	-	4
Insulin	17	24	16	23	18	23	15	21	15	21
Thyroid Preps.	21	25	17	22	17	22	21	18	22	17
Vitamins	18	12	16	12	22	11	18	12	20	14
Salts	10	14	11	16	14	17	14	17	17	18
Haematinics	18	8	19	8	19	8	20	8	19	8
Antibiotics	1	2	1	2	1	3	1	3	1	3
Antifungal Preps.	20	26	20	20	20	19	17	19	18	22
Antacids	8	15	7	13	5	13	18	15	9	15
Laxatives	16	16	15	14	16	16	16	16	16	16
Expectorants	15	17	13	15	10	15	10	13	12	11

Total number of prescriptions:- Males 12,149 Females 29,850

Table 36 - Prescriptions for 26 therapeutic groupings in males and females in rank order, 1973 to 1977.

Age 65 years and over.

Therapeutic Groupings	1973		1974		1975		1976		1977	
	M	F	M	F	M	F	M	F	M	F
Hypnotics	5	1	5	2	4	3	4	3	3	3
Antidepressives	7	4	3	4	8	4	11	4	12	4
Analgesics	2	2	2	1	1	1	1	1	1	1
Antitussives	11	13	10	14	12	17	11	15	15	17
Hypotensives	16	11	9	12	15	13	12	13	14	9
Bronchodilators	4	14	8	15	5	14	5	14	5	11
Antihistamines	17	20	12	21	17	15	15	18	20	19
Drugs on heart muscle	10	10	14	9	11	8	10	11	13	12
Vasoconstrictors	18	15	18	18	20	16	15	16	18	16
Vasodilators	8	9	13	11	10	12	8	12	8	14
Diuretics	1	3	6	3	2	2	2	2	2	2
Anticoagulants	15	21	19	22	16	22	19	22	21	21
Anti-migraine	-	-	21	24	-	25	-	24	-	24
Corticosteroids	9	12	4	8	7	7	9	10	9	6
Oestrogens	-	22	-	22	21	24	-	23	-	22
Progestogens	-	-	-	24	-	-	-	-	-	23
Insulin	20	18	16	19	18	21	17	21	21	20
Thyroid Preps.	-	16	17	17	-	18	-	17	-	15
Vitamins	19	17	16	16	19	19	18	20	19	20
Salts	6	5	11	6	6	6	6	7	6	13
Haematinics	14	6	19	7	12	9	13	9	10	8
Antibiotics	3	7	1	5	3	5	3	5	4	5
Antifungal Preps.	21	23	20	23	20	23	16	25	17	23
Antacids	13	13	7	13	13	11	13	6	11	7
Laxatives	9	8	15	10	9	10	7	8	7	10
Expectorants	12	19	13	20	14	20	14	19	16	18

Total number of prescriptions:- Males 6,021 Females 19,188

Table 34 shows that in the age group under 1-14 years, in both males and females and for each year from 1973 to 1977, the greatest number of prescriptions issued was for antibiotics. During the five years, antibiotics alone accounted for an average of 43% of all prescriptive items. During this period, five other therapeutic classes of drugs; antitussives, cortico-steroids, analgesics, anti-histamines and expectorants accounted for a further 41%. From this analysis it can be stated that the broad categories of drugs used are not incompatible with the morbidity pattern for the age group 1-14 years described earlier. What cannot be asserted is that the therapeutic response made by the doctor is necessarily the most appropriate. For example, some doctors would avoid prescribing antitussives and expectorants because they consider them of limited therapeutic value.

In the analysis of drug prescribing in the other age groups shown in Tables 35 and 36 different prescribing patterns are revealed. Although prescriptions for antibiotics head the list in males in the age range 15-64 years and account for 20% of all prescriptions, in females, antidepressives and tranquillisers take top ranking with 17% of the total prescriptions and with a further 8% for hypnotics. In both males and females analgesics account for 13% and diuretics for 6%.

In the 65 years and over age group, analgesics are high on the list in both males (16.6%) and females (18%). Hypnotics, antidepressives and tranquillisers account for a further 13% in males and 27% in females. Together with diuretics and antibiotics those 5 therapeutic classes account for 91% of all prescriptions in males and 64% in females.

It is important to recognise that in any practice population a significant proportion of individuals will be taking unprescribed medicines. A study of medicine taken in a U.K. sample by Dunnell and Cartwright, 1972, (86), found that 41% of adults were on prescribed medicines and 67% were using unprescribed medicines. Hannay, 1976, in a similar study in Glasgow, reported that 79% of the analgesics and

antipyretics taken in Glasgow were unprescribed. (87). In this practice, the analysis of drug prescribing in the elderly shows that analgesics and antipyretics are high on the list of prescribed medicines. If a significant proportion are also taking these drugs unprescribed then there is an increased risk of adverse drug reaction such as gastric irritation, haemorrhage or nephropathy.

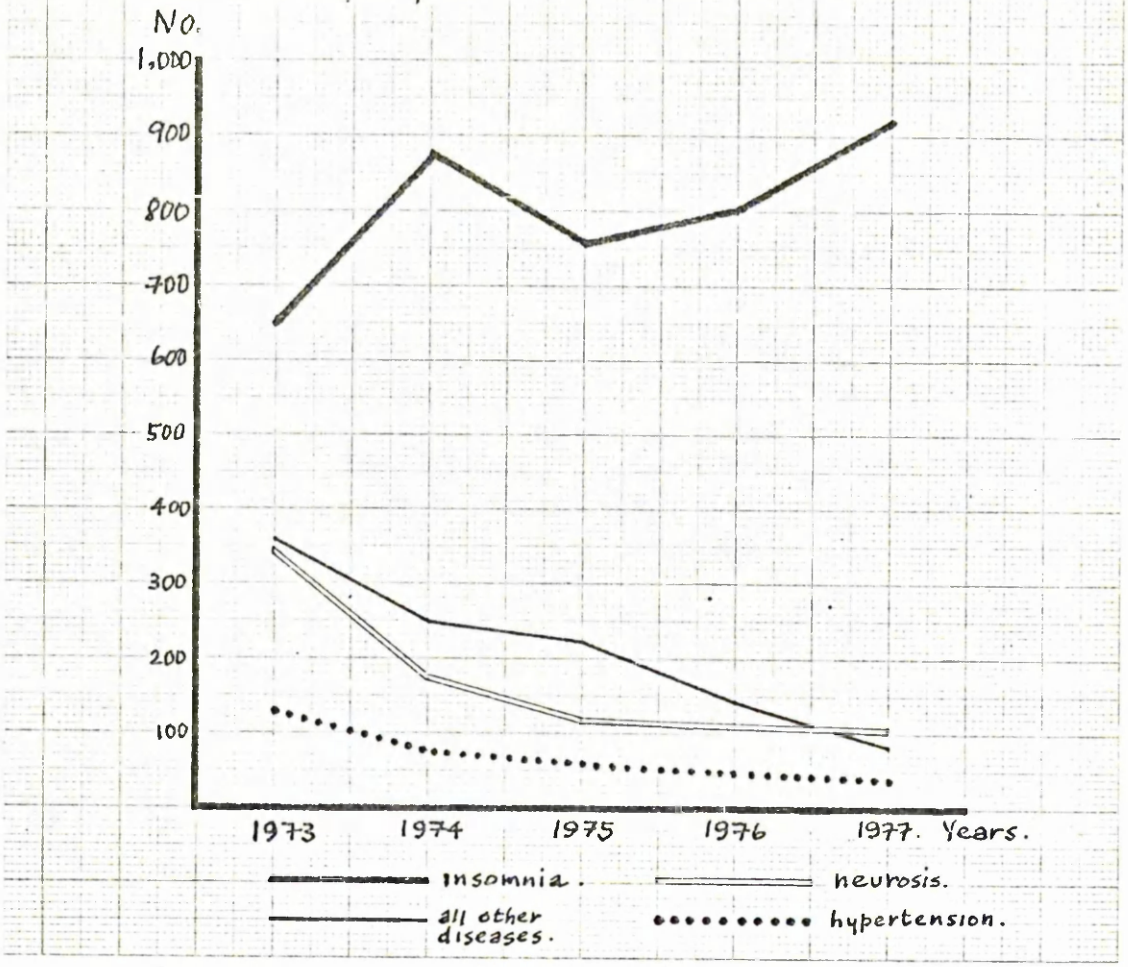
4. Drug prescribing related to age, sex and diagnosis.

The stage has now been reached where further progress in the analysis of drug prescribing can only be achieved by examining, not just the prescription, or the patient to whom the prescription is issued, but also the disease or condition being treated. Drugs in the therapeutic groups referred to previously are first examined in respect of the disease or condition treated. Later, consideration is given to individual drugs or medicines used in certain diseases commonly found in patients at different ages.

In part two of this section on drug analysis reference is made to the 21% of total prescriptions due to hypnotics, antidepressives and tranquillisers and the 14% due to antibiotics. Consideration is given to these therapeutic categories in the first instance, in Tables 37 to 40.

As noted earlier, the prevalence of disease in the practice population has remained almost unaltered during the five years of the study. It is unlikely, therefore, that changes observed in the pattern of prescribing during this period can be attributed solely to changes in the pattern of morbidity.

Table 37. The number of prescriptions for hypnotics and sedatives, each year, for the disease or condition specified.



The graph in Table 37 shows that the number of prescriptions issued for insomnia each year from 1973 to 1977 has fluctuated but with an overall increase by 1977 of over 40%.

An age breakdown of the 912 prescriptions issued for insomnia in 1977 show that 64% were issued to patients of 65 years and over. Judge and Caird, 1977 (88) observe that most elderly people sleep for shorter periods than do the young but many do not accept that this is a normal ageing process. The increased use of hypnotics in the practice suggests that a request for help with a sleep disorder is frequently met with a prescription and it is likely that scant effort is made to exclude, as Judge and Caird recommend, the simple treatable causes of insomnia. The conclusion is unavoidable that hypnotics are being over-prescribed and that a more critical attitude to hypnotic prescribing is required. As Dunlop, 1970, emphasises, we do not always draw a

clear distinction between the patients' wants and what we think are his needs, and it is regrettable how much we accede to the patients' demands in order to placate him and to save ourselves time and trouble. (89). On the other hand, the use of sedatives in the management of the neuroses and hypertension, has decreased although other drugs such as tranquillisers and hypotensives have replaced them. See Table 38. In addition the number of prescriptions for hypnotics and sedatives given for all other diseases or conditions has fallen considerably in the five years.

Table 38 - The number of prescriptions for anti-depressives and tranquillisers issued each year for the disease or conditions specified.

I.C.D. Code	Disease or Condition	1973	1974	1975	1976	1977
300 0	Anxiety Neurosis	580	645	570	602	515
3004	Depressive Neurosis	382	244	226	148	209
7902	Depression	153	234	203	221	260
7805	Vertigo	91	93	63	83	74
4010	Hypertension	82	79	84	63	68
7910	Headache	72	44	19	25	30
7841	Nausea & Vomiting	19	48	34	39	32
2900	Senile Dementia	33	36	25	10	26
2969	Psychoses	40	29	33	46	59
4020 to 4290	Heart Disease	80	76	68	45	39
3400	Multiple Sclerosis	24	23	21	18	17
3065	Anorexia Nervosa	9	14	35	33	29
7862	Incontinence of Urine	17	14	26	26	29
3064	Insomnia	7	21	22	10	28
	All other diseases or conditions	295	256	191	297	213
	Total number of prescriptive items	1884	1856	1642	1666	1628

"Drugs are available which will increase the over-all output of patients with too little behaviour, and other drugs are available

which reduce the output of patients with too much behaviour". Dews, 1958 (90). As Laurence, 1973, points out this bold statement usefully emphasises the depth of ignorance which is the most prominent feature of the background to the use of drugs to influence behaviour. (85). It is, therefore, not surprising that psychotropic drugs (= affecting the mind) are classified according to the symptoms they are used to relieve rather than their mechanisms of action.

Antidepressants and the minor and major tranquillisers are used in the practice to provide symptomatic treatment and this is reflected in the list of diagnoses given in Table 38. Taken together, these diagnoses account for 85% of prescriptions for psychotropic drugs. The first three diagnoses on the list suggest a degree of resolution which is more apparent than real. As Kerr, 1972, states there is never depression without anxiety and probably never anxiety without depression. (91). Nevertheless, the division is useful in practice in so far as it indicates the relative importance that the doctor places on the elements of anxiety and depression in the illness. Collectively, these three diagnoses account for 60% of all psychotropic prescriptions with a further 5% attributable to vertigo.

Before considering Table 39 it is important to recognise that topical antibiotic preparations are not included in the analysis and account, on average, for a further 225 prescriptions each year.

Table 39 refers only to those diseases and conditions for which a systemic antibiotic is given. The list of diseases is an abbreviated one but accounts for some 77% of all prescriptions for systemic antibiotics. Diseases of the respiratory system (I.C.D. Code 4610 to 4930 - and with which is included 'other diseases of the respiratory system', 5199, Dyspnoea, 7832 and Cough, 7833) alone account, on average, for 55% of all antibiotic prescriptions. This percentage has fluctuated each year and in 1977 was at its lowest at 51%.

Table 39 - The number of prescriptions for antibiotics issued each year for the disease or condition specified.

I.C.D. Code	Disease or Condition	1973	1974	1975	1976	1977
3810	Otitis Media	106	96	75	91	82
4610	Acute Sinusitis	30	26	20	26	19
4620	Acute Pharyngitis	80	133	80	97	94
4630	Acute Tonsillitis	192	193	164	166	121
4640	Acute Laryngitis and Tracheitis	35	43	27	64	40
4650	Acute Upper Respiratory Infection	206	237	179	135	109
4660	Acute Bronchitis	247	216	128	180	181
4700	Influenza	40	87	50	124	32
4910	Chronic Bronchitis	66	78	76	104	56
4930	Asthma	6	6	11	9	10
5199	Other diseases of Respiratory System	106	235	201	249	129
5990	Diseases of the Urinary Tract	104	107	112	67	85
6800 to 6860	Infections of Skin and Subcut. Tissue	59	45	56	56	45
7061	Acne	67	84	71	110	89
7832	Dyspnoea	9	10	-	-	5
7833	Cough	29	75	59	64	52
7860	Pain referable to Urinary System	12	27	45	5	30
7863	Frequency of micturition	19	55	90	107	85
	All other diseases & conditions	435	500	422	481	398
	Total for all diseases & conditions	1848	2253	1866	2135	1662

Further reference will be made in Section 5 to the apparent excessive use of antibiotics in respiratory disease, which as Table 40 illustrates affects all three age categories of males and females, although to a varying extent.

Table 40 - The number of prescriptions for antibiotics issued in 1977 for the diseases and conditions specified, by age and sex, as a percentage of the total of all antibiotic prescriptions.

Disease or Condition	0-14 yrs		15-64 yrs		65 yrs +	
	M	F	M	F	M	F
Diseases of Respiratory System	66	51	58	47	48	41
Urinary Tract Infection	1	8	1	18	15	33
Otitis Media	14	16	4	1	2	-
Acne	1	4	13	5	-	-
Infections of Skin and Subcutaneous tissue	2	4	4	3	3	-
All other diseases and conditions	16	17	20	26	32	26
	100%	100%	100%	100%	100%	100%

Prescriptions for diuretics, which account for 8.5% of all prescriptions issued during the period 1973 to 1977, are also worthy of closer scrutiny. The figures obtained in each year of the study are broadly compatible, and so only the total figures for the five years are used in Table 41.

Table 41 - The number of prescriptions for diuretics issued for the diseases and conditions specified from 1973 to 1977.

I.C.D. Code	Disease or Condition	1973-1977
3751	Glaucoma	166
3940-	Diseases of heart valves	228
3960 4010	Hypertension	1,958
4020	Hypertensive heart disease	298
4129	Chronic Ischaemic heart disease	359
4270	Congestive heart failure	810
4271	Left ventricular failure	119
4279	Disorders of heart rhythm	134
4380	Cerebrovascular disease with hypertension	104
5810	Nephrotic Syndrome	86
7826	Oedema	1,101
7832	Dyspnoea	103
-	All other diseases or conditions	811
-	Total No. of prescriptions	6,277

Diuretics are used to remove oedema in heart failure and in renal disease, to lower blood pressure in hypertension and intro-ocular pressure in glaucoma. All of these conditions are featured in Table 41. What is surprising is the large number of prescriptions given to treat a problem described as 'oedema', a label which provides no indication of the underlying pathology. When this problem is considered in relationship to the age and sex of the patients concerned, it is apparent that females, particularly elderly females, receive more prescriptions for diuretics than males.

In 1977, for example, 55% of all diuretics used in the treatment of oedema were given to females over 65 years. This represents 40 prescriptions for every 100 females in the practice population over 65 years. The equivalent figure for males over 65 years is 13 prescriptions per 100 males. The British Medical Journal, in an editorial in 1978 (92) stated that the use of diuretics is often inappropriate and potentially harmful. Ankle oedema is a misleading sign; only occasionally is it associated with heart failure, and, in a reference to Agate, 1970, (93), most often it is due to muscular inactivity combined with incompetent leg veins. Judge and Caird, 1978, point out, however, that oedema is a very common symptom in old age and that after exclusion of its commonest causes, venous disease and immobility, and its less usual causes such as cardiac failure and hepatic and renal disease, probably the majority of cases are unexplained. (88). Since both treatment and diagnosis are in doubt it is all the more important that each member of the practice team is aware of the unwanted effects of diuretics particularly in the elderly. The policy in this practice is to review each patient on diuretics, particularly those on "long term" therapy. In some patients it is possible to effect a change from a potent "loop" diuretic to the smoother action of a thiazide diuretic or alternatively to stop the diuretic altogether.

Some comments are made about four other groups of drugs in the

paragraph that follows.

Analgesics are prescribed for a great variety of diseases and conditions. In each year of the study, the computer print-out provides a list of more than 50 diagnoses. Many of the terms used are descriptive or symptomatic reflecting the doctor's uncertainty about the nature of pain and its diagnosis e.g. lumbalgia, lumbago, strain of back, myalgia, vertebrogenic pain syndrome, pain in limb, pain in joint, neuralgia. Although the list of diagnoses is long, osteoarthritis, rheumatoid arthritis, back pain and joint pain account for 52% of all prescriptions for analgesics. The uncertainty of the diagnostic process is also reflected in the widespread use of antacids to treat gastro-intestinal symptoms variously labelled as dyspepsia, nausea, flatulence, heartburn or abdominal pain. These five symptoms account for 56% of all prescriptions for antacids. Similarly, 31% of all prescriptions for anti-tussives are issued to patients with a diagnosis of cough and 20% of all prescriptions for vitamins to patients with a diagnosis of debility and undue fatigue.

5. Drug prescribing for disease in different age groups.

By relating the drugs prescribed to specific diseases in each disease category, a more precise analysis of drug usage is obtained. Some categories of diseases are more prevalent in certain age groups than others, e.g. respiratory disease in the 1-14 years age group, anxiety neurosis in the 15-64 years age group and osteoarthritis and cardiac failure in the 65 years and over age group. Depression is a problem which is common to all but the very young and is considered separately in both of the older age groups.

a) Prescribing for the 1-14 years age group.

(i) Diseases of the respiratory system.

Altogether 2,676 prescriptive items were given to contacts in the 1-14 years age group for six of the morbid conditions included in

diseases of the respiratory system. These were, acute tonsillitis (589), acute upper respiratory tract infection, (1,150), acute otitis media (263), influenza (62), diseases of the respiratory system (477) and asthma (135). For each diagnosis a drug table was prepared but to avoid overloading the text only one is included, as an example. See Table 42 on page 131. From the analysis of the results obtained certain prescribing habits were noted.

Acute tonsillitis.

On average, 85% of prescriptions were for antibiotics, mainly Penicillin V, although broad-spectrum penicillins, such as Ampicillin and Amoxycillin were prescribed more frequently in the later years of the study. Medical micro-biologists such as Wise, 1978, advocate penicillin by injection when dealing with the moderately to severely ill child with streptococcal pharyngitis. However, these injections are painful, distress the child and invariably diminish his trust in the doctor. Penicillin V given by mouth in syrup or tablet form is readily acceptable and when taken regularly appears to be effective in practice. As Fleming, 1978, pointed out, we have to distinguish between rational prescribing on a clinical-pharmacological basis and realistic prescribing for the individual patient. (95).

The use of broad-spectrum penicillin is less easily justified. As Wise states these drugs are less active and more prone to result in rashes particularly if a virus is the cause of the illness. (94). It is possible that in some instances the diagnosis is less certain than the label suggests and other features such as otitis media complicate the picture. The probability is, however, that in certain instances broad-spectrum penicillins are being used inappropriately but only the study of individual case records can confirm or refute this.

Acute upper respiratory infection.

Table 42 reveals that 27 different drugs were used in the treatment of acute upper respiratory infection. This suggests that if the

cont. on Page 132

Table 42 - Number of Prescriptive Items in males and females 1-14 years for specific drugs in the treatment of Acute Upper Respiratory Infection 1973-1977.

Acute Upper Resp. Infection	1973		1974		1975		1976		1977		Total
	M	F	M	F	M	F	M	F	M	F	
Paracetamol	16	17	9	8	8	11	12	5	4	8	98
Panasorb				1			1				2
Codeine Linctus	3	2									5
Phensedyl	27	22	22	24	12	22	19	26	19	14	207
Tixylix	14	6	4	7	4	4	6	5	2	1	53
Triotussix							1				1
Davenol		1									1
Sancos			6	5	3	3			2		19
Pholcodine	1	2									3
Orciprenaline		1	1	1	2	2	2	2	1		12
Salbutamol				2	1				1		4
Terbutaline Hyd.							1				1
Promethazine Hyd.	2	2								1	5
Triprocidine Hyd.	1		1								2
Xylometazoline Hyd.	17	15	9	7	16	11	5	5	7	11	103
Ascorbic Acid	1										1
Abidec		1									1
Vitavel Syrup	1							1	1		3
Penicillin V	21	13	19	21	17	19	11	10	7	14	152
Ampicillin	19	21	25	29	7	19	11	9	13	4	157
Oxytetracycline	2			1							3
Erythromycin	6	3	10	2	6	10	6	1	3	1	48
Cephalexin								1			1
Amoxycillin		1	2		8	11	12	10	13	3	60
Bactrim		1	1	1		1		2		1	7
Actifed Syrup	3	5	14	11	21	13	25	19	31	21	181
Beynlin Expect.	8	5		1	1	2		2		1	20
Total	142	118	123	121	106	146	112	98	104	80	
	260		244		252		210		184		1150

doctor's aim is the skilled use of a few alternatives then the assortment of drugs used is unnecessarily large, even although twelve of them were prescribed on less than five occasions. 63% of the total prescriptions were for symptomatic remedies and 37% for antibiotics. Symptomatic treatment is the not unexpected outcome of the consultation with a sick child whose minor illness is acute and self-limiting. The drug which ameliorates the sore throat, the nasal discharge or the troublesome cough is welcomed by the parents and if appropriately disguised, is usually acceptable and useful to the child. Nevertheless, doctors should not be over anxious to prescribe in these circumstances. As an Editorial in the Journal of the R.C.G.P., 1978, reminds us, practitioners are becoming increasingly aware that using drugs, especially for minor ailments, may breed dependency on doctors and expectations of further use of prescriptions when similar problems recur. (96).

The use of antibiotics cannot be readily justified. 70% of the prescriptions for antibiotics (297) were given to children in the age range 0-4 years and this suggests that the doctors were more concerned about the risk of complications in the very young child.

Diseases of the Respiratory Tract:

This is a useful diagnostic label for infections which appear to involve the lower respiratory system and are associated with accompaniments in the lungs but which do not merit the label of acute bronchitis or pneumonia. More than half of the prescriptions were for antibiotics with 66% being prescribed for the 0-4 years age group.

Asthma;

A limited range of drugs were prescribed for asthma in the age range 1-14 years with Sodium Cromoglycate (Intal) and Salbutamol (Ventolin) accounting for 70% of the total drugs prescribed and antibiotics for a further 12%. The small range of drugs used in the

treatment of asthma, potentially the most serious of the diseases of the respiratory system, is in contrast to the wide range of drugs used to treat other diseases of the respiratory system.

The tendency for doctors to prescribe a great variety of drugs is a common feature of the treatment of many diseases and conditions. The reasons for this are numerous. To start with, there is available an unnecessarily large assortment of drugs and each general practitioner has his own particular preferences and prejudices. Hospital doctors often recommend alternative therapy and the medical literature and drug representatives provide their own brand of persuasion to the choice of drugs. The patient's needs as an individual are also important and should not be forgotten. As Flemming reminds us, a standardised patient exists only in text books. Personal dislikes, proneness to nausea, sensitive gag reflexes may all play a part in patient compliance. (95).

It is important, however, that the practice team meet regularly and try to reach a common prescribing policy. The aim should be to achieve a reduction in drug costs without any decrease in the quality of patient care. They should avoid prescribing several equivalent drugs when one drug of the group may be satisfactory for the great majority of cases. The skilled use of a few alternatives may ensure that the patient takes the drug.

b) Prescribing for the 15-64 years age group.

i) Anxiety neurosis:

The nervous disorder labelled by us as anxiety neurosis has varying symptoms and others may use different terminology such as acute anxiety state, nervous debility, anxiety depression and so on to describe it. The apparent preciseness of the diagnosis is belied by the variety of drugs used in its treatment. In Table 43 on page 134 the total number of prescriptive items given for anxiety neurosis in males and females aged 15-64 years from 1973-1977 was 2,769 and altogether 30 different

Table 43 - Number of prescriptive items, in males and females 15-64 years, for specific drugs in the treatment of Anxiety Neurosis.

Anxiety Neurosis	1973		1974		1975		1976		1977		Total
	M	F	M	F	M	F	M	F	M	F	
Amylobarbitone Sod.	4	23	3	16	3	15	1	15	3	13	96
Dichloralphenazone				1						2	3
Pentobarbitone	11		6		5	1	6				29
Phenobarbitone	12			3		2					17
Triclofos Sod.						1		1			2
Nitrazepam	10	33	4	40	5	16	4	12	3	7	134
Flurazepam Hcl.				7		14		13		13	47
Mandrax	8	16		6							30
Tuinal		1									1
Chlorpromazine	1	1			2						4
Prochlorperazine	2	7	1	4		4			1	4	23
Oxypertine	1	1									2
Fluopromazine Hcl.		1									1
Thioridazine Hcl.	6		12		13		6		13		50
Meprobamate				3							3
Chlordiazepoxide Hcl.	15	79	17	85	9	57	12	32	6	14	326
Diazepam	53	212	65	253	55	264	45	336	60	250	1593
Oxazepam	1	10		8		7		5		2	33
Benziotamine Hcl.		2									2
Imipramine Hcl.			2	5		10		3	1	5	25
Amitriptyline Hcl.	7	57	19	73	1	47	8	48	9	30	299
Maprotiline Hcl.								1			1
Trimipramine										3	3
Lorazepam						4			4	4	12
Ascorbic Acid						1		2	1	1	5
Juvel								1			1
Orovite	1	3	1	3	1			1	1		11
Vitavel Syrup								1		1	2
Ferrograd C		2		1				5			8
Ferrous Sulphate		2		1				2		1	6
Total	132	450	130	509	94	443	82	478	102	349	
	582		639		537		560		451		2769

drugs were prescribed during this period. Certain drugs were prescribed very infrequently and if these are excluded the list is reduced to 18 drugs. Five drugs account for 89% of the total prescribed, i.e. Diazepam 58%, Chlordiazepoxide 12%, Amitriptyline 11%, Nitrazepam 5% and Amylobarbitone 3%. The fall in the use of barbiturates, in the five years of the study, was due partly to a fall in the total use of hypnotics and partly to their substitution by newer, safer hypnotics such as Nitrazepam. Minor tranquillisers, Diazepam and Chlordiazepoxide, first used to tame wild animals, are prescribed more frequently than any other group of drugs and although their mechanism of action is unknown, patients often obtain symptomatic relief from their use.

In the age range 15-64 years, females exceeded males by only 5.6%. However, of the 2,769 prescriptive items for anxiety neurosis, 2,229 or 80.5% were issued to females. This finding supports the view that women consume more psychotropic drugs than men, 1977 (97). Although about 63% of the practice population are in the 15-44 years age group more than half of the prescriptions for psychotropic drugs (56%) are given to patients between 45 and 64 years.

Marks, 1977, believes anxiety is a normal and valuable emotion and that the intervention of treatment, merely to suppress anxiety, may do more harm than good. (98). The Tayside Drug Information Centre, 1978, also suggests that the prescription of anti-depressant drugs may not always be appropriate for symptoms arising in relation to adverse environmental or personal circumstances. (99). On the other hand, Mills, 1977, in a letter to The Times states that till we change our so called civilisation so that people can cope, tricyclic anti-depressants used early are the most effective drugs in restoring coping ability. (100).

These statements may seem contradictory, yet, depending on the particular circumstances of the individual patient the advice given,

in any one of them, may be the appropriate line to follow. In this practice, Tricyclic antidepressant drugs account for 12% of the total prescriptions for anxiety neurosis and in each of the five years their relative percentage to all other drugs remained fairly constant.

ii) Depression.

In our diagnosis of depression, we try to distinguish between the anxious patient and the patient whose basic problem is depression, although recognising that reactive depression is often accompanied by anxiety and that the over anxious patient may become depressed and benefit from anti-depressant drugs.

The total number of prescriptions given for depression in the age range 15-64 years during 1973 to 1977 was 918, with females receiving 79% of them. Altogether 22 different drugs were prescribed, 2 hypnotics, 1 sedative, 7 antidepressants, 7 tranquillisers and 5 placebos. However, if those drugs prescribed on less than 10 occasions in the five years are excluded, the number is reduced to 6 drugs. Between them they account for 95% of the prescriptive items issued. The detailed breakdown is as follows:

1) Hypnotic (Nitrazepam) 4%. 2) Tranquillisers (Chlordiazepoxide and Diazepam) 25% and 3) Antidepressant drugs (Trimipramine, Imipramine and Amitriptyline) 66%. Although these drugs are separately listed, this does not mean that patients necessarily received them only one at a time, since combined therapy was likely to have been appropriate in some instances.

Further comments are made about antidepressant drugs in the analysis of prescribing for 65 years and over age group, in the next section.

c) Prescribing for the 65 years and over age group.

Prescribing for the elderly should be undertaken with great care. In an article on the hazards of prescribing for the elderly, Denham, 1978, states that the incidence of adverse drug reaction increases with

age - one in ten of all admissions to geriatric departments in the U.K. was caused wholly or partly by drug side effects. (101).

The importance of analgesics in the treatment of osteoarthritis in the elderly is considered in some detail.

i) Osteoarthritis.

Analysis of prescriptions for osteoarthritis confirms that it is a problem which frequently afflicts the elderly. Over a five year period only six prescriptions were given to patients with osteoarthritis under the age of 45 years, 439 prescriptions to patients between 45 and 64 years, and 1,882 prescriptions to patients over 65 years.

In the practice population, patients over 65 years represent 16% of the total population but are given 80% of the total prescriptions for osteoarthritis. Also, in this age group, women exceed men in the ratio of two to one yet women are given five prescriptions to every one prescription given to men.

The drugs given most frequently were Indomethacin, Paracetamol, Ibuprofen, Mefenamic Acid, Distalgesic, Aspirin and Naproxen, in that order and these seven drugs account for 90% of the total drugs prescribed. It is likely that some patients were treated with both an analgesic and an anti-inflammatory drug since a smaller dose of each is often effective. However, although fewer side effects occur in the elderly with analgesics than with other drugs, Denham emphasises that most elderly patients will make serious errors in their drug therapy if they are prescribed three or more drugs. (101).

ii) Cardiac Failure.

Diseases of the circulatory system are among the most important causes of morbidity in the 65 years and over age group.

Analysis of 1,777 prescriptions given in the treatment of left ventricular failure and congestive cardiac failure in the period 1973 to 1977 revealed that 1,655 (93%) were given to patients 65 years or over and only 122 (7%) to the 45 to 64 years age group. 42% of

prescriptions in the 65 years and over were issued to male patients although females out-numbered males in this age group in a ratio of two to one. 62% of prescriptions were given to the 75 years and over age group although the 65 to 74 years age group out-numbered those 75 years and over in a ratio of almost two to one. As geriatricians are increasingly recognising their primary concerns are with the very old. - Isaacs et al, 1972 (102).

In Table 44 on page 139 drugs used in the treatment of cardiac failure are analysed. Four hypnotics were prescribed occasionally and only one, a non-barbiturate, Nitrazepam (14) on more than ten occasions. Six diurctics were used and three of them, Frusemide, Neo Naclex and Neo Naclex K account for 671 prescriptions (89%) out of a total of 750. It may be that using the remainder on 79 occasions was still an un-necessary duplication of therapeutic agents. As Drury, 1977, argued at a symposium in Honolulu, general practitioners should familiarise themselves with a small group of drugs and in this way raise their recognition level of adverse drug reactions. (103).

Potassium supplements as Slow K or as an effervescent tablet account for 28% of the total of all prescriptions and a drug acting on the heart muscle, Digoxin, for a further 11.5%. Digoxin is clearly indicated in atrial fibrillation with a rapid ventricular rate and cardiac failure, Judge & Caird, 1978, (88). It has been shown, however, that 70% of elderly patients on maintenance Digoxin no longer need it and the question should be asked whether, after some months treatment, the drug may not be discontinued.

iii) Depression.

In the age range 65 to 75 years and over, 55% of the total prescriptions given for depression, were tricyclic anti-depressants. Davies, 1971, suggests that ageing is associated with an increase in susceptibility to the side effects of anti-depressants including confusional states, (104), and Ayed, 1965, that there are also effects

Table 44 - Number of prescriptive items in males and females 65 years and over for specific drugs in the treatment of L. Ventricular and Congestive Cardiac Failure.

Left Ventricular & Congestive Cardiac Failure	1973		1974		1975		1976		1977		Total
	M.	F	M	F	M	F	M	F	M	F	
Cyclobarbitone		3									3
Amylobarbitone	1					1		2			4
Pentobarbitone		3				2		1			6
Nitrazepam	1					1	1				3
Diazepam				3		1	2	3	3	2	14
Chlordiazepoxide		5									5
Oxyprenolol		2					4		5		11
Digoxin	16	13	24	12	15	28	17	26	18	21	190
Aminophylline							2		1		3
Glyceryl Trinitrate		4		6	1	9	8	3	12		43
Pentaerythritol Tetranitrate		7		11		11		14		13	56
Chlorathiazide	6										6
Bendrofluazide	8	13	18	6	11	2	15	3	10	4	90
Frusemide	40	47	41	62	33	65	40	49	34	61	472
Spironolactone		10	2	13	3	17	7	15	8	12	87
Moduretic					7		11		15	7	40
Navidrex K	7	1		4	8		10	1	2		33
Neo Naclex K	4	21	1	23	4	17	2	18	4	15	109
Warfarin					4	2		1			7
Multivite		1		6		1	1	2			11
Potassium Chloride	42	41	51	63	39	51	37	29	33	34	420
Efferv. Potassium Tabs.	2	4		4		4	3	12	5	8	42
Total	127	175	137	213	125	212	160	179	150	177	
	302		350		337		339		327		1655

involving the cardiovascular system. (105). For these reasons we try to keep a close check on the frequency with which these drugs are prescribed, particularly in the elderly.

Table 45 - The number of prescriptions, new and repeat, for anti-depressant drugs per 1,000 of the practice population by age group and sex, 1973 to 1977.

	15-24		25-44		45-64		65-74		75 +		Total	
	M	F	M	F	M	F	M	F	M	F	M	F
The frequency per 1000 pop.	4	466	109	824	378	808	214	585	79	350	176	676

Pollitt, 1977, stated that the most vulnerable time for women is from puberty to the age of 45 and that after 55 the sex rates for depression are equal. (106). Although Table 45 is concerned with the treatment of depression rather than the prevalence of disease the figures suggest that the period of risk in females spans a wider age range than Pollitt suggests, with a preponderance throughout of never less than two to one in the female to male ratio.

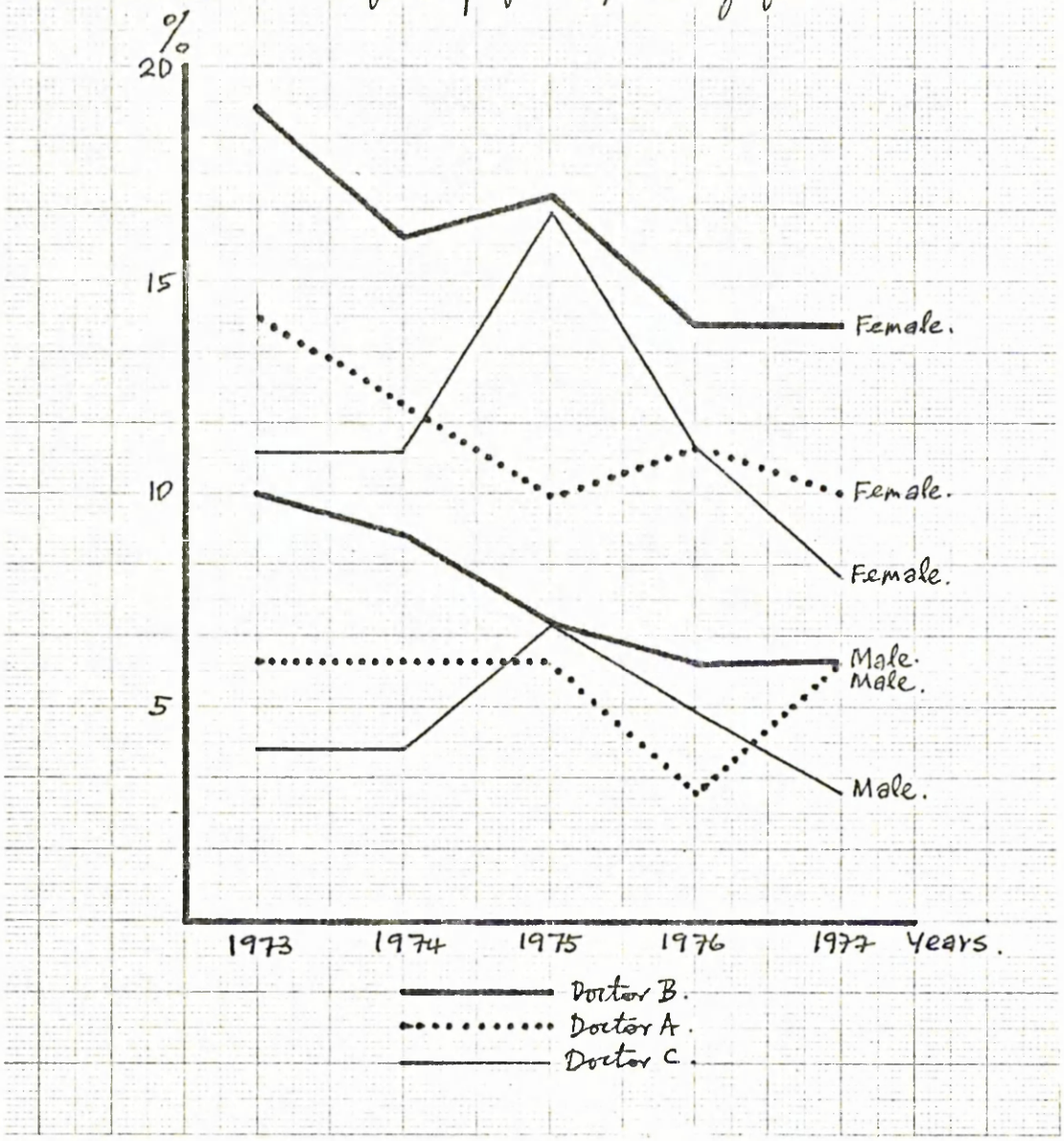
6. Prescribing of psychotropic drugs.

The increasing use of psychotropic drugs in the adult population is considered by many to be undesirable. Marks interprets figures issued annually by the Department of Health and Social Security on prescription costs and states that today about one in five adults in the U.K. is under treatment with psychotropic drugs. (98). Tyrer, 1978, suggests that the rapid increase in the use of psychotropic drugs is caused by unnecessary prescribing rather than detection and treatment of hitherto unnoticed illness but the evidence for this remains largely circumstantial. (107).

In order to view the trend in the prescribing of psychotropic drugs in the practice, by each of the doctors over the five years, a record was kept of male and female consultations at which a prescription for a psychotropic drug was given and the number of them expressed as a

percentage of the total consultations. See Table 46.

Table 46. Percentage of the total number of doctor/patient consultations, in males and females, for a psychotropic drug from 1973 – 1977.

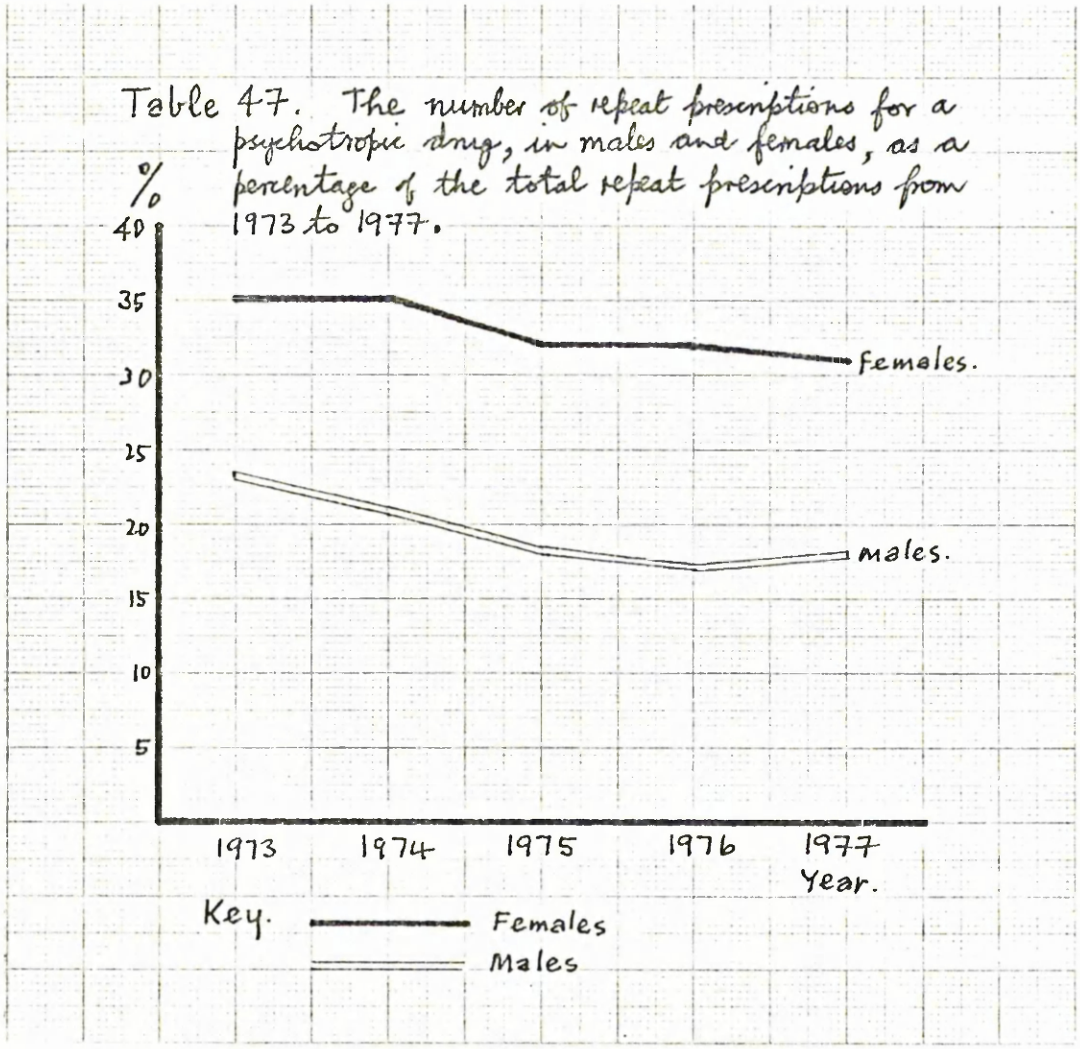


Doctor A and his wife, Dr. B are the principle practitioners in the practice and Dr. C represents the trainee practitioners, both male and female who assisted in the practice from 1973 to 1977.

Dr. B consistently prescribed more psychotropic drugs for her female contacts than either her male partner or her trainee colleagues. The overall trend, however, was a fall in the percentage of psychotropic drugs prescribed by her and also by the other doctors during the five years of the study. All the doctors gave, at least, twice as many prescriptions for psychotropic drugs to female contacts than to male contacts.

Parish, 1971, found a relationship between ease of obtaining a repeat prescription, duration of treatment and the dependence producing properties of the drug prescribed. (108). Repeat prescriptions for psychotropic drugs were analysed in our own practice. Every repeat prescription was noted and those for a psychotropic drug were counted separately and expressed as a percentage of the total. Repeat prescriptions for psychotropic drugs accounted, on average, for 18% of the total given to males and 31% of the total given to females. Although the trend over the five years has been a downward one it is still unacceptably high, as the graphs in Table 47 reveal.

Table 47. The number of repeat prescriptions for a psychotropic drug, in males and females, as a percentage of the total repeat prescriptions from 1973 to 1977.



These results tend to support the view expressed by Tyrer, 1978, that repeat prescriptions of this nature must form a substantial proportion of all prescriptions, and be an important element in the increased use of tranquillisers. (107).

The increase in the total number of repeat prescriptions from 3,781 in 1973 to 4,784 in 1977 is also disturbing and the practice team are uncertain how to deal with it effectively, short of insisting that patients attend the surgery for a consultation on every occasion. In 1977, an average of 92 repeat prescriptions were issued to patients each week. On the basis of a seven minutes consultation the work load for the doctors, if all of them attended the surgery, would be ten hours of additional consulting each week. At present, patients are encouraged to attend the surgery for reassessment, at least once, in every three occasions a repeat prescription is required. This is emphasised by a notice in the surgery and a letter to each patient who requests a repeat prescription. A copy of this letter is included in the appendix on page 159.

The aim of the practice in repeat prescribing for the elderly is to emulate Castledon, 1978, who stated that no substitute exists for clinical observation and subsequent monitoring of doses; there is no place for the prescription of large quantities of tablets or repeat prescribing to the elderly without frequent review. (109).

Drug analysis - Conclusion

The importance of drug analysis is that doctors are made aware of their prescribing habits and can take steps to modify them. This presupposes that the quality of the practice records and, in particular, the quality of the recording system for drugs prescribed is such as to allow a review of prescribing to be carried out. Where, for example, doctors fail to record on case records drugs prescribed at home visits, then a meaningful audit is not possible. In our practice, awareness

of the frequency with which antibiotics are prescribed, led the doctors in the team to consider the means by which misuse of them could be avoided. At practice meetings factors such as diagnostic uncertainty, the prevention of complications, patient and parental expectations, were all considered. Attempts were made to formulate an agreed policy for the prescribing of antibiotics. Subsequent analysis of antibiotics prescribed in the age range 0-14 years revealed a fall of 12% by 1977. Other factors such as a change in the pattern of morbidity may also have contributed to the outcome.

Reference has already been made to the high level of prescribing of psychotropic drugs. Tyrer, 1978, in his analysis of the currently prescribed psychotropic drug treatment of all patients referred from general practice to his Out-patient Clinic, considered that half of the drugs were incorrectly prescribed on pharmacological grounds. The major errors in prescription were (1) unnecessarily prolonged treatment, (2) incorrect dosage for therapeutic action and (3) pointless poly-pharmacy. (107). This information was a useful contribution to a group discussion on psychotropic drugs with particular reference to unnecessary prescribing.

The prescribing of diuretics in unexplained oedema, hypnotics in the elderly, symptomatic treatment of self-limited disease, multiple prescribing and the prescribing of a wide variety of similar remedies, were all revealed by drug analysis in our practice.

It would be naive to assume that when doctors are provided with precise information about their prescribing habits that they will, necessarily, be motivated to change those that they recognise as inappropriate. Reilly and Patten, 1978, consider that certain features of audit of prescribing by peer review, remain a problem. Following a feasibility study at Finaghy Health Centre, Belfast, they were of the opinion that change will not necessarily follow group discussions even when verbal agreement has been expressed and that there can be no

guarantee that only good practice will be adopted. (110).

The constraints of medical audit will be discussed in greater detail in the next section.

EVALUATING QUALITY OF CARE

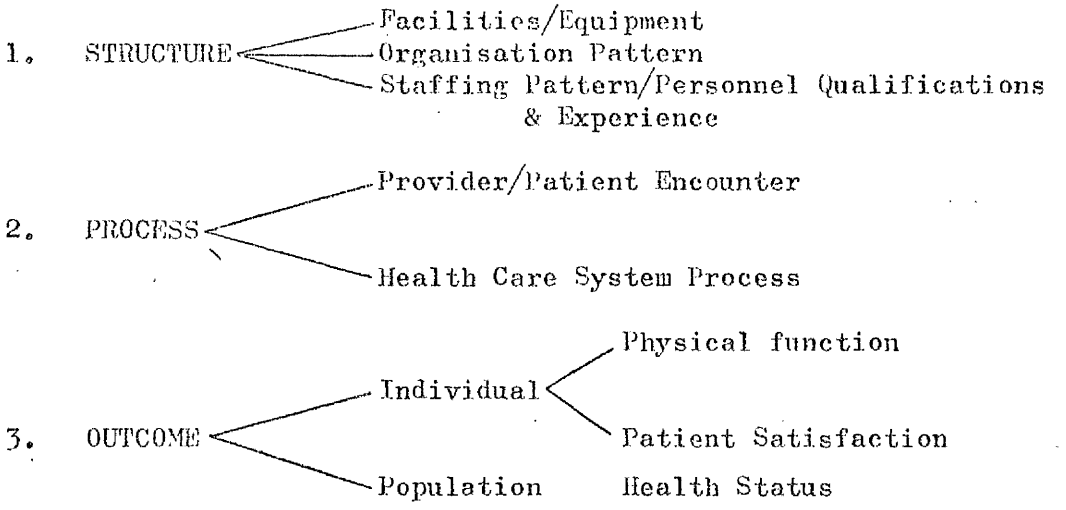
"We believe medical records can and should be adapted for use in patient care evaluation and the results of subsequent analyses considered on a regular basis by peer groups, with the objective of establishing standards of care by consensus and seeking means of improving them."

The report of a Committee of Enquiry on Competence to Practise (The Alment Committee), 1976, (111).

Much of the information about medical care evaluation emanates from the United States of America. In 1972, a Federal Law was passed creating the Professional Standards Review Organisations (P.S.R.O's). As Rose, 1974, explained, this law embodies "peer review" by doctors - a programme organised, administered, and controlled by local physicians to evaluate the necessity and the quality of medical care delivered in their region. (112). Although government anxiety about rising costs was paramount in bringing about the legislation, peer review has been practised in American medicine for a long time. Greene, 1976, explained that the current concern with the quality of health services in this country can be viewed as part of a continuum of efforts to improve the performance of the health care system. (61). Although referring to medical care in the United States his comments are also applicable to the National Health Service in this country.

The types of data used to assess quality in health care can be set out according to a classification first proposed by Donabedian in 1966 (113) and since modified and adapted, in particular by Starfield (114). In her scheme there are three main categories - see table 48.

Table 48 - Types of Health Service data.



1. Structure of Care

Structural data describe the resources used for health care. As Palmer, 1976, explains, such data have been the most frequently used in the past because they were the easiest and least expensive to get and because it was believed that good structure would inevitably lead to good process and, hence, good outcome. (115). However, although there is some correlation of good process of care with better facilities and organisation of practice, analysis of the structure of care reveals many variables whose influence on the outcome of care is uncertain, e.g. the composition of the primary care team, the number of patients on the practice list, the training of the primary physician.

2. Process of care

Data in the second category is referred to as process data and describes activities of the Health Care System. Palmer points out that in practice, so far, most efforts have concentrated on the role of the individual provider, usually the physician. However, in most care delivery settings nowadays, numbers of other personnel are involved in the delivery of care, and may contribute to its outcome. (115). This distinction has become increasingly relevant with the emphasis now being placed on the primary care team. As Buck, Dry and Irvine, 1974, point out, an important trend is the replacement of the solo

physician by a group of physicians and the addition of other health workers who may provide some preventive and counselling services more competently than the physician. (116). The important role played by ancillary staff in the care of patients, in my own practice, has been well substantiated.

The medical records of patients are the usual source of process data and some immediate outcome data. Where a doctor or group of doctors keep virtually no records at all, then any kind of record audit is inapplicable. As an Editorial in the Journal of the Royal College of General Practitioners, 1974, (117) explained, demonstrating the use of acquired knowledge in individual practices presupposes, among other things, the presence of well kept records and easy access to other practice statistics such as basic demography, mortality rates and data on prescribing. Curtis, 1974, pointed out that if the record is illegible or incomplete then the pathways of the patient's care reside in the doctor's memory. (118). The Alment Committee, 1976, were in no doubt that well kept medical records are an important source of information about standards of clinical care of patients but because their prime purpose is not regarded by the majority of doctors as being for patient care evaluation, existing records will need to be developed for the purpose. (111).

The problem oriented medical record lends itself well to record audit because of the defined components of the data base, the problem list and progress notes. Such an organised office record system documents the logic of the physicians approach to a problem and preserves it for review by peers, whether the purpose be education, recertification, relicensure or reimbursement, 1977. (60).

Medical audit can be described as the assessment of the quality of medical care using process data from medical records. The following are a number of examples:-

(1) A sample of cases based on a particular diagnosis (retrieval of

these is facilitated by a disease or problem indexing system), e.g. acute tonsillitis, hypertension, iron deficiency anaemia and depression can be selected for in-depth study. The practice experience can be compared with others as published in the literature.

(2) Selected data relevant to the study of a particular problem can be analysed, e.g. antibiotic usage, multiple prescribing in the 65 years and over age group, repeat prescriptions, laboratory services.

(3) Case by case assessments enabling judgements to be made about particular episodes of problems, e.g. delay pattern analysis (Hodgkin, 1973, (119)) applied to the problem of bronchial carcinoma.

(4) Random case analysis - which is likely to include problems of an ill-defined nature. Certain questions can be asked. Has sufficient effort been made to establish a diagnosis? Has treatment been more symptom oriented than patient oriented?

(5) Focus on patterns of care is more likely to detect remediable problems, e.g. the primary care team and the terminally ill.

Weed, 1969, (1) states that to be effective and fair everyone must know what is to be measured and how it is to be done. Criteria for the medical management of specific conditions can be drawn up explicitly, either by consenses of experts or by adoption of practice norms, and patient records reviewed for the presence or the absence of the items specified in the criteria. McWhinney, 1975, thought empirical standards might be used for audit but considered it essential that those being audited should select the criteria. (120). The Alment Committee, 1976, felt strongly that evaluation of records must be clearly seen to lead to improved knowledge, and not towards punitive action against individual doctors for errors of commission or omission. (111).

3. Outcome of care

Health outcome is defined by Bickner, 1970 (121), as a change in health status which can be attributed for better or worse to the

intervention of health care providers. He emphasised the importance of not assuming that the providers' action contributed to the observed outcome. Health outcome depends on variables other than the providers intervention including the genetic constitution, age and behaviour of patients, their environments and the natural history of disease.

The study of outcomes in primary care is especially difficult. Many illnesses are ill-defined and the most appropriate way to manage them has never been firmly established. Physical recovery in self-limited disease can hardly be credited to the physician and improvement in the outcome of chronic disease is only measurable in long term studies.

In the care of diseases where no cure is possible interpersonal skills are particularly important but have been little studied. As Ball, 1978, pointed out, care is as hard to define as cure. What values have to be placed on personal care and on the doctor as a therapeutic agent? (122). The British Medical Journal, in 1978, agreed that it will prove difficult to devise acceptable methods of measuring a doctors skill in eliciting physical signs, accuracy of diagnosis, and doctor-patient relationships. (123).

Perhaps the answer is to concentrate on the patient rather than the doctor. When the focus is on the patient then the variable which confounds the outcome becomes the problem which medical audit seeks to identify and remedy.

CONCLUSION

For the past six years, the information system used in the practice, has been based on the Problem Oriented Medical Record System of Lawrence Weed, 1969, (1). Although certain of his methods have been adapted to meet the constraints of general practice, the basic philosophy remains unaltered. The structure of the record is easily understood by all who use it, and the summary of problems and the progress notes allows an immediate grasp of the medical and social situation. The system, however, is not only an effective means of documentation, but it is also a way in which the Primary Care Team can learn, while caring for their patients. Without the knowledge of what has been done to meet specific problems, the quality of care cannot be improved.

The information system in the practice is readily amenable to assessment using the manual and computer records. Data from the manual record of an individual patient can be scrutinised, and also data from the records of groups of patients with diseases in common. Various aspects of the work load of the practice can be evaluated using simple methods of calculation, e.g. home visit rates, use of laboratory services, sideroom activities, repeat prescriptions. The computerisation of data, however, does allow a much more sophisticated and effective audit of what a doctor does and what he fails to do. A great deal of patient contact data has been fed into the computer over the past six years and the challenge was to retrieve the data so as to provide the doctors and the practice team with useful measures of work done. It was also important to identify areas requiring more detailed study or research. A further consideration was that the choice of data for assessment should be relevant to general practice as a whole and not just to those practices with a particular interest in record systems.

After discussions with the Computer Department of the Tayside Health Board, and much trial and error, some forty programmes were validated.

When computer facilities are extended to other general practitioners in Tayside, then the programmes which have already been written and evaluated, can provide them with similar analyses to those used in this practice. Among the most important of the analyses are those concerned with drug prescribing and, in particular, analyses that link drugs prescribed and illnesses diagnosed. Information of this nature allows doctors to compare their prescribing habits with one another, to rationalise what they prescribe and to become more aware of common side effects and drug interaction. It may also encourage them to practice economy in drug prescribing which is of especial importance in view of the rising cost of the National Health Service.

Doctors in group practice may consider it important to establish for themselves a list of drugs to which they will agree to restrict their prescribing. This is one of the tasks we have set ourselves, the aim being the preparation of a general practice formulary as distinct from a hospital formulary, to be used initially in our own practice and then evaluated by other practices in the area.

Despite the successful introduction of a unique patient numbering system for Tayside, it is to be regretted that the aim of an integrated medical record, in active use in the practice, has not yet been fully realised. This is a further objective that we intend to pursue more vigorously in the future.

Medical records have an important role to play in learning and teaching. The information system in the practice fulfills these requirements more readily than convential record systems. The need to learn applies not only to medical students but also to doctors, established and in training, who care for the patients. Whatever their degree of understanding, the practice records provide a wealth of easily understood data. The problem lists, for example, from a series of patients will permit an immediate grasp of the range and

importance of illnesses encountered in general practice and allow comparison with hospital experience. Diagnostic pathways are readily discernible on random case analysis and raise many teaching points. From the progress notes of individual patients it is possible to assess a doctor, or a student's, problem solving skills.

All doctors should be concerned with research and not least general practitioners. Critical observation and accurate recording are essential ingredients in any research project. The practice record system demands of its users a disciplined approach to information gathering and problem solving. What is done or not done can be readily assessed. Perhaps, more important however, exposed within the system's structured framework are the patterns of disease, from initial contact to the final outcome of the caring process - a wealth of research material just crying out for critical analysis.

Appendix 1.

GP PATIENT CONTACT - CODING

Item	Card Column	Coding
1. Card type	1	'1' for this application.
2. Instruction type	2	'1' for insertions, '3' for deletions.
3. Practice code	3-5	Proudfoot practice '001'
4. GP code	6-11	(a) 242097 - Dr. F.B. Proudfoot (b) 254977 - Dr. E.M. Proudfoot (c) Trainee Practitioner - if applicable.
5. Other code	12	1 - Rota Doctor 2 - Receptionist 3 - Nurse 4 - Health Visitor 5 - Social Worker 6 - Records 9 - Other
6. Date of Contact	13-18	A valid date in 6-digit format.
7. Place of Contact	19	1 - Surgery 2 - Home 3 - Hospital (in-patient) 4 - Hospital (out-patient) 9 - Other
8. Patient Number	20-29	A valid 10-digit patient number.
9. Occupation Code	30-32	Classification of Occupations (1970) Supplementary codes 994 - Student 995 - Unemployed 996 - Retired 997 - Housewife 998 - Widow 999 - Child
10. Diagnosis Code	33-37	A valid I.C.D. code must be entered.
11. Diagnosis Type	38	1 - Symptomatic 3 - Confirmed
12. Diagnosis Category	39	1 - New 2 - Ongoing 9 - Other
13. Drug Codes	40-44 46-50 52-56 58-63	A valid 5-digit drug code should be entered from the list of codes supplied by Admin. Up to four drugs may be coded on each line. Unused items must be left blank.
14. Reason for stopping	45, 51 57, 63	1 - Ineffective 2 - Adverse Reaction 3 - Discontinued (by the patient) 9 - Other

Item	Card Column	Coding
15. Investigation Code	64, 65 66	1 - Bacteriology 2 - Biochemistry 3 - Haematology 4 - X-ray 5 - E.C.G. 6 - Sideroom 7 - Cervical Cytology 8 - Serology 9 - Other
16. Referral Code	67, 68 69	1 - Hospital Admission 2 -O.P. Clinic 3 - Nurse 4 - Health Visitor 5 - Social Worker 6 - Domiciliary Visit 7 - Private Consultation 9 - Other

Note: Items 13-16 may be omitted, in which case the appropriate colums should be left blank.

PATIENT CONTACT RECORDS | GENERAL PRACTICE RECORDS | PATIENT CONTACTS

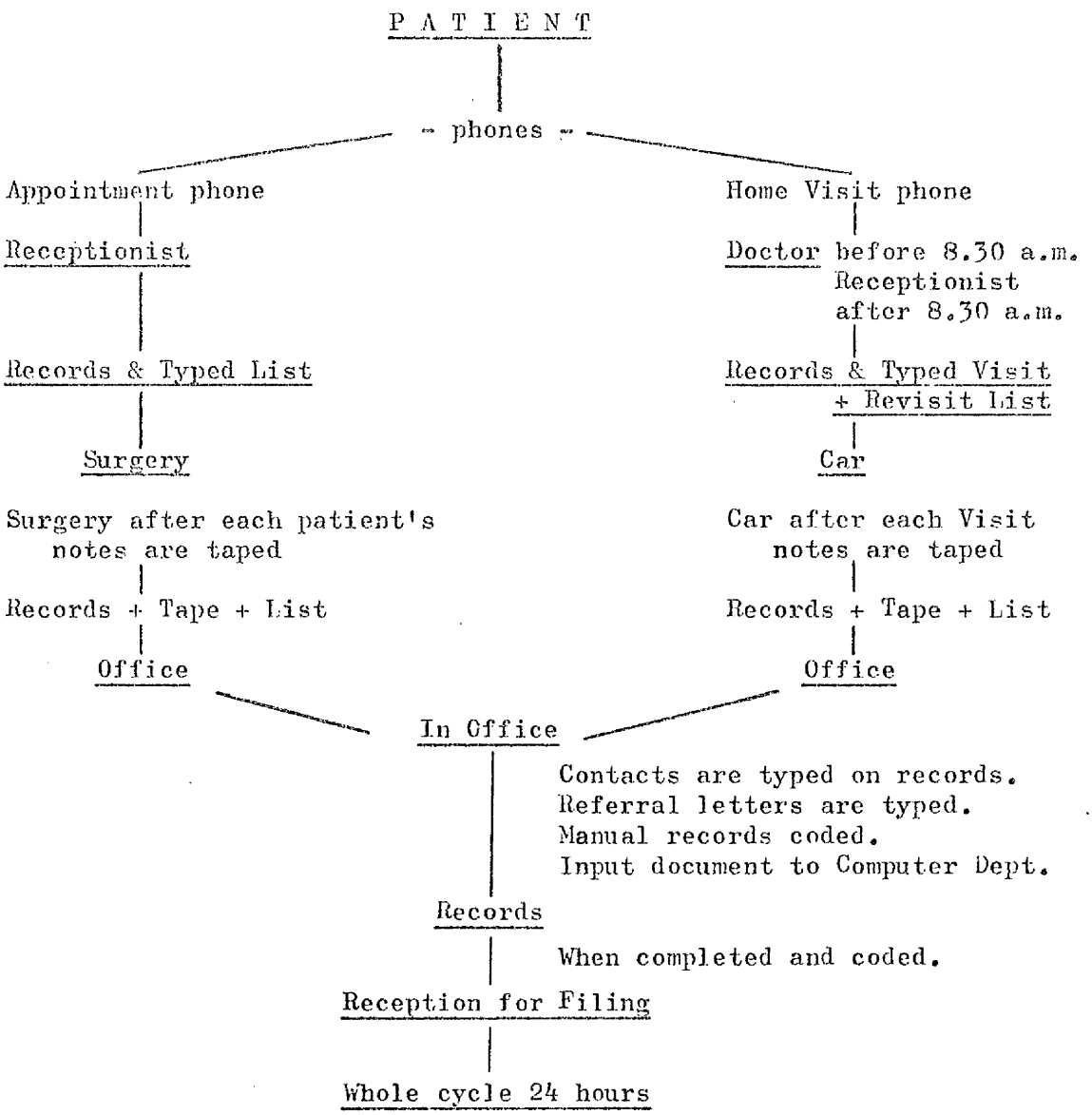
CONTACT FBP

C/T T/T: 1 1 (1–2) | PRACTICE: 0 0 : (3–5) | G.P.: 2 4 2 0 7 9 (6–11) | OTHER: (12)

PATIENT NAME	DATE OF CONTACT	13–18 DATE OF CONTACT	19 P	20–29 PATIENT NUMBER	30–32 OCCPN.	33–39 DIAGNOSIS I.C.D. CODE	T	C	40–63 DRUGS PRESCRIBED CODE	S	CODE	S	CODE	S		S	64–66 INV.	67–69 REF.
Jean Smith	13.11.78	1 3 1 1 7 8	1	0 9 0 4 1 6 0 0 6 8	1 9 3	4 6 4 0	1	2										
Eliz. Jones	"			1 1 0 9 9 6 0 0 2 6	9 9 7	5 1 9 9	3	1	5 0 0 1 0									
"	"					7 1 3 0	3	2	0 4 0 3 4									
John Black	14.11.78	1 4 1 1 7 8	2	2 8 0 1 9 1 3 0 0 1 9	1 7 2	4 1 0 9	3	2	2 5 0 1 8		2 4 0 0 2		4 3 0 0 7					
Agnes Whyte	15.11.78	1 5 1 1 7 8	1	1 7 0 1 1 2 0 0 4 6	0 6 8	7 8 8 2	3	1	7 9 7 1 6									
Ann Lynch	"			2 3 1 1 1 2 0 0 2 6	9 9 7	7 1 2 3	3	2	3 0 0 0 4									
"	"					7 8 3 2	1	1										
"	"					7 8 2 6	3	2	2 3 9 1 8									
Helen Moore	16.11.78	1 6 1 1 7 8	2	2 0 1 0 7 3 0 0 4 6	9 9 9	4 6 5 0	3	1	2 1 0 1 3									
Joseph Scott	"	1 6 1 1 7 8	1	2 5 0 4 7 2 0 0 3 3	9 9 9	4 6 5 0	3	1	2 1 0 1 3		0 5 7 0 5							
Joseph Scott	20.11.78	2 0 1 1 7 8	1	2 5 0 4 7 2 0 0 3 3	9 9 9	7 0 8 9	3	1	1 4 0 0 3									
William Watson				2 4 1 2 3 3 0 0 3 4	9 9 5	3 0 3 2	3	2										
Stewart McDonald	21.11.78	2 1 1 1 7 8	1	2 8 0 9 3 0 0 0 1 9	1 7 2	4 1 0 9	3	2										
Susan Smith	"	2 1 1 1 7 8	2	0 6 0 1 1 6 0 0 2 9	2 1 3	6 9 5 3	3	1	5 0 0 2 5									
Eliz. Jones	"	2 1 1 1 7 8	1	0 6 1 2 5 5 0 0 2 8	2 2 3	4 6 2 0	3	2										
John Martin	"			0 3 0 8 0 9 0 0 1 2	0 5 6	6 9 2 9	3	2	7 9 7 5 1		7 1 7 0 1							
Phyllis McLaren	24.11.78	2 4 1 1 7 8	1	2 5 0 7 3 4 0 0 2 9	1 6 3	1 3 3 0	3	1	1 4 0 0 3									

Appendix 2.

RECORD CYCLE



Appendix 3.

Medicines Evaluation and Monitoring Code

Therapeutic Groupings

0 - NERVOUS SYSTEM

01 Hypnotics etc.
02 Antidepressives etc.
04 Analgesics etc.
05 Antitussives

1 - NERVOUS SYSTEM

10 Hypotensives
11 Bronchodilators
14 Antihistamines

2 - CARDIOVASCULAR SYSTEM

20 Drugs on heart muscle
21 Vasoconstrictors
22 Vasodilators
23 Diuretics
24 Anticoagulants
26 Anti-Migraine

3 - METABOLISM

30 Corticosteroids
32 Oestrogens
33 Progestogens
35 Insulin
36 Thyroid preps.

4 - NUTRITION & CYTOTOXIC AGENTS

40 Vitamins
41 Salts
42 Haematinics

5 - ANTI-INFECTIVE AGENTS & IMMUNOLOGICAL AGENTS

50 Antibiotics
54 Anti-fungal preps.

6 - ALIMENTARY SYSTEM

60 Antacids
62 Laxatives

9 - MISCELLANEOUS

92 Expectorants

Dr. F. B. Proudfoot and Dr. Elizabeth M. Proudfoot,
21 Inverary Terrace, Dundee DD3 6BR

REPEAT PRESCRIPTIONS

Over the past five years the number of prescriptions issued to patients on a repeat basis has greatly increased. Requests are received for cough bottles, ointments, laxatives, antibiotics, sedatives and tranquillisers, apart from the drugs used in the more chronic and disabling conditions.

Although a repeat prescription may appear to the patient and sometimes to the Doctor as a quick and convenient method of dealing with a problem, it is not always in the patient's or the doctor's best interest in the long term. Re-assessment of the patient's clinical condition is necessary if appropriate adjustments in drug regimes are to be made. It may even be possible to discontinue certain drugs, either at once or gradually over a period.

Some patients have a prior agreement with the doctor that a repeat prescription for a certain drug or drugs can be obtained between one consultation and another. Many of these patients send a stamped addressed envelope to the doctor with their request, thus greatly easing the administrative exercise involved. Other patients, however, contact the practice directly by telephone in such numbers that the practice telephone is blocked. Thus, ill patients seeking a house call, an appointment, or advice are finding it increasingly difficult to contact the doctor or the receptionist in good time. Telephone requests for repeat prescriptions add considerably to the work load of the receptionist and often interfere with the smooth running of the surgery sessions and other clerical duties.

The practice team have discussed the situation and have agreed, with your co-operation, to take the following action:-

1. No further telephone requests for repeat prescriptions will be accepted.
2. Patients should contact the practice in person during normal working hours giving 24 hours notice.

OR

Send a written request enclosing a stamped addressed envelope.

3. A request for a repeat prescription will not be accepted on more than two successive occasions.
4. No prescription will be renewed for a drug which has not been issued to the patient within the previous three months.

N.B. Special consideration will be given to the needs of the elderly and the housebound.

These changes are designed to improve the quality of care provided by the practice team.

September 1978.

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