THE DEVELOPMENT OF A THEORETICAL FRAMEWORK FOR NURSING MANPOWER PLANNING IN THE HOSPITAL SECTOR OF THE NATIONAL HEALTH SERVICE IN SCOTLAND

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I declare that this thesis is all my own work.

The views expressed in this thesis are those of the author and should not be taken to represent those of the Scottish Office or of any other Government Department

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Having been involved with many aspects of manpower planning at various levels of management within the National Health Service over the past 15 years, the chance to analyse the subject from a theoretical perspective presented a new and exciting challenge. The initial stimulus came from Professor Penny Prophit, friend, respected colleague and academic supervisor, without whose support and advice this thesis would not have been started yet alone completed. To her I accord my sincere thanks and appreciation.

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ABSTRACT

Over the years, changes in nursing, changes in demography, and advances in medical science, chemotherapy, and technology have combined to extend the horizons of health care services which are potentially available to the community. These factors in turn influence the demand for health care and at the forefront of meeting many of these demands are nursing services.

Matching the supply of appropriately qualified nursing staff in sufficient numbers to meet the changing demands for health care requires effective manpower planning, an activity which has not featured as a major element of Health Service management. Staffing levels at present are dependent in large measure on the availability of qualified staff and on historical funding or the levels of funding commensurate with those which were available to meet former demands. Difficulties of measuring the quality and quantity of demand and of relating these to the quality or preparation and quantity of staff required compound the problem. It is argued that before effective manpower planning can be introduced there is a need to analyse both the organisation and the workforce and to understand what the term 'manpower planning' actually means within the context of this analysis.

Although isolated studies of aspects of manpower planning have been undertaken to address particular problems, their worth cannot always be realised if undertaken in the absence of

a theoretical framework of manpower planning. It is argued that a theoretical framework which identifies the relationships of the different components which comprise manpower planning is necessary to identify the relevance of individual studies to the whole; to determine those issues where further study is required; and to guide priority for action.

From an analysis of the existing nursing workforce, the role of professional nursing, the locus of nursing services within the health care system, and the management activity of manpower planning, a theoretical framework has been developed to provide a basis for guiding the introduction of manpower planning in nursing in the hospital sector of the National Health Service in Scotland. Only with effective manpower planning, executed within a theoretical framework such as that proposed, will it be possible to match the supply of nursing manpower to meet the demand for nursing services and to ensure that a competent standard of nursing can be provided throughout the hospital sector of the Health Service.

CHAPTER 1

Nursing in the National Health Service in Scotland

INTRODUCTION

> The unique function of the nurse is to assist the individual, sick or well, in the performance of those activities contributing to health or its recovery (or to a peaceful death) that he would perform unaided if he had the necessary strength, will or knowledge. And to do this in such a way as to help him gain independence as rapidly as possible.
>
> (Henderson, 1977, p.4)

A nurse is "one who has the care of the sick, feeble or injured" (Chambers Dictionary, 1977), a general definition which can be applied to the mother caring for her sick child; the daughter caring for her elderly mother; the spouse caring at home for his/her relative convalescing after major surgery; and to the professional nurse. The underlying concept in all these situations is that of caring in the sense of providing for, doing for, watching over and protecting.

While there are times when it is appropriate for a professional nurse to provide for, do for, watch over and protect, her function differs from that of the lay carer in several respects. She will be dealing with people, often in a situation of stress, who are strangers in the first instance, and she must therefore have well developed interpersonal skills to be able to establish quickly a meaningful relationship with the individual patient and his relatives. She will require technical skills of high order to be able to deal competently with a variety of situations and individuals. Some of these skills can be taught in isolation to lay people, for example

the wife supervising her husband's home dialysis, but the essential difference between the wife as the lay carer and the professional nurse is that the wife is only competent to deal with one person and within well-defined limitations. The professional nurse, on the other hand, must have a sufficiently sound knowledge of underlying principles to be able to adapt to the requirements of individual patients even if they are receiving treatment which to the casual observer may appear similar to treatment given to others. The final and perhaps most important distinction is seen in the area of the purpose of professional nursing. As Henderson (1977) has said, one of the functions of nursing is to help the patient gain independence as rapidly as possible. Clark (1984) has suggested that there are situations where the patient will, by his own volition, regain his independence. On the other hand, Orem (1980) and Miller (1985) have suggested that nursing can sometimes create dependency, particularly in caring for the elderly, if nurses continue 'to do for' the patient rather than to teach and support him as he relearns how to do for himself.

It is obvious that there are times when it is necessary and appropriate for the professional nurse 'to do for' the patient, for example following surgery, but once the immediate acute problem recedes, the patient gradually takes over and returns to independence. In some cases however the patient may not, for whatever reason, make this transition himself and in these situations the nurse will have to plan and manage the transition in partnership with the patient. The nurse must

therefore be able to assess the present status and potential of each individual patient's physical, mental and social abilities so that the plan for rehabilitation is realistic. She must be able to discern those patients capable of a return to some degree of independence from those in whom such potential does not exist and such decision making requires an adequate level of knowledge of the physical, psychological and social sciences.

Patients entering the hospital sector of the National Health Service (NHS) do so for treatment or investigation of physical, mental or social disease, illness or disability. Confinement within an institution creates needs for the patient beyond those needs associated specifically with his illness, disease or disability; for example he has to look to the institution to provide hotel services such as laundry and food. Effects of confinement within an institution are also exhibited within the context of nursing. For example, a patient may require assistance with bathing which, if he were at home, might be rendered appropriately by a relative if one were available. Because he is in hospital, however, and a relative is not available, such assistance is usually given by a member of the nursing staff. There are times when this assistance might, for good reasons, be given by a professional nurse, but equally there are times when it is quite appropriate for an unqualified auxiliary to carry out this function [National Nursing and Midwifery Consultative Committee (NNMCC), 1986]. When an activity such as bathing is described as a task, and

when such tasks are called 'nursing' and are seen to be performed by people with no professional qualification, this can lead to questions being asked about the role of qualified nurses and the numbers required in some specialties.

To assume that a series of observable physical tasks is nursing in a professional sense is quite erroneous for the reasons already given and also because this ignores other important aspects of nursing such as the psychological and social needs of patients. Also ignored are the time and skill required for the purposive planning which is necessary if each individual patient's needs are to be met and if his full potential for independence is to be realised.

The practice of nursing is complex and if that practice is to be of an acceptable standard there must be appropriately prepared staff available in sufficient numbers wherever patients are being cared for. As the preparation of a registered nurse takes a minimum of three years there is also a need to be able to predict future demands for qualified staff so that the recruitment of student nurses for training can be adjusted to reflect future demands for trained staff. To achieve these goals requires effective manpower planning and it will be demonstrated that this management activity has not been undertaken in any systematic or planned way in nursing in the NHS in Scotland.

In recognition of this problem the Scottish Home and Health Department established the Nursing Manpower Steering Group in 1985 and the work of this Group is being guided by the

recommendations contained in a strategy paper prepared by the author (Appendix I, p.156) and arising from work undertaken in preparation of this thesis. This work is based on the development of a theoretical framework which describes the relationship and relevance of the various components of manpower planning to each other.

A theoretical framework is necessary to guide the introduction of manpower planning as a management activity as well as to guide the sequence of development (for example forecasting cannot be undertaken if relevant and accurate data are not available) and it is necessary to allow those areas where empirical study is required to be determined. In the absence of a framework, empirical study, which may seem intrinsically useful of itself, may not address its question to take account of other relevant aspects of manpower planning. Theoretical development in manpower planning in nursing has been sorely neglected, and this observation is supported in the conclusions of the Operational Research Service of the Department of Health and Social Security in London following a critical appraisal of relevant and related literature:

> .... several studies have attempted to lay out a framework or part of a framework for conducting manpower planning at various levels. In general these frameworks have not led to the formulation of a comprehensive and detailed approach to manpower planning; most detailed work being conducted on parts of the whole problem.
>
> (DHSS, 1983, p.12)

This work will therefore focus on the development of a comprehensive theoretical framework within which manpower planning may be undertaken in nursing in the hospital sector of the NHS in Scotland.

OBJECTIVES OF THE STUDY

The objectives of the study are:

1. To analytically define the purpose of manpower planning and to relate that general definition to the nursing service in the hospital sector of the NHS in Scotland.
2. To identify and describe the aspects about which information will be required in order to establish a database from which manpower planning can be undertaken.
3. To formulate a framework where the interrelationships of the different components of information will be identified.

To be valid, a theoretical framework for manpower planning must be formulated from within the purpose and structure of the business or organisation to be served. In the context of nursing in the hospital sector of the NHS those aspects include: an understanding of the proper role of the professional nurse; the composition of the nursing workforce; and the management and organisation of the nursing service. An appreciation of all these areas is necessary before an analysis of the component parts of manpower planning as they relate to the nursing service can be undertaken. Consideration of these aspects will be undertaken in the remainder of this chapter.

THE PROPER ROLE OF THE PROFESSIONAL NURSE

It is apparently easy for people to understand the role of the qualified nurse caring for a patient who has undergone extensive surgery where there is a need for constant vigilance or where any element of technology is involved. What is not so clear to many is the role of the professional nurse in some other areas, such as care of the elderly, where the nursing role is seen by some as being akin to that of the surrogate relative. In other words, as long as the patient is kept comfortable, is well nourished, cleansed and given medication as required, all of which functions could be undertaken at home in many cases if a relative were available, there is really nothing else to the nursing of these elderly people. In acute areas, professional nurses themselves contribute to this inappropriate perception of nursing by relegating such activities to a low level both in words, by describing the activities as 'basic', and in action by delegating the activities to auxiliary staff.

In an attempt to understand how such attitudes have developed, the organisation of nurse training in the past must be considered. Approximately 80% of all student nurses are training to be general nurses; the remaining 20% undertaking training in mental illness nursing, mental handicap nursing and nursing of sick children, and this ratio has altered very little over the years. This balance very much reflects the demands of the population in terms of exposure to the NHS in Scotland where in 1984 there were 554,797 discharges from acute

and supra area specialties; 27,724 from mental illness hospitals; 2,771 from mental handicap hospitals; and 42,422 from paediatric wards (Scottish Health Statistics, 1986). It could be assumed therefore that both the general public and other health care professionals perceive nursing and the role of the nurse as they have observed them or experienced them directly or indirectly in the acute areas.

Until the late 1960's, nurses who were training for registration on the General Register of the former General Nursing Council for Scotland received the majority of their experience in the acute medical and surgical wards of general hospitals. By the nature of the service provided within these wards patients were admitted for investigation and/or treatment of specific medical conditions. Thus the role adopted by the professional nurses in these wards became dominated by the investigation and treatment procedures prescribed by the physician or surgeon, while other 'care' was given lesser status aimed at maintaining comfort rather than being seen as an area where a more dynamic and planned approach focusing on the individual as a person could result in improvement in overall well-being and independence. As a consequence, procedures or technical skills emerged within an hierarchy of 'skills' required by the nurse - the more technical the procedure the more 'skills' required, and the more senior and experienced the nurse had to be.

As a general rule the length of stay of patients in acute medical and surgical wards is short. The predominant and

initial needs of the patients are usually those associated with the resolution of identifiable physical problems normally manifest within a medical diagnosis, and once these physical problems are resolved to a level consistent with the patient being able to go home, he is discharged. Thus nursing came to be practised within a 'medical model' and much of the care required by patients was being carried out by the nurse but was prescribed by the doctor. Nurse education reflected this situation where the emphasis was on teaching the signs and symptoms of disease and where most of 'nursing' was taught on the basis of procedures associated with the diagnosis and treatment of disease. Student nurses were given little, if any, theoretical preparation about communication skills; the need to recognise and treat each patient as an individual and as a whole person; and no real preparation in regard to some other aspects such as care of the dying and the bereaved.

In the long-stay areas, on the other hand, the medical diagnosis may have little relevance to the needs of the patients whose prime needs are unlikely to be associated with immediate resolution and cure, and much more likely to be concerned with learning to live with the effects of the illness, disease or disability. In such areas professional nurses have to recognise that rehabilitation is an essential component of their practice.

Thus, nurses who were trained in acute wards but who chose to practice in wards where the elderly were cared for were ill-equipped to deal with the slower pace. They had not been

prepared for the rehabilitative component of their work and there was a danger of 'stereotyping' patients. Just as in the acute areas the stereotype was the medical label, so in, for example, care of the elderly there was a danger of referring to 'geriatrics' which could carry a mistaken expectation of potential for the individual person. The development stages of children and young adults can be identified within fairly limited boundaries; for example, there is an expectation that a child will walk by the age of two years. At the other end of the scale, however, the 'elderly' do not constitute an homogeneous group in regard to their mental, physical or social status. It is fair, therefore, to assume that their expectations and potential will also be different, and nursing practice must recognise and take account of these differences in individual patients.

Without recognition of the wider dimensions of professional nursing and arising from the focus on acute general nursing, there was an inadequate body of knowledge on which to underpin the practice of nursing; there was no definition about professional nursing to differentiate it from the very generalised 'caring' role which was open to a wide variety of interpretation; and in the absence of such a definition, the curriculum for nurse education failed to reflect nursing as a whole. The contribution of nursing to health care therefore became an evolutionary process reacting to changing needs of medical diagnosis and treatment, and to the demands created by advances in medical science.

Since the early 1970's, all nursing students have been required, as part of their training programme, to gain experience in a much wider variety of clinical areas, although the core of the programme remains focused on the specialty in which they will eventually gain their professional qualification. Thus a nurse undertaking general training will still work in medical and surgical wards, but will also gain experience in the community, mental illness, paediatrics and obstetrics. Programmes of this nature recognise the much wider perspective that is nursing; that the individual is a whole person; and that there is an underlying ethos which is nursing regardless of the patient's medical diagnosis or the specialty label of the ward in which he is receiving care (Roper, 1977).

The notion that nursing is widely perceived as dealing primarily with physical problems and tasks/procedures associated with these is perhaps crystallised in discussions about the 'extended' role of the nurse where, by and large, this extension normally relates to the nurse undertaking tasks which have been undertaken previously by someone else [Scottish Home and Health Department (SHHD), 1979]. For example, the performance of venepuncture is normally undertaken by a doctor but is sometimes undertaken by a nurse. The procedure of venepuncture is not a difficult one but, like everything else, it has to be taught and learned. So in essence the debate about the extended role of the nurse is really clarifying the legal position of the nurse carrying out an activity which is identifiable as a 'task' and in which she has not received

instruction as a routine part of training. It makes sense that anyone should have preparation to undertake any work which they have not done before; for example, a newly qualified doctor may require to be instructed by a nurse in how to move someone with a fractured spine. He will know from his own preparation the dangers associated with such a procedure, just as the nurse will know about venepuncture from her observation of others undertaking the procedure, but both will need instruction by someone with experience in the practical execution of the activity. There is no mention in medical circles of considering the turning of the patient with a spinal injury as being the extended role of the doctor. This author believes the debate about the extended role of the nurse, focusing as it does on the performance of tasks, is inappropriate and that its foundations rest within the absence of a real, acceptable and accepted concept of the proper role of the professional nurse.

During the 1970's, the effects of many changes affecting the demand for the provision of health services were being felt. Improvements in preventive health measures accompanied by improved hygiene, diet and social awareness meant that people enjoyed better health, started to live longer and entered the health service with medical conditions which had previously been seen only in younger people. Some of the major infectious diseases virtually disappeared, for example poliomyelitis. Advances in medical practice, technology and chemotherapy completely changed the potential for investigation and treatment of disease. And perhaps one of the greatest changes

as far as demands on the resources of the NHS are concerned, has been the rise in the number of elderly people who, because of old age, are unable to remain in their own home and require admission, often for the remainder of their lives, to an institutional setting, often a hospital. In addition, developments such as home dialysis under the supervision of a relative began to beg the question of the function of the professional nurse as being that of undertaking 'tasks' associated with the diagnosis and treatment of medical conditions.

Consideration of these issues concurrent with the rising costs of the nursing service led to the raising of another question which will be the main focus of this thesis, namely the question about the number and preparation of nursing staff required to give an acceptable standard of care. If the function of the nurse is ambiguous or not understood, it follows that these ambiguities and misunderstandings will cloud any debate about the numbers and qualifications of nurses who will be required in any situation. Simply stated, if the fundamental function of the professional nurse is not understood, there is no basis for stating the number of professional nurses and others who will be required, nor is there any means of evaluating the appropriateness or otherwise of the level of staff in post in terms of the quality of nursing required or delivered. Compounding this difficulty is the absence of any outcome criteria against which standards can be measured, and indeed the 'standards' to be achieved are not clearly stated.

It was against this background that serious discussions began about nursing in an attempt to clarify the role of the professional nurse while still retaining flexibility to accommodate change. It is postulated that this flexibility which must exist in a profession infers the need to develop from principle rather than from a series of tasks and procedures. Only when such clarification exists will it be possible to identify manpower requirements; the mix of skills required; and the basic and post-basic educational requirements for registered practitioners of nursing. Perhaps the trigger to the whole debate was the publication of the Report of the Committee on Nursing (Briggs, 1972) which considered many aspects about the role of nursing as a basis for recommending major changes in the educational programme of nurses. In response to this, the Scottish National Nursing and Midwifery Consultative Committee published a series of papers - 'A New Concept of Nursing' (1976); 'The Role and Function of the Registered Nurse' (1981); and 'Report of the Working Group on the Nursing Support Person' (1986).

The 'New Concept' paper (pp.49-50) dismisses the notion of "... defining nursing in terms of jobs, activities and skills alone..." on the basis that any of these are 'nursing' if performed by a nurse and 'non-nursing' if performed by someone else. Nurse, in the context of the reference, is someone who has completed a statutory preparation and has been admitted to the Register of Qualified Nurses. The paper further postulates that there is a process of professional nursing which has five

phases, namely recognition (of a problem), assessment, planning, implementation and evaluation, and that the skills required to participate in this process are motor skills, social skills and intellectual skills. It is recommended that the emphasis of nursing is removed from the task per se to the location in which the task is performed. Thus, to revert to the example of the patient having home dialysis supervised by his wife, provided the wife has been instructed when and how to seek advice she can be guided in the application of this technology to one person, namely her husband. She could not, without further instruction, supervise the dialysis of anyone else. The professional nurse, on the other hand, has the knowledge and skills to supervise any patient having dialysis. A further example relates to the giving of a bed-bath — a simple task in some situations but a complex procedure in others, for example the patient with a fractured spine; the patient in the period immediately following an attempted suicide; the patient having suffered a multi-system trauma. This principle of the circumstances in which a task has to be performed being more relevant to the skills required to perform it, rather than on the task itself, permeates the 'New Concept' paper.

A further publication being widely debated in Scotland at the same time was the Principles of Nursing by Henderson (1968, revised 1977) in which she stated that the proper function of the nurse had four elements. First of all she suggests that the function of the nurse is to assist individuals who are sick or

well to carry out those activities which contribute to health or its recovery which the individual would carry out for himself if he had the necessary strength, will or knowledge. Secondly, she suggests that the purpose of this activity is to help the individual to gain independence as rapidly as possible. Independence is often considered only in terms of physical abilities; it should, however, also relate to a person's ability to be independent and comfortable in interpersonal relationships, including his ability to behave within society according to the habits and customs of that society. Thirdly, Henderson refers to the nurse helping the individual to carry out the treatment plan initiated by the physician, which includes carrying out those aspects of medical diagnosis and treatment which are appropriately undertaken by a nurse. Finally, she recognises the need for the nurse to participate as a member of the multi-disciplinary team who work together in planning and carrying out the total programme of care, whether this is for improvement in health, recovery from illness or support in death.

It was the bringing together of the principles formulated by Henderson and the paper on the 'Concept of Nursing' which led to the recommendations in the classic document which focused on the 'Role and Function of the Registered Nurse'. This advocates that the registered nurse alone is properly prepared to be responsible for assessing the patient's needs for nursing; determining the goal which nursing action should achieve and identifying the timescale within which it would be

hoped to achieve the goal; and evaluating the effectiveness of the plan in meeting the goal. The actual intervention or execution of the plan being undertaken at times by others in the ward team but always under the direction of the registered nurse. This, then, is the function of the registered nurse and to fulfil it she requires the knowledge base which will allow her to take the correct decision in respect of the nursing needs of each individual patient. Of course, all members of the team have a contribution to make to each of the phases of this process of nursing, but the final decision about action rests with the registered nurse whether directly or by delegation, in which latter case she remains accountable.

In addition, therefore, to the recognised role of the professional nurse in dealing with matters arising from the medical diagnosis, nursing activity also aims to use the strengths of patients with a view to achieving the maximum independence in living activities for each individual patient as distinct from maintaining the status quo and responding to immediate physical needs alone. Where independence is not a realistic goal the nurse will attempt to minimise further deterioration and will attempt to ensure as good a quality of life as possible for that individual within his limitations and personal preferences. Where deterioration is inevitable, the nurse will aim to minimise physical, psychological, emotional and social problems. To fulfil the function as outlined, however, demands a sound knowledge base to enable the registered nurse to make the discriminatory choices which will be required.

Instead of a task being important of itself, the problems of individual patients are identified and a plan prepared to suit that individual. This represents a major change in nursing practice with its tendency in the past to focus upon the medical diagnosis, for example left hemiplegia, without really considering how that left hemiplegia was affecting the individual who is unique. The move now is towards focusing upon the effect of the left hemiplegia upon the individual patient and his ability to live normally and, in consultation with the patient, to draw up a plan specific to him. Of course there is a need to be aware of and take account of the pre-disposing cause of the left hemiplegia because this will affect what can or should be attempted, but important here is the move towards recognising that the individual is a whole person and that each individual is unique. The patient thus becomes an active participant in his care rather than a passive recipient of orders, treatment and advice from others.

Without this positive approach to professional nursing, patients, particularly those outwith acute medical and surgical wards, will receive nursing care which may make them more dependent than they have to be, with a consequent effect upon the individual himself and the need for continued hospitalisation where discharge might be a realistic possibility. With older people now coming into the health care system with problems which are not essentially those of old age their reaction time and recovery time are likely, because of their age, to be different from younger people with a similar

diagnosis. So the older person who may become dependent on nursing staff during the acute phase of an illness may accept dependency which a younger person will reject when he begins to feel better. This notion is supported by Miller who found that:

> .... nursing care is producing dependency ...

and that:

> .... task allocation nursing was found to be positively unhealthy for elderly long stay patients, while individualised care (nursing process) was associated with lower patient dependency, a shorter hospital stay and a better chance of surviving the hospital stay.
>
> (Miller, 1985, p.63)

So while the debate about the proper function of professional nursing continues, and pressures are applied to alter the nursing curriculum to reflect the principles described here very briefly, it must always be remembered that the NHS is a large organisation which caters for all health problems. Balances must therefore be struck and whilst outlining the function of the nurse as being something more than that based traditionally within a 'medical model' there will be times when it is appropriate for the nurse to function entirely, for a time at least, to the dictates of the presenting medical condition, for example the patient admitted in severe diabetic coma. At the other end of the scale however, in a long-stay hospital for care of the elderly, the medical diagnosis may have little relevance to the nursing needs of the patient.

The function of the professional nurse is therefore not equivalent to that of a surrogate relative, even in the long-stay areas. The professional nurse's function will be aimed at recognising if, when and how the patient can become more independent and she will plan nursing accordingly taking account of the individual. To implement the nursing plan, the registered nurse will require the support of others (NNMCC, 1986), though the numbers and the mix of skills required will vary in different clinical areas.

THE PRESENT NURSING WORKFORCE IN SCOTLAND

Professional nursing is delivered in both hospital and community areas throughout Scotland. While all the principles debated in this thesis will apply equally to nursing staff in both sectors, the community has a different structure and organisation, and throughout the remainder of this thesis attention will focus solely on the hospital sector which contains 91% of the present nursing workforce.

The nursing workforce comprises four groups of staff: registered nurses; enrolled nurses; learners; and nursing auxiliaries/assistants. Recent legislation from the United Kingdom Central Council for Nursing, Midwifery and Health Visiting (UKCC) has resulted in a change in terminology with registered and enrolled nurses becoming first level registered nurses and second level registered nurses respectively. This can lead to some confusion so throughout the remainder of this thesis both titles will be used, the new terminology with the

former terminology in brackets. Brief explanation about these four groups is given below:

(a) First level registered nurse (registered nurse). This qualification is gained following a three-year programme of combined theoretical and practical experience. It is from the ranks of staff so prepared that ward sisters/ charge nurses, teachers, researchers and managers of nursing emerge. There are four parts of the first level register, with each part having a prescribed programme under the direction of the National Board for Nursing, Midwifery and Health Visiting for Scotland (NBS). The parts of the register are - general, mental illness, mental handicap and sick children. A nurse registered on one part of the register, for example general, cannot be employed as a registered nurse in another area, for example psychiatry, unless she has undertaken relevant additional preparation.

There are other limitations imposed upon nurses who are registered on certain parts of the register, for example only a first level registered nurse (registered nurse) who is on the general register may proceed to midwifery or health visitor training. Others may not do so without additional preparation.

The majority of courses leading to registration on these four parts of the register are organised within the Health Service in Colleges of Nursing and Midwifery. Student nurses (i.e. those preparing to become first level registered nurses) are employees of the Health Boards and

receive their practical experience in clinical areas, normally under the direction of the ward sister. Their theoretical instruction is usually accomplished within study blocks, that is they have no clinical commitments at this time. Student nurses, by the traditional nature of their preparation, form an integral part of the nursing workforce. Again, however, there is debate at this time about the possibility of ensuring that students, for at least part of their training period, will be supernumerary to manpower requirements (UKCC, 1986). In addition to preparation entirely within the Health Service there are programmes of education conducted in Universities and Colleges of Higher Education which lead to registration. The numbers of nurses qualifying from these courses represent about 5% of the total.

(b) Second level registered nurse (enrolled nurse). Preparation of these staff (pupil nurses while in training) is of a much shorter duration - 18 months - and is of a practical nature. In Scotland a nurse so prepared is eligible to work as a second level registered nurse (enrolled nurse) in any of the clinical areas in the Scottish Health Service. Staff prepared in this manner have no career prospects apart from promotion to Senior Enrolled Nurse. They cannot become ward sisters and they cannot proceed to further training, though those who are deemed suitable may take a shortened course which leads to registration as a first level registered nurse.

(c) Learners. These are student and pupil nurses receiving training in the Health Service as described at (a) and (b) above.

(d) Nursing auxiliaries/assistants. These staff are unqualified and receive no formal nationally recognised preparation prior to employment. The nature and duration of any preparation is a matter for local Health Boards.

These four groups of staff comprise the nursing workforce in the hospital sector of the NHS in Scotland. In 1984, a total of 56,336 whole time equivalent (WTE) staff were employed (Scottish Health Statistics, 1986). Many staff work part-time and the actual number of staff employed in the nursing workforce was 64,930. The WTE figure is arrived at by adding together the contracted hours of all part-time staff and dividing the number of hours determined as full-time — at the present time 37½ hours per week. Nearly all students and pupils are full-time and of the remainder of the workforce, 65% of qualified nurses work full-time, whereas the comparable figure for unqualified auxiliaries/assistants is 41%. In 1984 the disposition of the nursing workforce in the four categories described was first level registered nurse (registered nurse) 18,069 WTE (32%); second level registered nurse (enrolled and senior enrolled nurse) 9,949 WTE (18%); learners including student midwives, 11,495 WTE (20%); and nursing auxiliaries/ assistants, 16,823 WTE (30%).

Nursing staff work in more than 300 hospitals in Scotland with a total of 57,306 available staffed beds providing a

service for all medical specialties. The hospitals range in size from five beds (St. Brendons, Barra) to 1,600 (Hartwood Hospital). Some of the hospitals are specialty specific, for example psychiatry, while others have different major groups within them, for example maternity and general.

The Scottish Health Service Costs Book 1985 describes aspects of turnover, occupancy, staffing levels and costs by grouping together within categories those hospitals with similar functions, there being 38 functional categories described. Figures are expressed as staff per 100 weighted patients — the weighting reflecting inpatient, outpatient and day care attendances. With regard to nurse staffing wide differences are described within and between the hospitals in different specialties, for example:

Category 01 - large general teaching hospitals covering a full range of services (7 hospitals with 4,762 staffed beds) where the average effective number of nursing staff per 100 weighted patients is 125 (Range = 110 to 137).

Category 17 - long-stay geriatric units controlled by a geriatrician (56 hospitals with 4,491 staffed beds) where the average effective number of nursing staff per 100 weighted patients is 89 (Range = 57 to 135).

Category 22 - major teaching maternity units (4 hospitals with 672 staffed beds) where the average effective number of nursing staff per 100 weighted patients is 206 (Range = 155 to 240).

Category 35 - non-teaching mental hospitals (21 hospitals with 11,594 staffed beds) where the average effective number of nursing staff per 100 weighted patients is 66 (Range = 47 to 104).

In addition to differences in total numbers of nursing staff there are also differences in balance between grades within and between the different categories. Considering the same four categories given as examples, the average effective trained nursing staff and nursing auxiliaries/assistants per 100 weighted patients is as follows:

Category 01 (General):-

Trained staff = 82 (Range = 65 to 100)

Nursing auxiliaries = 24 (Range = 19 to 37)

Category 17 (Long-stay geriatric):-

Trained staff = 40 (Range = 22 to 62)

Nursing auxiliaries = 48 (Range = 27 to 99)

Category 22 (Maternity):-

Trained staff = 126 (Range = 90 to 161)

Nursing auxiliaries = 58 (Range = 45 to 79)

Category 35 (Mental illness):-

Trained staff = 34 (Range = 23 to 57)

Nursing auxiliaries = 24 (Range = 17 to 56).

There may be reasons why different staffing levels are required in the different hospitals within the same category. For example, the number of consultants and the nature of the work they do might be different; the organisation of support services and the number of support staff may be different; each in turn having an effect on the number and grade of nursing staff who will be required. Absence of information about the nursing staff establishment, that is the number of staff required by grade, which should ideally reflect any different levels of demand, does not make it possible to determine the actual discrepancy in individual hospitals between staff establishment (demand) and staff in post (supply), which latter are the numbers referred to above. Equally, there is no information to identify the different activities within the functional groupings which might have an effect on the nursing staff levels. Absence of information of this type is seen as a major flaw but, even in recognising this, the differences are in some situations so large, for example category 17, as to suggest that there are imbalances in disposition of nursing staff to apparently similar specialties throughout Scotland.

THE MANAGEMENT AND ORGANISATION OF THE NURSING SERVICE

The management of nursing services is undertaken within a line management structure which was redefined in 1984 (SHHD, 1981). This structure and the line relationships are currently under further review pending the introduction of Unit General Management in the Scottish Health Service (SHHD, 1986). Until

the proposals are finalised and implemented the actual line relationships are not clear, but nurse managers will remain responsible for ensuring the delivery of an acceptable standard of nursing; for monitoring and controlling expenditure on nursing staff; and for many aspects of the personnel management function. Although improving in some local situations, many senior nurse managers complain that they are either given no information or insufficient information about both staffing and costs, and that the information they do get is often inadequate and/or too out of date to enable them to fulfil their proper management functions.

The sources of information currently used, unless managers themselves set up a duplicate manual system, are the Payroll and the Financial Management System (FMS) which are both standard computerised systems for the Scottish Health Service. The source of the national statistics is the National Manpower Statistics System (NAMS) which is an extract of the Payroll file and which provides information on a 'snapshot' basis at the end of March and September each year.

Most of the information used within these systems is notified in the first instance by nurse managers, many of whom express dissatisfaction at the lack of return in terms of information and resentment at the need to duplicate information already notified for another administrative purpose. That this situation has arisen is not surprising. The Payroll was the first major computerised system in the Health Service and it was established for pay purposes. The potential to obtain manpower information from it became clear at a later date and

the provision of such information is a by-product of the system rather than being an integral part of the system. The Payroll is designed to collect and sort information for any aspect of pay purposes but without major amendment the Payroll will not yield information at a sufficiently detailed level to facilitate manpower planning. The Payroll contains much of the information which would be required for manpower planning and it would be possible in theory to develop it for this purpose. There is, however, a debate at the present time about the best way forward in terms of computing strategy in the Scottish Health Service. Should the Payroll drive a personnel system and a manpower planning system or should the Payroll and the manpower planning systems be developed as modules of the personnel system? The resolution of this debate is not yet clear but at the present time the constraints on the Payroll system inhibit the development of a comprehensive information system within the Payroll system itself. Indeed the data requirements of such a system have not yet been described in detail.

JUSTIFICATION FOR THE PRESENT STUDY

The nursing workforce represented approximately 48% of all staff employed in the NHS in Scotland in 1984 and cost approximately £442,000,000 or 36% of all revenue expenditure in the Health Service that year (Scottish Health Statistics, 1986). The paucity of information about such a large resource is itself justification for change but, in addition, the need

for manpower planning in the nursing service has been reiterated in all major relevant reports in recent years. In 1969, the Committee of Public Accounts (HMSO, 1970) were disturbed to learn that 20 years after the inception of the NHS, Health Departments still did not know whether there were too many or too few nurses. The Report of the Committee on Nursing (Briggs, 1972) considered the absence of a national manpower strategy to be a serious deficiency and their view was later supported in the Report of the Royal Commission on the NHS (Merison, 1979). A further Report of the Committee of Public Accounts (HMSO, 1986) reaffirms the need for and absence of manpower planning in nursing.

As has been alluded to briefly, nursing is complex; what constitutes an acceptable standard of care has not been defined; the balance of skills required in any clinical situation has not been determined; and the number of staff needed to give an acceptable standard of care has not been identified. All of these issues are major studies in themselves as part of an exercise to measure the demand for nursing and the supply of nurses required to meet it. Detailed information is lacking about staff currently employed and little is known about their characteristics, their turnover and their absences. Without such information, manpower planning cannot be undertaken. Again, all these areas are worthy of examination in depth. It is postulated, however, that no matter how intrinsically valuable an in-depth study in any of these areas would be, the real worth would not be potentiated if undertaken

in isolation. It is further postulated that this isolation can only be overcome if studies in these areas can be located within an overall framework which describes the cycle of manpower planning. This present work will not address in detail any parts of the whole, but will focus on the development of a framework which will reflect the whole.

LIMITATIONS OF THE STUDY

One of the principal objectives of the study is to develop a framework which will enable manpower planning to be understood and undertaken in the context of the nursing service in the hospital sector of the NHS in Scotland. The framework will guide the nature of information which is required but will not address the minute detail in which the information should be recorded. The development of a valid framework should mean that the framework itself should not change when some details may require to be altered to reflect change in circumstances; for example, the locus of nurse learners within the framework will not alter but some of the details about learners may have to be enhanced or modified to reflect any change in the programme of preparation for nurse learners.

Implementation of a system for manpower planning in nursing will be dependent on negotiation with relevant Health Service managers. Such negotiations, using the framework developed within this study, are being undertaken concurrently with preparation of this thesis. It is hoped that these negotiations could result in the establishment of a pilot study

of the resulting system, though this to some extent will be dependent on the outcome of discussions currently underway to introduce a standard computerised personnel system to the NHS in Scotland. As previously stated, the recommendations of this document have already been used to guide the establishment and work of sub-groups of the Nursing Manpower Steering Group and, because of action already taken on the basis of the work of this thesis, data and references pertinent to the development of a system for manpower planning in nursing in Scotland will cease at 1984 as the events after that will be concerned with the determination of details and the practicalities of implementation. So while the framework may be theoretically correct to meet its purpose, the availability of resources within the NHS in Scotland may result in some short-term compromise which may yield better information than is available at present, but which may not capitalise fully on the potential if the system were implemented in its totality.

The activity of manpower planning itself is dependent to a large extent upon the application of statistical models to information. Although recognising the need for such models, the attempt in this preliminary work is focused on the identification of those components necessary in a database to which relevant statistical models may subsequently be applied.

Although the framework developed is applicable to both hospital and community nursing services, the debates which led to the development of the framework have a focus within the hospital sector. The different organisation and management of

the community nursing services will require in some respects a slightly different approach in detail. For example, while clinical specialty as identified in 'Scottish Health Authorities Priorities for the Eighties' (SHAPE, HMSO, 1980) can normally be determined by identification of discrete ward areas in hospital, a different approach to identification of this aspect will be required in the community. However, developments in the hospital sector will provide the basis for the introduction of a parallel development in the community.

CHAPTER 2

Literature Review

> As the cost constraints affecting utilisation of labour increase, it becomes more necessary to effectively plan the recruitment and deployment of human resources with as much consideration as is given to financial planning.
>
> (Farmer, Shipp, and Wiseman, 1972, p.2)

OVERVIEW

The paucity of information available for manpower planning in nursing has been alluded to in Chapter 1, as has the conclusion that manpower planning as an entity has not been addressed in nursing (DHSS, 1983). The literature will be reviewed to check the veracity of these statements in Scotland and, if substantiated, will explore the reasons why. The locus of manpower planning as a management activity will be considered and the conceptual frameworks within which a manpower planning system could be developed will be identified.

Manpower planning relates the demand for manpower to the supply of manpower and needs data to do this. Different methodological approaches for estimating demand for nursing manpower will be considered and the status of information about the nursing workforce will be reviewed. Data management will be explored and the influence of the organisational structure on the activity of manpower planning will be considered.

As will be demonstrated, the activity of manpower planning as an entity requires a considerable amount of detailed information over a wide range of topics. As a result, the

majority of publications on this subject tend to be in journals or books relevant to the wider topic area rather than to manpower planning per se. As the aim of the present study is to generate a broad framework within which manpower planning can be undertaken, the focus of the literature review will be on determining the approach to the development of such a framework and on outlining the principles which should be followed.

NURSING MANPOWER PLANNING IN SCOTLAND

During the 1970's a considerable amount of work was undertaken at the behest of the Scottish Home and Health Department (SHHD) reviewing manpower planning in the NHS in Scotland (Shipp, 1971), and giving an overview of NHS manpower in Scotland (Farmer et al, 1972). Nurses were included in this overview along with all other NHS staff but a separate initiative dealing with nurses alone resulted in the production of a series of Nursing Manpower Planning Reports, Numbers 1-8 (SHHD, 1974-1977). These papers provided a comprehensive statement of the profile of the nursing workforce in Scotland and also identified issues relevant to the introduction of effective manpower planning.

Exhaustive review, analysis and communication with professional and administrative contacts have revealed that manpower planning is not undertaken and that relevant information and literature are absent or, at best, limited. Even when available, there is little routine summary or descriptive analysis about the characteristics and movement of

the nursing staff. It has not been possible to identify conclusively why a gap exists between the work done in the early 1970's and the absence of any evidence of manpower planning at the present time. Shipp (1971) recognised that the SHHD personnel function could influence the NHS manpower process provided that effective lines of communication were established. In 1974, however, the administrative structure of the NHS in Scotland was re-organised and responsibility for the personnel function, including manpower planning, was devolved to Health Boards (SHHD, 1973).

Subsumption of the manpower planning function within the wider personnel management function is apparent in textbooks dealing with personnel management (Crichton, 1968; Thomason, 1981; Torrington and Chapman, 1983; Cuming, 1985). Personnel management includes issues of staff development, industrial relations, conditions of service, in-service training, recruitment and retention, and manpower planning. Herein, perhaps, lies a major part of the difficulty in relation to manpower planning. If the personnel department itself is not large enough to encompass fully all aspects of personnel management, it is likely that immediate issues such as industrial relations and conditions of service will take precedence over other longer-term issues such as staff training and manpower planning (Beaumont, 1985).

The reasons for the present lack of manpower planning in nursing can only be speculative but that the lack exists is unequivocal. This situation, however, is not specific to

nursing or to the NHS in Scotland. According to Bennison and Casson (1984) manpower planning has not become the positive management force which might have been expected. In relation to the NHS, Long and Mercer (1981) offer the view that ".... most commentators on the progress of manpower planning .... have been less than enthusiastic" (p.2).

One reason for this may be that the definition of manpower planning which is in general use, that is the right number of people in the right jobs at the right time, is a rather facile definition which must be explored and understood in much greater depth to get to the core of what manpower planning is in reality [Institute of Manpower Studies (IMS), 1978]. On the other hand, there are aspects of effective manpower planning which would be more appropriately subsumed within the term 'manpower management'. For example, Lynch (1982), in the more explicit definition of the purpose of manpower planning, notes that the aim is to provide an enterprise with:

> The right **NUMBER** of employees;
>
> possessing the right types and degrees of **SKILLS**;
>
> in the right **JOB**;
>
> at the right **TIME**;
>
> performing the right **ACTIVITIES**;
>
> to achieve the right **OBJECTIVES**. (p.28)

It could thus be argued that manpower planning should result in the identification of the right numbers of people with the right skills for any particular work location. But if there is inappropriate deployment of staff, or if working conditions or

relationships are poor, these are matters for manpower management and not manpower planning as such. To draw such a distinction may, in the first instance, appear facile. However, if these quite different management activities are the responsibility of different people within the line management structure and if the different participants do not have a clear understanding of the issues, problems could occur. Thus, if the organisation does not have individuals who are clearly identified as having responsibility for manpower planning, and if the functions are blurred or not fully understood, this activity becomes less than effective. Stainer (1971) suggests that some aspects of manpower planning must be undertaken at the level of the 'firm', as specialist knowledge and an overview of the whole will be required. He further suggests that it would be reasonable for the manager of a large department, that is more than 1,000 employees, to have one or perhaps two individuals who are mainly concerned with manpower planning working for him.

Another reason for manpower planning not having been effective may be the influence of the availability of finance where managers might be less than enthusiastic to participate in an exercise whose outcome might be uncertain because of financial constraint (Tilquin, Lambert and Vanderstraeten, 1981). This, of course, suggests a belief that manpower planning is going to result in demands for more staff, whereas there would be grounds for suggesting that effective manpower planning could lead to more efficient and economic practices by

providing managers with a better quality of information on which management decisions could be made.

Statistics are not available to describe the number of student nurses who qualify and work in nursing, so the wastage from the training resource cannot be identified. But supposing that for every 1,000 nurses qualifying in a given year, 300 leave for whatever reason without practising in their profession and information generated from a manpower planning system can identify characteristics or reasons which, if dealt with or resolved, could result in the figure of 300 being reduced to 150, this would be economically effective and would release resources for deployment elsewhere. At this time the numbers of students who enter nursing are known (NBS, 1984), but what happens to them on completion of training is not known. In addition, attrition during training requires action (West, 1986). The growing awareness of the potential problems of recruitment to nursing caused by the projected fall in the number of school leavers demonstrated in Appendix II (p.158) has led to a recognition of the need to retain in and attract back to nursing those nurses who are currently inactive (Committee of Public Accounts, 1986). But just how many qualified nurses are available in the community but not working in nursing, and under what circumstances they would return is not known. An analysis of the 1981 Census data (Clark and Carstairs, 1986) suggested that of all qualified nurses (up to pensionable age) in Scotland, 66% were working in nursing; 10% were working but not in nursing; and 25% were out of work or inactive.

Concurrent with questions about the numbers of qualified staff required or available, there is debate about the effective utilisation of qualified staff currently in post. Are shift patterns economical (Committee of Public Accounts, 1986)? Are professional nurses being utilised effectively, or are they having to undertake work on a routine basis which does not require professional nursing skills and which could be done as effectively and more economically by staff with less training (MacLeod, 1985)? It could be argued that questions of the type given as examples should be part of effective manpower utilisation and deployment, and the fact that they are asked in isolation confirms the absence of a manpower information system which could give answers and provide a basis for decision making.

THE LOCUS OF MANPOWER PLANNING IN MANAGEMENT

Stainer (1971, p.7) argues that people are an asset in a firm and he believes there is a mistake in industrial perspectives on manpower where ".... the accounting conventions treat inanimate things as assets and manpower as an expense". In a labour-intensive industry such as nursing, and within a system financed by public monies such as the NHS, this whole area of debate raises a very real and fundamental question. Should finance be made available to meet a demand which has been systematically and explicitly determined, or should the supply be confined within the limits of the availability of finance? The answer to this question has not been found in the

literature but there can be no doubt that each approach will have an effect on that aspect of manpower planning which is concerned with methods for estimating nurse staffing requirements. On the one hand, if unlimited finance were available or if there were a potential to obtain additional monies, a systematic description of the need for nursing manpower would be required; while, on the other hand, if no additional finance is likely to be made available, the focus will be on trying to achieve an equitable distribution of the supply of nursing manpower which the available finance can purchase.

Manpower planning is a management activity whose sole aim is to produce relevant information as a basis for decision making (IMS, 1978). It is not the function of manpower planning to make decisions (Casson, 1977). As a management activity it must, however, be linked closely to other management activities and, in practice, will have to deal separately but consistently with different staff groups within the organisation. This has led different authors (Lynch, 1971; Tilquin et al, 1981; Somers, 1977) to advocate a systems approach to the analysis and understanding of the activity of manpower planning and of the organisation to which it is being applied on the basis that an organisation as a system functions as the result of the working together of a series of sub-systems. The classic work on systems theory is generally attributed to von Bertalanffy (1968), who defines a system as consisting of "elements standing in interaction". Schaefer (1974) reinforces the importance of interaction within a system and suggests that any

system is more than the simple sum of its parts and only becomes a system when the parts are brought together into a state of interaction or interdependence. Other authors (Kramer and de Smit, 1977; Emery, 1978; Lockett and Spear, 1980) have discussed the relevance of systems theory to the management of organisations. No two organisations function in the same way; thus there is no model which can be applied universally to all organisations. It is posited, however, that by applying the principles derived from systems theory (Emery, 1978) it is possible to develop a framework within which manpower planning in nursing within the NHS in Scotland can take place.

Tilquin et al (1981) propose a conceptual diagram of the manpower planning process. The model is based on a systematic and cybernetic vision of planning and comprises five broad functional units - orientation; measurement and forecasting; intervention; diagnosis; and control. Casson (1977) suggests that the established notion of the manpower planning process is of a systematic, statistical approach integrating, in a series of distinct consecutive steps, the four tasks of forecasting the future requirement for manpower; analysing manpower availability and supply; drawing up plans to match supply to demand; and monitoring and controlling against these plans. Casson further argues that in practice two kinds of activity take place under the heading of manpower planning, namely a regular monitoring activity accompanied by an investigatory activity, where problems identified by monitoring can be analysed and management action can be planned to resolve them.

Bennison and Casson (1984), in their comprehensive publication The Manpower Planning Handbook, discuss in more detail many of the elements which are required in any manpower planning activity. Hornby, Ray, Shipp and Hall (1980), in a course book prepared for a series of 12 workshops, describe aspects of the management and information requirements for manpower planning. And Lynch (1971; 1972; 1982) outlines in some detail many aspects of the manpower planning process recognising that effective manpower planning must be derived from the business strategy of the organisation.

Manpower planning is concerned with determining the number of staff and the skills required within an organisation, that is demand; with monitoring staff in post to determine characteristics and behaviour with a view to identifying problems and forecasting future requirements, that is supply; and the availability of data to facilitate these activities. Manpower planning is often perceived as being a statistical exercise and many authors, among them Bell (1974), Burack and Walker (1972) and Bramham (1975), all give attention to statistical methods. On the other hand, Stewart (1977) argues that there is a need to consider behavioural science in what is essentially a statistical discipline because the statistics represent individuals. Again the dilemma emerges of the statistical component of manpower planning, the manpower management component of manpower planning, and the wider personnel management activity, all of which must function in harmony with each other if there is to be effective manpower planning.

THE DEMAND FOR NURSING MANPOWER

The measurement of demand in nursing is difficult and is exacerbated by the absence of outcome criteria against which demand can be assessed. Attempts have been made to utilise a work study approach to the measurement of required nursing time by ascribing a time to the performance of identifiable nursing tasks. The best known and earliest example of this approach in the United Kingdom being the work undertaken by the former North Eastern Regional Hospital Board in Scotland which resulted in the production of the 'Aberdeen Formula' (Scottish Health Services Studies Series, Numbers 3, 1967 and 9, 1969). While the approach adopted in this study can go some way towards identifying the amount of nursing time required and, by simple arithmetic, can determine the number of whole time equivalent staff required in a ward or in a hospital, there are serious flaws. The 'Aberdeen Formula' and many other similar approaches are focused on the physical dependency of patients on the assumption that the more physically dependent the patient, the greater the amount of nursing time which will be required. It is true that physical dependency will place a demand on nursing time, but to focus on that in the absence of other needs which the patient may have cuts right across the concept of professional nursing addressing the patient as a whole person and not only on the physical needs arising from the presenting medical diagnosis. It also ignores that important function of professional nursing which is to assist the patient to become as independent as his physical and mental

states will allow (Henderson, 1977; NNMCC, 1976, 1981). The focus on physical dependency as the base from which to determine required nursing time is suspect as, although not yet tested, it is a generally held view that the teaching and supporting role of the nurse to achieve this independence is more time-consuming than 'doing for' the patient. Miller (1984) has suggested that a task-based physical approach to care creates dependency, therefore a dependency-based approach to the determination of nursing manpower requirements will yield an output which will not allow time for the rehabilitative component of the professional nurse's work. No studies have been identified on the economic appraisal of the alternative approaches. For example, if a patient can be discharged after three months of intensive rehabilitation by the nursing staff but might not be discharged for a year if this rehabilitation is not available, is the cost of the additional staff justified economically or socially?

The ascription of time to observable physical care does not make any allowance for those aspects of professional nursing which are not observable or quantifiable but which are vital if effective nursing is to be undertaken. For example, if a good quality of nursing is to be provided, careful and sometimes time-consuming assessment is required of the individual patient's physical, psychological, and social abilities and potential, particularly in the long-stay areas of nursing. How does an observer classify time spent talking with a patient and how does he judge whether the time spent was

enough, too little or too much? But this is what would have to happen if this aspect of nursing were to be included in any work study exercise from which a staffing level was to be determined. The psychological and other non-physical components of nursing are difficult to measure and even after extensive work in mental illness hospitals the Aberdeen team was unable to establish a formula for assessing nurse staffing requirements in this specialty (Grampian Health Board, 1975).

This difficulty of measurement holds good in the acute areas also where counselling and explanation are required if anxiety is to be minimised, if coping strategies are to be established and if compliance with advice is to be encouraged (Revans, 1966; Pratt, Seligman and Reader, 1957). The need for counselling and advice, and the amount of nursing time which has to be spent, will be dependent on the individual patient. Again there are no studies which assess the effect of different levels of communication and the individual patient's demand for health services in the future, a demand which might be affected by the quality of counselling given by the nursing staff.

A further criticism of using a work study or dependency-based approach to estimating nurse staffing levels is that they reflect 'what is' rather than 'what should be' (Gault, 1982). Thus, changes in nursing practice which may be in the interests of providing a better quality of nursing, may be inhibited because of lack of staff, if this aspect of their work has not been 'timed', and a vicious circle leading to frustration and dissatisfaction among nursing staff can be established which may, in turn, have an effect on turnover rates of staff.

An alternative to observing what nurses do, a 'bottom up' approach, is another approach, that is 'top down', such as the 'Trent Regression Analysis' (1978). This particular method is used to balance the nursing staff levels by identifying and trying to rectify deviations from the average for particular types of hospital. Thus if, for example, the psychiatric hospitals in a region had an average ratio of 70 nursing staff per 100 in-patients but the range was 50-100, an attempt would be made to re-balance staffing levels to bring them all to the average of 70. While there could be strong arguments levelled against this approach from a professional standpoint, the attraction to the manager who is trying to achieve equity within finite resources can be readily appreciated.

Barr (1984) offers a method which will facilitate comparative analysis within and between hospitals and specialties. This method relates the nursing staff available to the number of patients being treated. Again, while this might be a useful management tool to point to areas of difference, the more sensitive and relevant indicators necessary in a nursing context are missing, for example the age, medical diagnosis and any indication of the patients' nursing needs, and thus cannot be taken into account in such an exercise. It can never be assumed that figures which quantify indicators of demand and supply will have a direct relationship to the quality of demand.

One fundamental problem with the 'top down' approach is that it carries an implicit assumption that the baseline levels from which the averages are developed are satisfactory.

Unfortunately, while this might be challenged at a professional level, the relevant information to make a substantive qualitative critique is not available.

Telford (1979) proposes a totally different 'bottom up' approach which is firmly grounded in the application of structured and disciplined professional judgement. This method demands a detailed audit of the area being studied and, in addition to the determination of nurse staffing requirements using professional judgement, management practices and nursing practice are all subjected to detailed scrutiny. This method is attractive to many, but treated with suspicion by others because the process involved in stating the numbers and grades of staff required cannot be itemised or explained in a quantitative manner. It is pertinent to reflect, however, that in all other methods where the process appears to be more explicit, professional judgement is also exercised, whether this be in the allocation of patients to particular dependency categories in the 'bottom up' approaches, or in the determination of what is 'safe' in the 'top down' approaches.

The dilemma between the relevance of incomplete statistical information and the application of frank professional judgement as the basis for estimating nursing staff requirements remains. The present state of knowledge does not allow any relationship to be established in any of the methods between the need for nursing manpower, that is the workload, and the manpower in terms of the numbers and skills required to meet it. It seems reasonable to assume that the way

forward will be a compromise between the two approaches. As Gault (1982) has suggested, there are theoretical limitations when undertaking statistical analyses and there is a need to employ scientific methods in support of rather than instead of professional judgement.

THE SUPPLY OF NURSING MANPOWER

At all levels in the NHS in Scotland information is potentially available about the number and grades of nursing staff in post on given dates. The figures are published annually on a national basis in the Scottish Health Statistics Series. The information is available in this form approximately two years after the date to which it refers and while numbers of staff in post are available by grade, there is no information routinely available about age, turnover, or work location other than for this latter category which is by Health Board only (Scottish Health Statistics, 1986). These figures are therefore only of value for a straight comparison by year of staff in post.

The nature and amount of information is potentially better at a more local level where the information is also available more quickly. But, as already stated, there is no evidence of analysis of the data which do exist even at local level and the main focus of the present activity is to ensure that budget levels are not exceeded. It was interesting to note however, in a study conducted in 1984 (Abel, Mitchell and Clark, 1986), that the staff in post on 30th September that year were 2.8%

below the funded establishment. The reasons for this are not known and whether or not this was an atypical month cannot be ascertained without further study as the information was obtained as a by-product of another study whose main aim was to identify the methods which were used throughout Scotland to determine nurse staffing levels.

In the absence of evidence to the contrary, it is fair to assume that no real manpower planning is being undertaken in Scotland at this time. In some places nurse staffing levels have been adjusted following application of the 'Aberdeen Formula' where this is relevant (Abel et al, 1986), but it does appear at the present time that staffing levels are being dictated almost exclusively by the budget availability and within the financial allocations determined by application of the SHARE (Scottish Health Authorities Revenue Equalisation) formula (SHHD, 1977). While the overall status quo appears to be being maintained throughout Scotland in regard to total numbers of nursing staff being employed with only 0.6% increase in the whole time equivalent figure between 1982 and 1985, there is a noticeable shift in the ratio of qualified staff to unqualified staff. In the same three-year period there has been an increase of 8.5% qualified staff altering the ratio of qualified to unqualified from 50:50 in 1982 to 54:46 in 1985. The reasons for or the management decisions taken to effect this change are not known, and the ultimate target or how it is to be reached have not been identified.

DATA REQUIREMENTS

Manpower planning provides information as a basis for decision making and while the terms 'information' and 'data' are often used interchangeably, ".... information is generally defined as data that are meaningful and useful to the recipient ...." and ".... data items are therefore the raw material for producing information" (Davis and Olsen, 1984, p.9). If, for example, a manager wants information about the length of time staff have been in post he will probably want this expressed in years and months, but the raw data items required to generate this information would be the date on which each member of staff was engaged by the firm and the date on which the enquiry was being made. These data can then be used to provide the information which is required. In a manual system these data would have to be painstakingly extracted and carefully tabulated before the information could be provided.. In a computerised system, however, routine data should be available and by appropriate programming the raw data can be sorted within the computer to yield information as an output. It is important therefore that in the planning of the computerised system the manager has a clear idea of the information, that is the output, which he is going to require. In addition, the computer can offer the facility of database where information entered once for one particular purpose can be used for another (Davis and Olsen, 1984). Thus if an individual employee's personal file is held on computer, information such as the date of birth and date of starting will be entered as part of that

record and will provide the basic data for future analysis which could yield respectively age and length of time in post.

Tricker (1982, p.1) stated that "... while decision makers face a surfeit of data, there is a paucity of information", which suggests that the data necessary to provide the information are available but, for whatever reason, are not always being utilised by managers. It may be that converting data to information manually is too cumbersome or that the potential richness of the raw data when converted to information is not fully appreciated. Bennison and Casson (1984) suggest that from their extensive experience with companies:

> .... the data needed for manpower planning are by and large available in most organisations and are already kept for a number of different purposes by different individuals. (p.295)

They further suggest that to be useful for manpower planning the data have to be brought together and reconciled. The successful bringing together of information within a large organisation will be dependent in large measure on the structure of the organisation, particularly in a large and complex organisation such as the NHS which has large numbers of staff, many different disciplines and which functions on many sites. An appropriate organisational structure will be necessary, however, to facilitate the processing of information as a basis of decision making (Child, 1984). Tricker (1982) further suggests that the modern executive requires support from a variety of information systems to enable him to make

strategic decisions. In addition therefore to the need to identify the specific data requirements for manpower planning, there must also be an organisational structure which will facilitate the collection and analysis of information, and managers themselves must know their information requirements.

Hirsh (1985) identifies the categories of information which are required for manpower planning; Körner (1984) suggests the minimum data sets necessary for manpower planning in the NHS; and Bennison and Casson (1984) advocate the need to develop coding strategies as the means of facilitating the analysis of the data to yield the information. Although not explicitly stated, the nature of the examples which Bennison and Casson give to illustrate various points of importance in any manpower planning exercise infers the need for a systematic and detailed analysis of both the workforce and the nature of the organisation if an effective system for manpower planning is to be established. It will only be as a result of this analysis that the interactive elements essential in a systems approach can be determined.

SUMMARY

The review of literature has been an exhaustive presentation of evidence of systematic manpower planning activity within the nursing service in the United Kingdom. Essentially, there is no evidence of systematic manpower planning as a basis for decision making. Problems of estimating the demand for nursing manpower have been identified and there

is a paucity of information available about many aspects relevant to the behaviour and characteristics of the nursing workforce — information which must be available if manpower planning is to be effective.

The review has evidenced the inability to identify any research-based studies which demonstrate the benefits of effective manpower planning to an organisation. But if the workforce is indeed to be recognised as an asset and if the organisation's success is dependent upon the present and continuing availability of appropriate skills in sufficient numbers to meet the demand, it seems inevitable that manpower planning is essential in any major organisation.

Manpower planning itself, however, appears not to be fully understood. It is often confused with manpower management on the one hand and with complex manpower modelling and sophisticated statistical analysis on the other hand. That these three components must function together if effective manpower planning is to exist is indisputable but they cannot function in isolation and cannot function at all if the relevant data are not available.

The availability of finance may dictate the supply of manpower, which carries with it an implication that unless there is a substantive statement of increased requirement the status quo will be maintained. This is accompanied by expressions of concern by professional nurses as the demands for care do not remain static and, even if they did, budgetary inertia would only be acceptable if the baseline staffing

levels had been estimated from a basis of need rather than from historical accident or chance. The pursuit of methods to identify realistic staffing levels continues.

The activity of manpower planning provides information to assist informed decision making. The information is generated from raw data which can be handled most effectively by computer. Only with this technology will the detailed analysis necessary for effective manpower planning be possible.

From the review of literature it is possible to identify those aspects which must be addressed if a system for manpower planning is to be developed:

(a) A systems approach should be used to analyse the workforce and the organisation within which they work.

(b) Determination of where the different parts of the system must interact is required.

(c) The organisation's need for information must be described before the necessary raw data can be identified.

(d) An information system should be established.

(e) The unique and powerful facilities of the computer should be employed for data sorting.

Addressing these aspects will result in the development of a manpower planning system only if the structure of the organisation to be served is receptive to and conducive to the activity of manpower planning. Only once these stages have been completed will it be possible to undertake the in-depth

statistical analyses necessary to provide detailed information required for meaningful and informed decision making about the present and future supply of manpower to meet the demand.

The absence of evidence of systematic manpower planning in nursing has been identified during the review of literature and has provided further confirmation of the need for and the justification of this work.

CHAPTER 3

Manpower Planning in a 'Service' Industry

> Any manpower planning function is concerned with formulating and evaluating policies whereby an organisation will be able to cope with a forecast workload.
>
> (Shipp, 1971, p.8)

Manpower planning as a management activity requires knowledge of both the demand for and the supply of staff in the organisation and requires data which will yield information upon which management decisions may be taken. These requirements are fundamental to manpower planning regardless of the organisation being served and the quality of decision making in management will be inextricably linked to the quality of information which is available.

The concept of demand is an interesting one. How does demand relate to need? And how are needs identified? Needs can perhaps be classed into two categories: those which are basic to survival; and those which have an effect on the quality of life of individuals. As such, therefore, basic needs could be described as those which are essential to the maintenance of life: shelter; environment; and nutrition. Other needs related to quality of life will be enhancements of these fundamental needs and the degree of enhancement which an individual demands will be dependent to a greater or lesser extent upon the personality, expectations and aspirations of the individual and the availability and affordability of particular products and services. Linked to availability and affordability are the

values which individuals place upon different products and services and it is likely to be a reflection of the individual's values which creates the demand in the first place, and hence the level of demand for products and services.

The terms 'products' and 'services' are used deliberately because they are quite distinct entities in both material and political terms. In the case of products, that is, material goods which are tangible, they can be seen, counted, weighed and measured. Most products of this kind are produced by private enterprise where profit is the key to viability of the business. Without profit a private company cannot survive for long; investment in new plant, machinery and ideas dwindles; the ability to compete in an open market diminishes; and the only solution is to go out of business or to increase prices which may, in turn, affect demand for the product by reason of affordability.

Maintaining competitiveness and ensuring sufficient profit to keep the business viable requires that a delicate balance is struck between evidence of demand, knowledge of the size of the demand, the nature of the demand and the cost of resources required to meet the demand. The demand for products can be measured by the uptake but, in addition, the product itself can be specified by whatever criteria are appropriate in any given circumstance. It is therefore possible to predict the quality of the product necessary to meet the demand for it; the quality of the goods to be produced; and the cost of the equipment, material and personnel required to fulfil the process of

production in its entirety. So while it is possible to predict and measure both the demand and supply, another possibility with regard to products is the ability to monitor and measure the quality of both the product and the production process. By far the majority of products are produced in bulk but there are small industries which will produce custom-made goods which reflect an individual's preferences or indulgences, but this is beyond the financial resources of the majority of people.

The bulk of the literature on manpower planning has a focus in industry — the examples relate to companies and production. While the principles of manpower planning are the same in an organisation which does not produce material goods, by the nature of such organisations, many elements of such a service do not lend themselves readily to conventional measurement. It has already been suggested that the requirement for material goods will be affected by the expectations or desires of individuals and, simply put, the acquisition of particular goods is usually dependent above all on the financial resources and personal preferences of the individual. While these options may be exercised by individuals in relation to services such as health care and education, by far the majority of people look to a nationally provided, though locally organised, facility for these services.

In such services there is no tangible end product where a detailed specification of product can be measured against the outcome of production. The nature of demand is inherently linked to the individual's values; therefore, someone who sees

education as being important will wish opportunities for education to be readily available while others may not.

Services such as those alluded to are financed largely via direct and indirect taxation, and are therefore subject to finite resource provision and political decision. Persons of different political persuasions may therefore reflect their different values when determining priorities for resource allocation. Resources are not infinite and choices must be made about both the scale and the nature of services to be provided — choices which may be unpalatable to some but where demonstration of adverse effects resulting from a specific choice may be difficult to make in a concise and factual manner because of the lack of measurable specification of outcome of the service and the processes involved in providing the service. Subjective views can therefore sometimes affect an issue but in some instances where irrefutable facts cannot be produced, subjective argument is the only alternative, and the weight given to the argument is dependent in large measure upon the influence of the person(s) making it and the subject matter.

In the Health Service there are many examples of this. Technology continues to extend the horizons of possibility in regard to options for treatment, many of which are expensive and, if developed and operated within the boundaries of available finance, it follows that the money to provide such services must be found from somewhere within the existing service. So while there may be an overall expansion in

provision of services, the nature of some of the more expensive services may mean that a few benefit at the expense of the many. But if knowledge exists to undertake a certain type of treatment where the outcome may be uncertain, can it morally be denied? For example, someone who suffers severe brain damage following some trauma may be kept alive within an Intensive Therapy Unit which is expensive to run and he may survive in a vegetative state. However, as long as he even has an outside chance of recovery initial treatment cannot be withheld and once embarked upon, cannot be stopped. Embarking on treatment at the outset may itself create a demand for continuing care of the individual within the Health Service for years to come. Professional staff are the first point of contact which an individual has with the Health Service and each professional is going to treat the patient to the best of his ability using all the resources which are available or known to be available. Denial of the professional's right to act in this way strikes at the very heart of his right as an independent practitioner who alone is responsible for the treatment of his patient. At the end of the day, however, when the costs of services are reviewed, it may well be that the expensive and more overtly life saving services have consumed any development money which is available and other services, such as those for improving the quality of life for the mentally handicapped, may not have resources available to them. Dilemmas of this kind have yet to be resolved within the Health Service.

There can be no doubt that the absence of measures of quality in service industries can lead to economic abuse by ineffective or inefficient management practices. Nonetheless, while effectiveness and efficiency are laudable goals in service industries just as in any other industry, measurement of the relationship between quality and quantity becomes complex where such services are run by people for people and where profit, as normally defined, is not an integral aspect of survival of the organisation.

Knowledge of both the nature and scale of demand is therefore a prerequisite of any planning exercise regardless of whether that exercise aims to yield a product or a service. Without knowledge of demand it is not possible to determine with any assurance the resources of equipment, material, skills or personnel, that is supply, to ensure that the demand can be adequately met with greatest efficiency, effectiveness and economy.

Supply relates directly to resources and, just as for demand, has the dual dimension of quality and quantity. The nature and volume of what can be acquired as supply will be dependent on the availability of finance. Finance alone, however, cannot always ensure availability of resources; for example, there may be sufficient finance but a raw material might be in short supply, or in the case of personnel there may not be sufficient people with the necessary skills. Knowledge of existing supply is necessary both in the context of its ability to meet demand and also, over time, to provide

information about trends. This information will be necessary to predict as far as possible the changes in demand and supply in the future for which action must be taken in the present to ensure maintenance of supply in the future. This is a complex issue and as far as personnel are concerned the amount of forward planning which is required will be dependent in large measure upon the skills required and the length of time it takes to acquire them. Thus, the shorter the period of preparation which is required, the shorter the forward planning is likely to be.

With regard to operational management and to forward planning, information about both demand and supply will be necessary. This information should be generated from data which are sufficiently rigorous and explicit to facilitate sorting in a variety of permutations and combinations.

Reference has already been made in general terms to the feasibility of measurement of quality and of quantity in both the processes and output of a manufacturing industry. Attention now focuses on the more specific problems associated with the qualitative measurement of demand and supply in the provision of the nursing component of the Health Service. It is possible to estimate in some respects some of the demand which is likely to be created (i.e. number of patients/clients) by assuming that patterns of previous demand will be repeated. Similarly, some information is known about the supply, in this context the number and grades of nursing staff, but as yet it is impossible to relate the quantity and quality of the demand to the

quantity and quality of the supply needed to meet the demand adequately.

It is the determination of quality which presents one of the greatest difficulties with regard to nurse manpower planning or indeed to manpower planning in any aspect of the Health Service and renders evaluation of both the processes and the outcome extremely difficult, if not impossible. The reasons for this are that the Health Service deals with people who are all unique individuals with different expectations or indeed, dependent upon their medical conditions, with different possibilities of a satisfactory outcome, if outcome in this context is defined as a return to 'normal' health. Indeed 'normal' will vary from individual to individual and it is this, in conjunction with expectations or ability related to physical, mental, emotional and social factors, which combine to make each individual unique.

As such, therefore, there is no tangible end product which can be measured against a detailed specification established before intervention by the Health Service takes place. It is possible to make some general statements of objectives with regard to some aspects of health care: for example, it could be stated that a certain level of preparation is required for individuals who are going to theatre for a particular type of surgical operation; it is possible to state that an objective could be the avoidance of cross-infection in a surgical ward; and avoidance of the development of pressure sores could be another statement of objective. The uniqueness of individuals

is such, however, that even in attempting to achieve general statements of objectives as cited will often require different actions to meet the needs of different individuals. So, in addition to there being no tangible and common end product, the processes involved in achieving even general statements of objectives will be different and tailored to the needs of individuals. This serves to emphasise the difference between the Health Service and industrial enterprises in relation to the complexity of manpower planning.

Within the Health Service there are many different professional groups and each of these may have different expectations. For example, it has been stated that doctors 'cure' and nurses 'care' and whilst this attitude does not do full justice to the expectations of either group, it does perhaps give a key to one of the difficulties of identifying and agreeing measures of quality. If the question of 'outcome' is considered to be a relevant indicator of quality, apparently similar outcomes might be seen as success by one group but as failure by another. If, for example, a doctor sees his role as being of effecting 'cure' and the patient dies, he may see this as a failure. On the other hand, the nurse might consider her work a success if the patient dies without pain, with an intact skin and with peace of mind. This would suggest that a measure of quality, if determined as outcome, should relate to the outcome of action planned to meet specifically identified needs and problems as opposed to the overall outcome. In this situation, therefore, evaluation of the components of the whole

should be the measure of quality rather than attempting to measure the whole of itself. Acknowledgement of the differences between individuals as the basis of good quality care can only be assured when their problems are individually described and dealt with. Research about the control of post-operative pain has described the wide range of pain relief required by different individuals and if the practitioner prescribes or administers analgesia dependent upon his own perception of what he thinks should be required rather than on the basis of what the individual patient considers he requires, then the quality of care received by the individual patient may be lower than he needs. Thus, the overall outcome, if assessed at the time of the patient's discharge from hospital following, for example, cholecystectomy, may be deemed to be satisfactory but elements of the care may have been at a lower standard which may have caused unnecessary pain and suffering. It is the avoidance of unnecessary distress and suffering which must be one of the goals of all professional groups within the Health Service but, in addition to the knowledge and skills which are required to effect this, there must also be sufficient manpower available to meet the individually-determined needs of each patient.

To elaborate this notion further there must be an understanding of the role of nursing within the Health Service. Many erroneously believe that the nursing function is directed solely towards either the maintenance of comfort and hygiene almost as a surrogate relative or in responding to medical prescription related to the presenting medical condition.

Whilst both of these are indeed legitimate and necessary functions of members of the nursing team, a third major component which is not always understood or acknowledged by others concerns the nurse's role in teaching, supporting and rehabilitating patients in learning to live and cope with the effects of the presenting illness, disease or disability. Frequently ignored are those functions of the nurse which recognise that she will do for the patient that which he would do for himself if he had the necessary strength, will or knowledge with the aim of making the patient as independent in daily living activities as his mental and physical states will allow. It could therefore be stated somewhat crudely that doctors deal with disease and nurses deal with people and the effects of the disease upon their ability to live normally. With regard to disease it is often possible to quantify its severity, for example, haemoglobin estimation in anaemia; prescription of treatment; and, after a given period, evaluation of the effectiveness by again measuring haemoglobin. Dealing with human beings and evaluating the effect of nursing intervention in such a specific way is not yet possible. There is, however, a move towards the recognition and description of the needs and problems of individual patients; the determination of goals which should be set for each of the problems; the making of a plan which is specific to the patient and his problems which aims to meet the goals which have been set; and the introduction of improved documentation which will enable communication and ensure consistency of practice but

which will also permit evaluation of the effectiveness of the plan in achieving the stated goals (Maslow, 1970; Orem, 1980; McFarlane, 1982; Prophit, 1980, 1982; Henderson, 1969). Thus, while at this time nurses are recognising the need to set standards (RCN, 1981) and are approaching their practice in a way which will permit standards to be set and monitored for individual patients, there is as yet no valid objective means of linking the numbers and skills of nursing staff required to meet individually-based standards. Much research is needed in this area and it may be some years before an acceptable solution is found to this aspect of quality assurance and control.

This obvious deficiency and its resultant effect of being unable to determine the number of nursing staff required to provide a stated and measurable standard of nursing presents a major problem in nurse manpower planning. Almost inevitably manpower planning in nursing deals with figures which reflect actual availability of staff and thus has a focus on quantity rather than on quality, but the present state of knowledge offers no real alternative. Nevertheless, while the need to strive towards the determination of methods for assessing quality remains of paramount importance and those with a responsibility for manpower planning should remain aware of the need to consider quality when only quantitative measures are available, it is postulated that the development of a framework for manpower planning in nursing which focuses on the quantitative aspects will be able, if properly constructed, to

accommodate the qualitative component once knowledge in this area becomes available.

In conclusion, difficulties in determining the qualitative component of demand and supply in a nursing service have been briefly discussed. Patients are individuals and, as such, are unique; in an ideal world, therefore, where resources of finance and personnel were limitless, it might be possible to deliver a 'custom-built' service which would satisfy the needs, reflecting in turn the values, of each individual person. It is unlikely that such a situation will develop and considerable research activity will be necessary before even reasonable relationships can be determined between the quality and quantity of demand and the quality and quantity of supply required to meet that demand.

Any discussion about manpower planning in the nursing service which ignores these issues would be false, even though one has to acknowledge that specific answers may not be available in the short-term. In some health care situations it is possible to determine an element of time required to give physical care to patients or to undertake aspects of investigation or treatment of disease. In recognising the uniqueness of the individual, however, a focus on physical needs alone denies those other issues such as the psychological needs and social needs, which reflect personality and values - the very components which make each person different. One of the aims of the service must be to satisfy individuals and no matter how competent the physical care may be, if the

appropriate psychological and social care are not given, and if the physical potential is not fully realised, the outcome and satisfaction may be less than is possible or desirable. The level of rehabilitation and of psychological and social support required will vary between individuals and will be time consuming for staff to deal with and these are among the many areas where measurement is difficult.

CHAPTER 4

Analysis of Nursing Manpower Planning in Scotland

> .... any system is more than the sum of its parts. It becomes a system when the parts are brought into a state of interaction or interdependence.
>
> (Schaefer, 1974, p.38)

INTRODUCTION

In acknowledging the merit of adopting a systems approach as the basis for developing a framework for nursing manpower planning in the hospital sector of the NHS in Scotland, an immediate and fundamental question arises: what is 'the system' for which the sub-systems have to be identified? The overall system itself could be described as being the NHS in Scotland which is the totality of services provided from Exchequer funds for the provision of health care. As such, the NHS embraces the hospital sector, the community sector, primary care sector and all the functions of the Common Services Agency such as the Blood Transfusion Service, the Ambulance Service, the Management Education and Training Division, Health Education Group and the Information Services Division. It would be a very complex exercise to undertake a detailed systems analysis which identified and linked together all the sub-systems which must work together to make the NHS in Scotland function effectively. An example of the complexity of such an exercise was highlighted during work undertaken by the Ward Data sub-group of the Scottish Health Information Feasibility Study Committee (SHHD, 1974), when the different services which might be

utilised directly or indirectly by patients and staff in any single ward area of a hospital were identified (Appendix III, p.162).

While rejecting the NHS in Scotland as the 'system' it is necessary to consider those sub-systems which are relevant to the provision of a nursing service in the hospital sector of the NHS and to determine the relationships of each to the other as a means of identifying the location of nursing manpower planning within the overall system. It would be fundamentally wrong to consider either nursing or manpower planning in nursing as separately functioning systems without recognising and taking into account other sub-systems which impinge upon the organisation and delivery of nursing services.

Five related aspects which must be taken into account but which will not be analysed in detail are identified briefly as follows:

(a) Determination of services to be provided

Health Boards will determine the nature and extent of the hospital services which will be provided within their geographical area but in essence where there are patients, so there will be nurses. The non-availability of nursing staff may be a crucial factor in whether or not services can be provided and nurse managers must have available to them the information which will enable them to contribute to the decision about this aspect. Nurses, however, do not

make the decision about the services which will be provided, but like other professional staff they must implement to the best of their ability the policy of the Health Board.

(b) National planning guidance

Account must be taken of any national planning guidance which may be in operation at any time. SHAPE (HMSO, 1980) is the relevant guidance at this time and built into any system of manpower planning in nursing must be a facility which will permit monitoring of the implementation of such guidance in respect of the nursing component of the service. Such monitoring will also permit the identification of any specific problem which may be affecting any aspect of the implementation, for example difficulty in recruiting staff to any part of the service which has been identified as a priority area for development.

(c) The personnel management function

Manpower planning is described as a component of personnel management along with staff training and development; selection and recruitment of staff; industrial relations; conditions of service; and staff counselling. Any manpower planning system must therefore dovetail with these other components of the personnel management function, much of which is, in the nursing service, devolved to the line manager and not dealt with directly by the Personnel Department.

(d) The development of computer systems

Technology now offers the possibility of quick and effective sorting of many functions previously undertaken manually. Indeed it could be said that the complexity and volume of data required for manpower planning is such that it can only be effectively utilised with computer assistance. To obtain maximum benefit from these systems, however, mechanisms must be found to avoid the need for multiple data entry of essentially similar information. The use to which the information will be put must be known before the computer system is developed so that the data requirements can be identified; the necessary software prepared; and the relevant hardware selected. Only then will it be possible to avoid multiple data entry, for example information about staff absence might be required in a different format for different aspects of personnel management, but the basic data requirements might be the same. Determination of an appropriate computer strategy for the NHS is not a matter for either nurses or nursing manpower planning in isolation.

(e) Standardisation

The concept of standardisation is an anathema to many; however, it will only be as a result of standardising definitions in regard to agreed minimum data sets that compatibility of data can be assured. This does not mean that decisions at local level become standardised, rather

that the basic information upon which the decisions are taken is in standard format. Flexibility at local level can also be assured if standardisation is applied only to minimum data sets and the option for inclusion of additional information required by local managers is protected. It may be some time before all Boards have access to standard computerised systems and this will be affected largely by the overall computer strategy adopted by the NHS in Scotland. Nonetheless, there is an urgent need to agree standard definitions so that relevant input documents can be developed for use in a manual system until computer assistance is available. If standardisation can be agreed this should mean that aggregation of data from local level, for example about each hospital ward, will become possible at whatever level is required, thus obviating the need for additional returns being requested in a slightly different format for different purposes.

Nursing staff, whilst comprising the largest single group of employees in the NHS, are nonetheless only part of a much larger whole. Any planning must therefore take account of wider issues such as those referred to in the foregoing paragraphs but must still satisfy the information requirements about the nursing service. Planning therefore cannot be in isolation, no matter how desirable the outcome or committed the participants.

ANALYSIS OF THE PRESENT STATUS REGARDING MANPOWER PLANNING IN NURSING

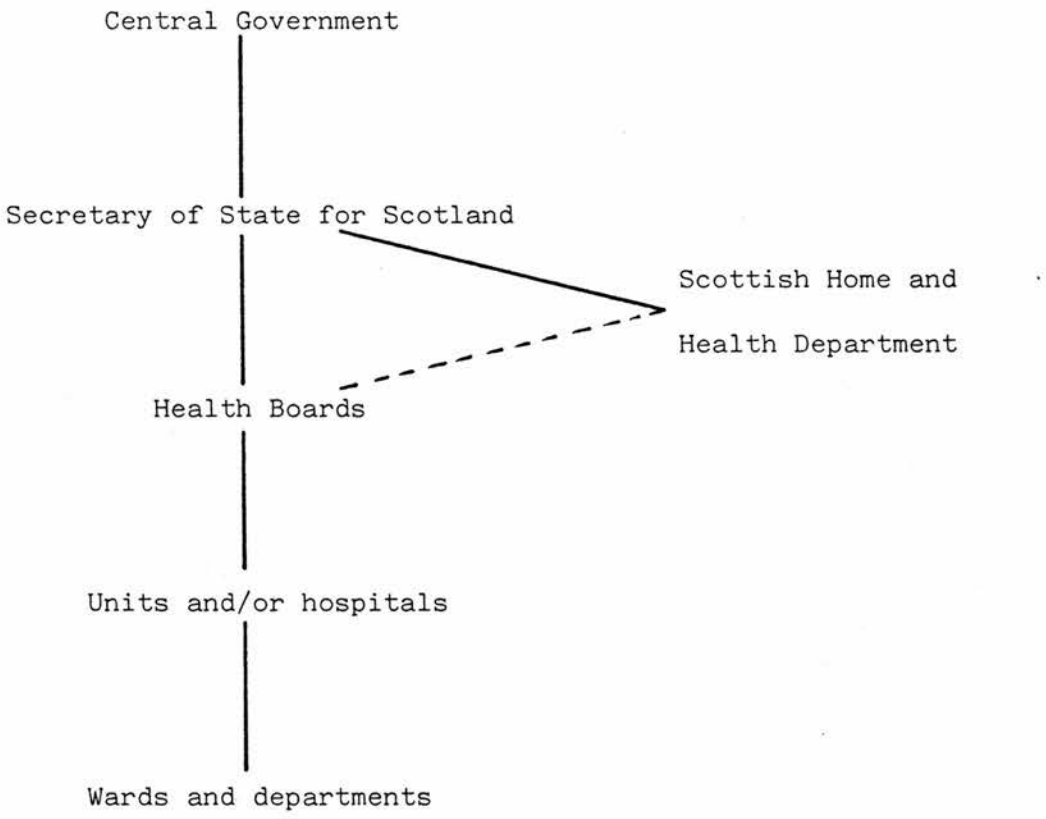
Having acknowledged the need in practice to consider other matters when a system for manpower planning in nursing is eventually described, it is now possible to focus upon a more detailed analysis of the current situation in regard to manpower planning in nursing. To assist in this examination the following definition of the function of manpower planning will be used:

> Manpower planning is concerned with human activity directed towards a particular economic purpose. It aims to provide an enterprise with:
>
> - the right **NUMBER** of employees;
> - possessing the right types and degrees of **SKILLS**;
> - in the right **JOB**;
> - at the right **TIME**;
> - performing the right **ACTIVITIES**;
> - to achieve the right **OBJECTIVES.**
>
> (Lynch, 1982, p.28)

The activity of manpower planning per se, while expressed by Lynch as a series of identifiable components, cannot be said to be undertaken if one or more of these components is excluded from any exercise which purports to be manpower planning. In acknowledging the principle of the need to establish the relationship of each component to the others, it will be from the identification of the detailed information necessary to meet the aims of each of the components that these relationships will become clear.

In making the overall statement of purpose, Lynch recognises that the word 'right' will vary from one enterprise to another. The general aims of the NHS should permeate all its locations, so what, for the purposes of manpower planning in nursing, is meant by an 'enterprise'? Is each hospital an 'enterprise' or is each individual ward and department an 'enterprise' in itself? Perhaps the final line of Lynch's definition, that is "to achieve the right objectives", gives the key to this question in that each level of the Health Service where policy and/or management decisions are taken, as shown in Figure 1, will have its own set of objectives. It is suggested, however, that each of these objectives will be related to each other from general overall objectives at the policy making levels to more specific operational objectives in an hierarchy which moves towards the point of delivery of direct care to the patients. So while policy makers can state intention, that intention can only become a reality if staff at the point at which the patients actually receive care know of these overall objectives but, in addition, have their own objectives stated clearly.

Figure 1. Levels at which different objectives may be set within the NHS



In an organisation such as the NHS which is labour intensive with 72% of revenue monies being attributable to salaries, it follows that the amount of money allocated from Central Government will have an effect upon the number of people who can be employed. Conversely, without a definitive statement of objectives and identification of the number of staff and skills which are required to meet the objectives at the different levels, the case for arguing for additional resources is weak.

Having considered the application of a systems approach and identified that nurses are part of a larger employee group

and that manpower planning is part of a wider management function, nurse manpower planning can be described as a ".... set of parts coordinated to accomplish a set of goals" (Lynch, 1971, p.12). It is postulated that it will be from the identification and understanding of the 'parts' that a framework for manpower planning in nursing will be developed. For the purposes of further elucidation, these parts themselves fall into two distinct categories: the location within which nursing staff work; and the components of the definition which comprise the overall activity of manpower planning. Each of these is considered separately.

THE LOCATION WHERE NURSES WORK

Nurses work at all levels in the NHS as shown in Figure 1 (p.81). The majority however work within hospital wards, a ward being defined as a discrete physical location which is under the control of a senior nurse, normally a ward sister (SHHD, 1984). The number of wards in the country is not known, but each ward is ascribed a medical label of which 39 have been identified, and to which the 57,294 average available staffed beds are allocated (Scottish Health Statistics, 1984). For practical purposes, these specialty groups are usually referred to within broader groups when discussing nursing manpower. These broader groups, with the percentage of available staffed beds in each, are:

General	34%
Care of the Elderly	19%
Psychiatry	29%
Mental Handicap	11%
Paediatrics	2%
Midwifery	6%

In addition to these broad groups of hospital wards in which patients receive in-patient care, a minority of nurses also work in other areas where patients go for treatment and/or investigation, such as out-patient departments, accident and emergency departments and theatres. Such departments are normally subsumed within the relevant broad categories identified above. The majority of hospitals are specialty specific, that is, they are 'psychiatry' or 'maternity' and so on. Other hospitals have more than one specialty, particularly the new District General Hospitals which may have in addition to 'general' beds, a psychiatric unit or a maternity unit or both.

For the purposes of manpower planning, however, the broad groups referred to are not entirely satisfactory. The general category, for example, includes surgery; medicine; orthopaedic surgery; ear, nose and throat; intensive therapy; and others. Even considering a general medical ward can lead to problems as, in practice, the medical consultants attached to these wards very often have a specific clinical interest in addition to their responsibilities for general medicine. This interest can be as specific as thyroid disease or diabetes mellitus as

distinct from endocrinology per se. The interest can be cardiology, renal disease, gastroenterology, or haematology to identify a few. Inevitably such specialisation can create a different volume of workload for the nursing staff and may also require that the staff have different skills to deal with the different clinical demands, all of which are in addition to the needs created by the 'general' patients in the ward. It is possible also that the behaviour of nursing staff in terms of movement into and out of the different specialties may vary, though this information has not been identified as yet.

In essence, therefore, it is advocated that the activity which will be the foundation of manpower planning in nursing should be identified at the point of delivery of the service, that is from the individual wards and departments in which nurses work. Some aspects of manpower planning will not be possible at this level; for example, identification of the overall number of recruits required, but if a system is developed using the ward as a base, information generated in standard form about each ward will permit different degrees of aggregation of the data at whichever level this is required and will thus provide the baseline from which the overall cyclical activity of manpower planning can take place.

THE COMPONENTS OF THE DEFINITION WHICH COMPRISE THE OVERALL ACTIVITY OF MANPOWER PLANNING

"Manpower planning should achieve the right OBJECTIVES"

Despite this being the final aim of Lynch's (1982) definition it is dealt with first as in the absence of understanding about the objectives and some of the difficulties associated with their establishment, consideration of the other components has no focus. Difficulties of forecasting, relating, and measuring the quality and quantity of the service demanded and the quality and quantity of the service provided have been alluded to in the previous chapter, and the effects of these difficulties should not be underestimated. Nonetheless, to see them as being insurmountable in the context of the current work would be inappropriate.

SHAPE (HMSO, 1980) could be construed as the current statement of objectives for the Health Service in Scotland. This advocates that priority is given to certain services, for example mental handicap and mental illness, with a reduction in priority given to the acute areas. Implementing such policy at local level within an environment of cash limits requires strong management because, in practice, money has to be saved from the acute sector before it can be spent in identified priority areas. No analysis has yet been completed to assess the effectiveness of Health Boards in meeting the requirements of the SHAPE objectives.

It is not easy for Health Boards to make choices, for example to reduce acute services, when the demands for these

services do not diminish. The effect, however, of failing to shift resources can lead to frustration at local level, for example in a mental handicap ward. The staff know theirs is a priority area, but there is no tangible evidence of this as manifest by additional resources. So while there may be overall planning objectives, each hospital and each ward will be required to determine realistic objectives within the resources which they have available. They could identify ideal objectives but, without additional resources, these may not be met. There might however be some merit in determining both the realistic and the ideal as this could give information, while perhaps in the short-term not measurable, of qualitative differences between what nursing should be given and what can be given.

Setting objectives in a ward situation may well be undertaken by describing standards which will in turn reflect, in part at least, a certain quality which is being aimed at. Although this notion is at this time in its infancy, it does provide a real opportunity for development of the qualitative dimension of both demand and supply.

Objectives at an operational level need to be more than a general statement of intent as SHAPE is. Objectives for the purpose of manpower planning must be comprehensive and stated in some detail. Only one method for estimating nursing staff requirements, the 'Telford Consultative Approach', has the statement of objectives for a ward as an important and central part of the method. It will take nurses time to learn to express the objectives in a meaningful and comprehensive way.

Nonetheless, it is a start and one which only nurses, of all the Health Service disciplines, are giving serious thought to at this time. Once objectives are known and agreed it will become easier to identify those which cannot be met and why, and also to begin to explore the establishment of a link between the objectives and the numbers and skills of staff required to meet them.

"Manpower planning should secure the right NUMBER of employees possessing the right types and degrees of SKILLS"

The absence at present of any means of determining standards and objectives, and thus the quality of nursing to be provided for individual patients means, as already stated, that the link between the quality of care to be provided and the numbers of staff and degrees of skills required to provide it cannot yet be made with any confidence. It is averred that one of the major difficulties in determining the number and grade of staff required has been, in the past at least, the non-availability of certain grades of staff. There has been a problem of recruiting sufficient registered nurses and there was thus no real impetus to determine what constituted a 'sufficient' number when faced with the reality of never having enough. Indeed, it is likely that such action would have been seen as a waste of time, but to compensate for such lack, much compromise was reached by nurse managers trying to maintain at least some level of service. This meant, however, that when more registered nurses became available (during 1983 and 1984 according to nurse managers) the required numbers and grades of

staff had not been determined in a systematic way, and the number of recruits necessary to maintain the stock of qualified nurses had not been calculated. Concurrent with this change there was some economic restraint when questions were being asked about the justification for increase when particular levels and mixes of staff had 'managed' before.

Thus, while more registered nurses appear to be available in some quarters at the present time, the likelihood of this situation continuing into the foreseeable future must be in some doubt when considering the population projections of school leavers (see Appendix II, p.158) from whom the majority of entrants to nurse training are recruited. Any planning activity must take account of such events in order that alternative solutions may be considered before a potential problem manifests itself into a real problem.

Despite the difficulties of determining quality, attempts have been made to relate patient need to nurse staffing levels using objective criteria. The most notable of these attempts, as already mentioned, has been the development and application of the 'Aberdeen Formula'. The basis of this method was the determination of the minimum standard of 'basic' nursing which a totally helpless bedfast patient would require. By application of work study techniques it was possible to identify the time required to undertake the nursing activities needed to provide this 'basic' standard. It was then possible to determine an appropriate proportion of that time for patients who had lesser degrees of helplessness and thus of dependency on nursing staff.

This approach with regard to 'basic' care, that is those aspects associated with maintaining hygiene and comfort, is acceptable, though it assumes the nurse 'doing for' the patient rather than, as in the case of rehabilitation, the nurse teaching and supervising the patient as he learns 'to do for' himself where this is possible, bearing in mind that one of the aims of nursing action is to assist the patient to become as independent as his physical and mental states will allow. This difficulty could be overcome by further work study exercises if these were undertaken alongside a systematically determined nursing care plan for each individual patient. So it is not a fundamental problem with regard to the acceptability of such an approach in principle, though the extent of resources required to keep the timings comprehensive and current should not be minimised, and the effects of not providing them should not be ignored.

Where there are difficulties within the 'Aberdeen Formula' as presently constructed is with regard to the allowances made for 'technical' care. As discussed earlier, the demands for nursing time will vary even within wards of apparently similar specialties and whilst a mechanism can be found to reflect these differences for 'basic' care, no such mechanism exists with regard to 'technical' care, though again timing undertaken in parallel with individual care plans might offer a solution to this. In the initial study and to make an allowance for this 'technical' care, the work study team identified the amount of nursing time spent on undertaking pre-determined 'technical'

activities in the wards studied. The range of time spent on this technical care varied considerably within and between specialties and, as it was not practicable to determine values for technical care in the same way as had been done for 'basic' care, that is no minimum standard could be set, an average of the time spent on technical care was identified in each specialty. The technical components of the nurses' work was then included in the formula as a percentage of time spent on 'basic' care. This latter is perhaps the greatest aspect of difficulty within the 'Aberdeen Formula' where:

> .... in surgical wards, whether general, ENT or gynaecological, in a hospital training registered nurses, the time spent on technical nursing was between 55 and 80% of the time spent on basic nursing; in medical wards, it was between 25 and 50% and in orthopaedic wards, it was between 15 and 50%.
>
> (SHHD, 1969, p.9)

Differences of similar order were found in other specialties but in determining the values to be included in the formula, the respective percentages for the specialties alluded to above are: general surgery, ENT and gynaecology, 67.5%; medical wards, 37.5%; and orthopaedic wards, 27.5%. In averaging results where such wide differences exist, it means inevitably that the outcome of application of the formula will result in some wards having less staff than required while others will have more, and some adjustment will be necessary.

In addition, while those results reflected practice at the time of the study, in any dynamic organisation such as the

Health Service, where for example, medical technology, chemotherapy and possibilities for surgery are constantly changing and having a consequential effect upon patients' needs for nursing and the type of nursing required, it seems reasonable to suggest that the values for both 'basic' and 'technical' nursing will alter. The formula was commended for use throughout Scotland without further studies to ensure that the values used in the original study were in fact representative in locations other than the wards included in the original study. In addition, no resources were made available to ensure that the values were regularly updated to take account of changes in practice.

The 'Aberdeen Formula' covers day duty staffing only in all the general specialties, care of the elderly and maternity, and if it is to continue in use a major review would be necessary. In particular and in addition to the inherent problems of method, other difficulties are:

(a) application of the formula to small wards is reported to produce an outcome which is insufficient to ensure safe cover;

(b) application to highly specialised areas such as intensive therapy units is reported to produce an outcome which does not permit adequate staffing;

(c) guidance is required about methods for determining an appropriate grade mix once a total requirement has been determined; and

(d) guidance is required about the inclusion of learners in the total staffing numbers.

The formula does not allow for consideration of other issues which will affect the numbers of nursing staff required, for example the number of consultants and support staff, and methods of providing services such as pharmacy and laundry to the ward. So whilst there is a degree of objectivity within the formula, professional judgement is required to adjust the outcome of application of the formula to take account of these other factors.

Despite the difficulties, the original work undertaken by the Aberdeen team was the first serious attempt to objectively measure the nursing time required to achieve a stated standard of 'basic' care. Nonetheless, the problems described are such that a major review of the current advice (SHHD, 1975; 1977; 1979) is required. In addition, there is a need to decide upon a method which can be used to estimate staffing requirements on night duty and in those areas where the 'Aberdeen Formula' does not apply, and guidance about staffing in theatres and out-patient departments (SHHD, 1976; 1979) is also in need of review.

Other major areas of the nursing service have different methods for estimating nurse staffing requirements. In the field of mental illness the 'Telford Consultative Approach' has been suggested as the method of choice, though it has not yet been commended by SHHD. The 'Telford Consultative Approach' is based upon a disciplined and structured application of

professional judgement where in addition to the review of patients in the ward a comprehensive audit of ward management is undertaken.

There are those who suggest that professional judgement is too subjective and will lead to unnecessary demands for 'more and more'. The ward audit, which should be accompanied by statements of standards and objectives, should offer a mechanism for undertaking a realistic review of the staff required to meet them though no methodology has, as yet, been developed to undertake such a study.

Caution is necessary, however, in placing an unwarranted amount of confidence in methods which appear to be more objective and where the processes are more readily understood but which may have inherent methodological flaws. Further studies would be required to test the validity of the application of professional judgement compared to more overtly objective methods for estimating nursing staff requirements.

In the field of mental handicap the 'Telford Consultative Approach' has been commended as the method of choice for estimating nursing staff requirements (SHHD, 1985).

From this very brief overview of the current situation it can be concluded that much further work is required to define the limitations of different methods and to plan work to overcome or minimise these limitations. That some systematic approach is required is indisputable and, even if it cannot be agreed that one method can be applied in all specialties, the same method should be applied in like clinical areas throughout

the country. Only with such an approach will it be possible to compare and contrast the situations in different parts of the country.

Whatever approach is finally agreed in any of the major fields of activity, the outcome of application should be the determination of the nursing establishment, that is the right NUMBER of employees. Unfortunately the term 'establishment' has three meanings:

(a) the 'ideal' establishment which is that identified as being necessary following the application of some systematic method for relating patient need to nursing staff requirement;

(b) the 'funded' establishment which is that for which finance has been allocated; and

(c) 'staff in post', i.e. those currently employed.

All official statistics describe only (c), which cannot allow any real interpretation to be made of the staffing levels in hospitals which have a broadly similar function because the demand for services which are provided within these hospitals and which have an effect upon staffing levels cannot be separately identified. Statistics at present can only have a limited value in that they can prompt questions rather than permit any valid comparison. For example, in category 02 of the Scottish Hospital Cost Book 1985, that is general hospitals with some teaching units but not necessarily wholly teaching, the average effective number of nursing staff per 100 weighted

patients is 114 (Range = 87 to 144). A similar discrepancy is found in the average effective number of trained nurses which is 65 (Range = 48 to 81). The reasons for these wide differences are not known; for example, are the services being provided so fundamentally different as to warrant such a wide variation? Are some of the hospitals under-funded while others are over-funded? Are there different levels of medical consultants with quite different clinical interests with a consequent demand on nursing time? Are there different levels of support staff and different ways of providing services? Do some hospitals have problems of recruitment and/or retention of staff and, if so, what are they? Many of these questions require detailed scrutiny but if the 'ideal' establishment or an establishment which represents an agreed percentage level of the establishment were available and included as a routine measure alongside staff in post figures, a more realistic assessment of the situation could be made. The absence of this information makes any meaningful interpretation impossible and changes in practice which may have an effect on nursing staff requirements cannot be identified; the adequacy of the baseline figure from which changes have occurred over time cannot be assessed; and the target, that is the number of nurses required, cannot be estimated.

Between 1978 and 1984 (Scottish Health Statistics) there was an overall rise of 14% in the whole time equivalent of nursing staff employed in the hospitals within the Scottish Health Service. In the major categories of general, mental

illness, mental handicap and maternity the rises were 14%, 9%, 31% and 13% respectively. In the absence of baseline information it is not possible to estimate how 'good' or otherwise these changes were. For example, in the field of mental handicap, while acknowledging the improvement, it may not be as satisfactory as it first appears if the baseline (in this case 1978) has been very low.

There is, therefore, a need to develop indicators or standards which will give a measure of quality as the existing quantitative indicators, such as numbers, throughput and bed occupancy, give no real estimate of nursing workload. Some standard method for estimating the nursing staff requirement in each individual ward is required to permit the identification of a nursing establishment which is based on patients' needs for nursing. Once determined, this figure should be shown along with staff in post to facilitate a meaningful interpretation and permit assessment of changes in demand and supply over time. Only when these steps have been taken will it be possible to answer the question posed by the Committee of Public Accounts of "how many nurses are needed?" and will it be possible to fulfil the component of Lynch's definition which states that "... manpower planning should achieve the right OBJECTIVES".

The systematic identification of the number of staff required would give baseline information about the supply of staff needed but a further dimension which must be addressed is the consideration of how to achieve and maintain these numbers.

In addition to problems of non-availability, the level to which the numbers may be achieved may be determined to a large extent by the amount of money which is available, which is essentially a political issue. Nonetheless, until the numbers which are required are known, and until qualitative measures are available to be able to describe in concrete terms the effects of shortages on standards, the bargaining power is weak.

With regard however to maintaining the numbers, at whatever level they are agreed, there is a need to introduce a system for forecasting which will require information about the workforce and its movements. It therefore relies on retrospective information which can identify trends and so predict the future. Forecasting is not an exact science and application of any techniques for this purpose will result in giving information to assist decision making rather than giving a precise answer which must be slavishly followed. In addition to the inherent difficulties of forecasting in any situation, there are issues which are peculiar to nursing which make it even more complex:

(a) nurses are, on the whole, trained within the system in employee status and in an apprenticeship type approach;

(b) nurses do not control their own workload in that admission and discharge are controlled by medical consultants. Nurses therefore have to be able to react to different demands created by the nature of each individual patient's illness, disease or disability;

(c) advances in medical technology, chemotherapy and the possibilities of undertaking more radical surgery and on different groups of patients than in the past, all have an effect on the workload of nurses. The effect of such changes are not quantified at the outset in that it is not said that X procedure will be carried out on Y patients from a particular date. The changes tend to be gradual and therefore have to be accommodated by existing nursing staff rather than having a planned increase in nursing staff to deal with an increase in demand;

(d) the large numbers of nursing staff involved and the variety of skills required in different settings;

(e) the wide variety of physical locations in which nurses work. For example, though again not quantified, many nurse managers believe that part of the difficulty of staffing some of the larger hospitals for the mentally ill and handicapped is because of their inaccessibility to local communities;

(f) the nursing workforce is predominantly female (92%) with an inevitable movement out of, and sometimes back into, the service according to social needs and preferences such as bringing up

a family. Again, though not quantified, the effects of legislation about maternity leave is said to have had a major effect upon the availability of nursing manpower;

(g) as a consequence of being a predominantly female workforce and the need to meet family commitments, 36% of nursing staff work part-time;

(h) nurses are required to work shifts which cover 24 hours a day, 7 days a week and 365 days in the year. Attracting staff to work at unsocial times can be difficult;

(i) many nurses move to further training on completion of their initial basic training. For example, many go on to undertake midwifery training very soon after completing their general training, though the majority have no intention of practising as a midwife. Much of the reason for this rests in history where in many general hospitals nurses could not obtain a ward sister's post without this additional qualification; and

(j) the vast majority of nurses receive their training within the Health Service. Therefore a considerable amount of information is required

> about the learners in regard to both their contribution to the workforce and also for assessing probable future availability as qualified nurses. This is particularly important as, although the present exercise is concerned only with NHS hospitals in Scotland, account must also be taken of the fact that no nurse training takes place in clinical areas outwith the Health Service and therefore it is from within the ranks of those trained within the Health Service that the community, private hospitals, nursing homes, industry, nursing agencies and any other organisations outwith the NHS recruit qualified nurses.

Despite this complexity it is postulated that careful definition of many factors (which will be discussed later) will make it possible to yield data which are sufficiently sound to enable forecasting to take place, always however with the caveat of caution about difficulty of interpreting the likely effects of external factors. For example, it is believed by many that when there is high male unemployment, the wives who are nurses will try to obtain employment. Answers to questions such as these will only become possible following ad hoc study using the database of information about the whole nursing workforce.

That some method of forecasting is required if the right numbers are to be maintained is not in dispute; in fact the

population projections for the next 20 years (Appendix II, p.158) underlines the urgency with which some action is required. Along with a need for forecasting there is a need to know more about qualified nurses who are not working; for example, where, in what capacity and under what conditions would they return to work? What proportion of learners who qualify do not work in the NHS, where do they go and why? What are the career histories of qualified nurses? It would not be possible to answer all these questions by routine data collection as an integral part of the data set required for manpower planning but ad hoc study as and when required would be feasible if resources are made available. This could be achieved by determination of the outputs required on a routine basis; identification of the data set which would allow these outputs to be generated; once trend data have been identified, boundaries could be set within the data; and introduction of ad hoc studies when the boundaries are exceeded in either direction. Thus if, for example, trend data show that the expected turnover of staff nurses is 20% per annum, the boundaries could be set at 18% and 22% and anything below or above these could be said to be reflecting a changing trend which might have to be subjected to further study.

In 1974 a report was published of work undertaken by the Institute of Operational Research (IOR) on behalf of SHHD which includes a description of a statistical model for forecasting purposes. The model is applicable to qualified nurses and requires data about staff joining, staff leaving, the age of

staff and the 'stream', of which there are six, to which they belong. The streams are: male enrolled; male registered; female enrolled whole-time; female enrolled part-time; female registered whole-time; and female registered part-time.

The information which is required about joiners is twofold, that is about mature joiners - those returning to the service after a break in service; and new recruits - those who are joining the service on completion of training. Unfortunately, information to discriminate between these two groups is not readily available in sufficient detail for use in the model and the model cannot therefore be used with any confidence in anything other than overall numbers. Investigation is required to find some means of resolving this difficulty.

When the original study was conducted by IOR, the data for entry to the model had to be collected by ad hoc study as there was no alternative means available at that time. Since 1979, however, the National Manpower Statistics System (NAMS) has been available to the Health Service in Scotland. This computerised system is an extract of the standardised Payroll system which is operational in all Health Boards in Scotland and in theory much of the information required for the forecasting model should be available from this source. NAMS is however a 'snapshot' at the end of March and September and any movement of staff, that is those joining or leaving between April and September, cannot be described. In addition, some of the detailed information required for manpower planning may not be available from the system as presently constructed.

Attempts have been made to adapt the statistical model to run on NAMS data but there are certain issues which would have to be addressed before the information could be as useful in practice as it has the potential to become:

(a) the model only runs on national data and would require to be developed for use on local Health Board data;

(b) the model does not discriminate between major specialty groups and, to be relevant, it would have to be able to run on at least the major groups of general, mental illness, mental handicap and maternity. Without this facility only global figures are available which would be dominated by the general field because it has the largest numbers; and

(c) the model deals with trained staff only. If to be really valuable, some means must be found of either including the learners or having a model for learners which could be 'grafted' on.

Only with these amendments would it be possible to determine the different characteristics within different specialty groups and would it be possible to forecast with any degree of accuracy the number of recruits who would be required if the workforce is to be maintained, increased or decreased according to objectively determined need.

In theory, therefore, a model already exists in the Scottish Health Service to enable forecasting to be undertaken.

However, in addition to the amendments suggested as being necessary, there are some other aspects of detail which would have to be addressed. At present a registered nurse who undertakes a post-registration course which does not lead to a statutory qualification, for example a course in intensive therapy nursing, will be shown on the statistics as a staff nurse and not as a registered nurse undertaking a particular course. This occurs because the pay scale and job title are the base of the information from Payroll to NAMS and the subtle difference between a staff nurse in a substantive post and one undertaking a post-registration course cannot be identified. The only registered nurses receiving further training who are identified within the system are those undertaking a post-registration course leading to a statutory qualification such as midwifery. The omission of such information is important in any manpower planning system as those on a course of training which has a prescribed length should not be included as part of routine turnover information as they would produce a faulty picture of trends. In addition, in future, additional non-statutory training might become a requirement for practice in some clinical areas and this information would then become vital in any manpower planning system.

To be effective therefore, forecasting requires that data about staff should be organised and utilised at as great a level of detail as is practicably possible. If not, generalisations only will be possible and the significance of

change, particularly where small numbers are involved in a particular sector, may be hidden within global numbers; that is where averages are made of components which vary in size, the influence of the largest component may adversely affect the smaller components.

With regard to the issue about types and degrees of SKILLS, this is yet another area where insufficient work has been undertaken. Reference is made in the report of the work by the team who developed the 'Aberdeen Formula' that once the total staffing needs have been determined following application of the formula, the total should be broken down into different grades. No guidance is given about how to do this but there is recognition that non-availability of certain grades may mean that the nurse manager may require to substitute one grade for another while remaining within the overall total. Insufficient work has been undertaken in this area to permit the issue of guidance to nurse managers about methods for determining the appropriate mix of staff and there is a need for considerable experimental study in this area.

The nursing workforce at ward level is made up of four broad groups of staff: registered nurses; enrolled nurses; learners; and nursing auxiliaries. The registered nurse's function includes assessing individual patients' needs for nursing; developing a detailed nursing plan to meet the patient's needs; ensuring that the plan is implemented as described; and evaluating the effectiveness of the nursing plan

in meeting the patient's needs (NNMCC, 1981). The registered nurse is therefore the member of the nursing team who makes decisions about the nursing care to be given to the patients and who, in addition, co-ordinates into this plan the medically prescribed components of the nurses' work. Perhaps therefore it is within the area of decision making and, in particular, the frequency with which decisions are required that the key to a means for determining the number of registered nurses will rest. Further study is required in this area because once this question is answered, it should not be difficult to determine the composition of the remainder of the team whose main function is to implement the nursing care ordered by the registered nurse for each individual patient.

Recognition of this as being the legitimate role of the registered nurse would do much to clarify the role of the enrolled nurse whose training is of a practical nature but does not equip her to make the decisions required of the registered nurse. Unfortunately, the lack of availability of registered nurses in some quarters has led nurse managers to compromise and employ enrolled nurses instead with a resultant blurring of roles and expectations. Further work will therefore be required before competent guidance can be given about methods for determining grade mix.

These issues apart, perhaps the greatest problem of determining the nursing team in a ward is the identification of the real contribution made by nurse learners to the workforce. Traditionally nurse learners in the United Kingdom have gained

their experience in an apprenticeship type situation and have thus been considered as an integral part of the workforce. Changes in their educational programme, however, have resulted in a reduced availability overall and a marked fluctuation in both the numbers and stages of training when gaining clinical experience in the wards. A study demonstrating this fluctuation was undertaken by the author in a major general teaching hospital in Glasgow in 1976 and the resulting report is shown in its entirety in Appendix IV (p.164). Although only one hospital was studied in such detail, evidence was submitted from the other teaching hospitals which indicated that similar degrees of fluctuation existed in these hospitals.

In 1982 a new scheme of training was introduced in Scotland and one of the aims of this scheme was to ensure a more even flow of learners to the clinical areas. It will not be possible to assess the effectiveness of the organisation of the new scheme in meeting this aim until the overlap with the former scheme has ceased.

Although it has never been quantified, many nurses believe that much of the rise in staffing levels over the years can be attributed to the reduction in the numbers of learners in the clinical areas and to compensate for the fluctuation in allocation of the number of learners going to the wards. What is absolutely clear in the absence of relevant information to date is that as long as learners comprise an integral part of

the nursing workforce there should be no change in the educational programme which will diminish (or increase) availability on the wards without the overall effects on manpower having been assessed.

Responsibility for the education and training of nurses in Scotland moved during the 1970's from individual hospitals which had their own training schools into Colleges of Nursing and Midwifery which integrated several of the former training schools. In addition, the theoretical and practical programme was extended. For example, a student who was training for the 'general' Register would, in former years, have gained most of her clinical experience in the general medical and surgical wards and associated departments within the hospital in which her training school was based. After this change took place, experience in the clinical areas was extended to include psychiatry, care of children, community and obstetrics but the overall length of the training period was not extended. Whilst not arguing the merits of the change in overall terms, it does mean that while learners are paid by Health Boards and are subject to the employment requirements of other Health Board employees, responsibility for the planning of the theoretical and clinical experience rests with Colleges of Nursing and Midwifery which are under the jurisdiction of the National Board for Nursing, Midwifery and Health Visiting in Scotland.

This dichotomous situation with an apparent conflict of interests, that is learners' educational requirements versus

their contribution to the nursing workforce, is one which requires resolution. It could be argued, however, that these two issues are not as widely separated as might appear in that it could be said that the quality of learning in the clinical areas is adversely affected where there are peaks and troughs in allocation of learners to the clinical areas as demonstrated in Appendix IV (p.164). Nonetheless, learners do comprise approximately 20% of the total nursing workforce in numerical terms and therefore a large proportion of the nursing budget.

Debates about the rights and wrongs of having learners as an integral part of the workforce are for the profession and the policy makers to pursue, but as long as the learners do give an element of service, some means must be found of ensuring an even flow of nurse learners to the clinical areas and for identifying in quantifiable terms a realistic estimate of their contribution to the nursing workforce.

"Manpower planning should ensure that staff are in the right JOB, at the right TIME and performing the right ACTIVITIES"

Once the staffing targets have been identified for a particular ward this component of the function of manpower planning rests firmly within the ambit of the local nurse manager. In nursing, as in other jobs, professional qualification and experience are the main criteria for determining the suitability of an applicant for a specified job. Recruitment methods, advertising, and selection and interviewing of staff, if properly planned and conducted, should result in the proper selection of an appropriate individual for a specific job. Equally, developed and proven

staff appraisal systems should ensure that the individual, once employed, is performing the right activities in the right way. No manpower planning system in such a large organisation as the nursing service in the NHS in Scotland could deal effectively with this aspect of manpower planning in the short-term at least, but a well-developed system within the wider personnel management function should yield additional information to managers to facilitate identification of certain factors. For example, it might be possible to establish some relationship between the outcome of staff appraisal/development programmes, if these are systematically described, and staff turnover rates. Thus, if the average turnover rates are known, any marked divergence from the average could be identified and action taken to investigate the reasons. In situations of higher turnover, there may be a problem of morale whereas in situations of a lower turnover there may be evidence of good organisation and practice. If this can, in turn, be linked to the performance of key individuals, then some positive guidance or additional preparation can be given, which in turn could result in a more effective use of available manpower.

Although this aspect is considered to be the business of local management, some monitoring system should be developed so that problems which might be more amenable to national resolution can be identified. For example, if a difficulty were identified about recruitment of learners to a particular specialty, and if this difficulty were being experienced in all Health Boards, some national initiative might be more effective

than each Health Board undertaking action on its own. In this situation it is not an either/or solution, that is national or local, rather that the combination of planned action at both levels is likely to be a more effective approach. This obviously depends on the nature of the problem to be tackled, but the principle of co-ordinated action rather than isolated, independent action should be the aim.

The aspect of ensuring that staff are in post at the right time is a complex one. Assuming that the overall number of staff and the mix of staff have been agreed and are available, ensuring that they are there at the right time will be dependent on the effective deployment of staff which is normally achieved through the implementation of shift systems. Allocation of staff to different shifts must take account of the needs of patients and of the staff themselves, and a review of the current shift systems is being undertaken in Scotland at the present time. There can be no doubt, however, that no matter how competent a system may be for identifying the right number and mix of staff for any clinical area, poor deployment will be costly and the objectives which the number and grades are supposed to achieve will not be met.

In 1979 the Chief Area Nursing Officers in Scotland undertook a review of shifts operating at that time when it was found that staff in general hospitals usually worked different combinations of shifts during each week, for example 'early' shift one day and 'back' shift the next, with the duty rota being compiled two or three weeks in advance of the week to which it applied. On the other hand, staff in hospitals for the

mentally ill have tended to work weeks of fixed shifts, for example a week working 'early' shift followed by a week working 'back' shift, with rotas compiled weeks, if not months, in advance. The efficacy of different shift patterns has never been fully tested but attempts at change can be frustrated by professional organisations and trade unions. These difficulties can arise from rigid contractual agreements or as a result of resistance to change where practice has become established by habit and custom over the years.

An example of the contractual problem given to the author was where, at times of staffing difficulties because of non-availability of staff, some nurses were able to negotiate very rigid contracts regarding the hours they would work, which, at times of greater availability, remained inflexible and thus reduced the managers' manoeuvrability in ensuring the most effective and efficient deployment and utilisation of staff. This type of issue is therefore a delicate management problem which can only be dealt with at local level, but there is a need for further study of the effectiveness of different shift patterns in meeting the needs of both patients and staff, and to relate this to cost, taking account of local constraints such as availability of public transport.

An additional difficulty in attempting to effect change, though again there is no evidence of documentation about it, concerns the entitlement to 'special duty' payments at certain times of the week. All nursing staff are paid at the rate of time plus one-third of their basic pay on Saturdays and from

8.00 p.m. till 6.00 a.m. on other week-days. On Sundays and public holidays, the entitlement is at time and two-thirds. In effect, therefore, a staff nurse who has two days off per week, works three weekends out of four and has two hours at enhanced rates on the evenings she works, will have an addition of almost 20% to her basic salary as a result of these enhanced payments. It is said that shift patterns in some areas are designed to ensure that all staff benefit equally from this additional revenue, so any alteration in the way in which shifts are organised can have an adverse effect upon the take-home pay of individuals who may have budgeted in their personal lives on the basis of the lead payment comprising an integral part of their salary. There is no easy solution to this problem but its existence does serve to highlight a constraint which may exist if a manager attempts to make change to ensure more effective and economic deployment and utilisation of staff. A problem which is further compounded for managers by their having no basis for financial bargaining as the salaries and conditions of service are negotiated and agreed on a United Kingdom basis with no facility for local initiative.

A further problem exists, particularly in the acute sector, where off-duty rotas are normally compiled at least two weeks in advance of the week to which they refer. The average patient stay in the acute sector is nine days and, as already discussed, the workload can vary markedly. It is therefore patently obvious that the marrying of particular staff to a

particular workload is impossible in advance and that any match between demand and supply will require adjustment on a day-to-day basis. It would be unrealistic to staff wards at all times in anticipation of maximum workload while, on the other hand, it would be undesirable to staff wards in anticipation of minimum workload. Staffing to the average would be the only practicable solution but this would have to be accompanied by some back-up facility for when demand exceeds the availability of staff. Whether this is best achieved by having a pool of nurses available regularly, or a bank to call on as required, or the use of agency nurses, is not known and further study is required in this area.

Conclusion

The framework proposed by Lynch offers an outline against which to analyse the existing situation with regard to nurse manpower planning in Scotland. The framework as a statement of specified aims is also a useful basis from which to develop a manpower planning system. However, to achieve this end, the framework must be constructed to take account of the organisation which it is to serve, which can only be done by describing the relationship of each of the component parts to each other and by identifying in considerable detail the information which will be required in each of the component parts. Analysis of the framework permits the determination of certain principles which should guide such development:

(a) the system developed for manpower planning in nursing should be conceptually sound so that any changes are changes in detail rather than in any fundamental aspect. Thus, for example, while the situation with regard to nurse learners may alter over time, the locus of nurse learners within the manpower planning system should not change though some of the details about them might;

(b) a nurse manpower planning system must be planned within the context of other related systems;

(c) isolated activities which address aspects of manpower planning cannot be said to be manpower planning per se;

(d) for the purposes of nurse manpower planning, each ward and department should be considered as a separate 'enterprise';

(e) the information about each 'enterprise' should be in a standard format so that compatibility will be assured and aggregation of information can be undertaken at any other level within the system, e.g. to hospital, Unit, Health Board or national level; and the activity of manpower planning should be undertaken at local Health Board level but within a nationally agreed standard system. Thus, while the data are standard, the management decisions made on local

data should be undertaken by local managers to reflect the strategic plans of that Health Board; and

(f) the manpower planning function at national level will include review of the Health Boards' strategic plans and identification of problems, e.g. of recruitment, which might be affecting all Boards.

Perhaps the most disconcerting aspect of the analysis of Lynch's framework as applied to the nursing service in Scotland has been the paucity of information about a resource which cost £442 million in 1984 and accounted for 51% of the salary component of revenue expenditure in the hospital sector of the NHS in Scotland. This, together with work which has been started but not taken to a conclusion, coupled with the ad hoc nature of much of the work which has been undertaken in the name of manpower planning, re-emphasises the need to develop a comprehensive approach which will facilitate the activity of manpower planning in nursing.

CHAPTER 5

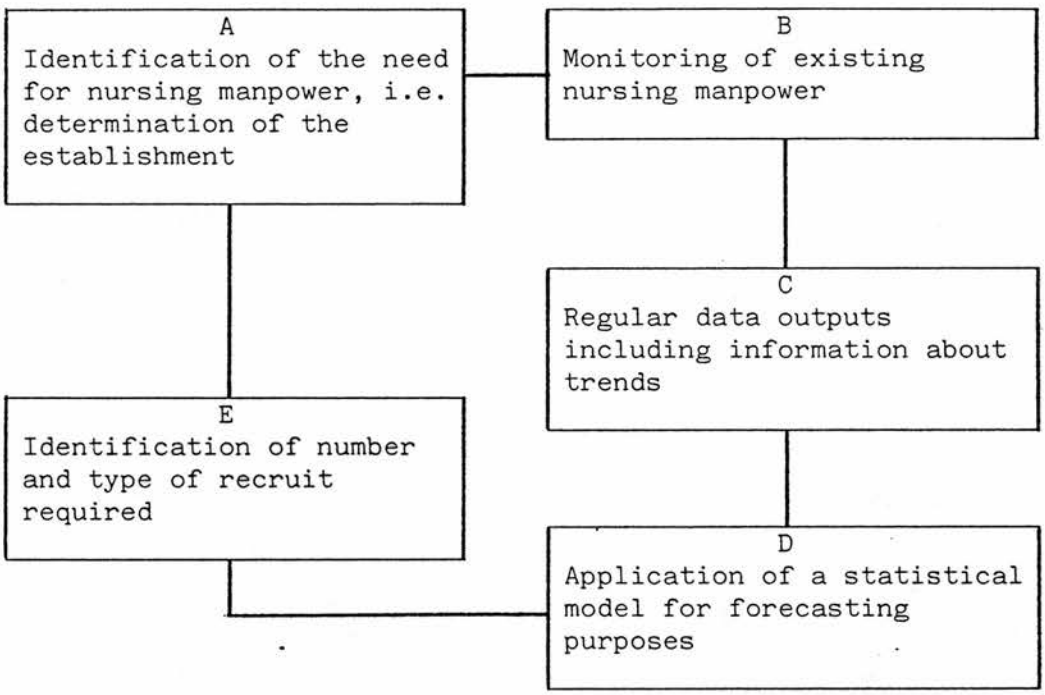
A Framework for Manpower Planning in Nursing in Scotland

INTRODUCTION

The main reason for developing a theoretical framework for manpower planning in nursing is to create an outline for the construction of a sound database of relevant information which can be interrogated to provide information which will facilitate planning and management of the nursing service in both the short- and the long-term to take account of strategic plans for the Health Service as a whole and for individual Health Boards. In addition, it will only be through the existence of such a database that meaningful monitoring of planning and management decisions can take place. It has been demonstrated that nursing is itself a series of 'parts' functioning alongside other 'parts' which together provide the Health Service in Scotland. To understand the relationships of the different parts will require that relevant sub-systems are identified before the detailed information necessary for the creation of the database and thus for manpower planning can be identified.

The first consideration from which other factors will emerge is the development by the author of a framework within which manpower planning can take place (see Figure 2, p.119). This framework will satisfy all the components of Lynch's definition apart from the local management issue of ensuring effective deployment and utilisation of staff on a daily basis.

Figure 2. The framework for manpower planning in nursing

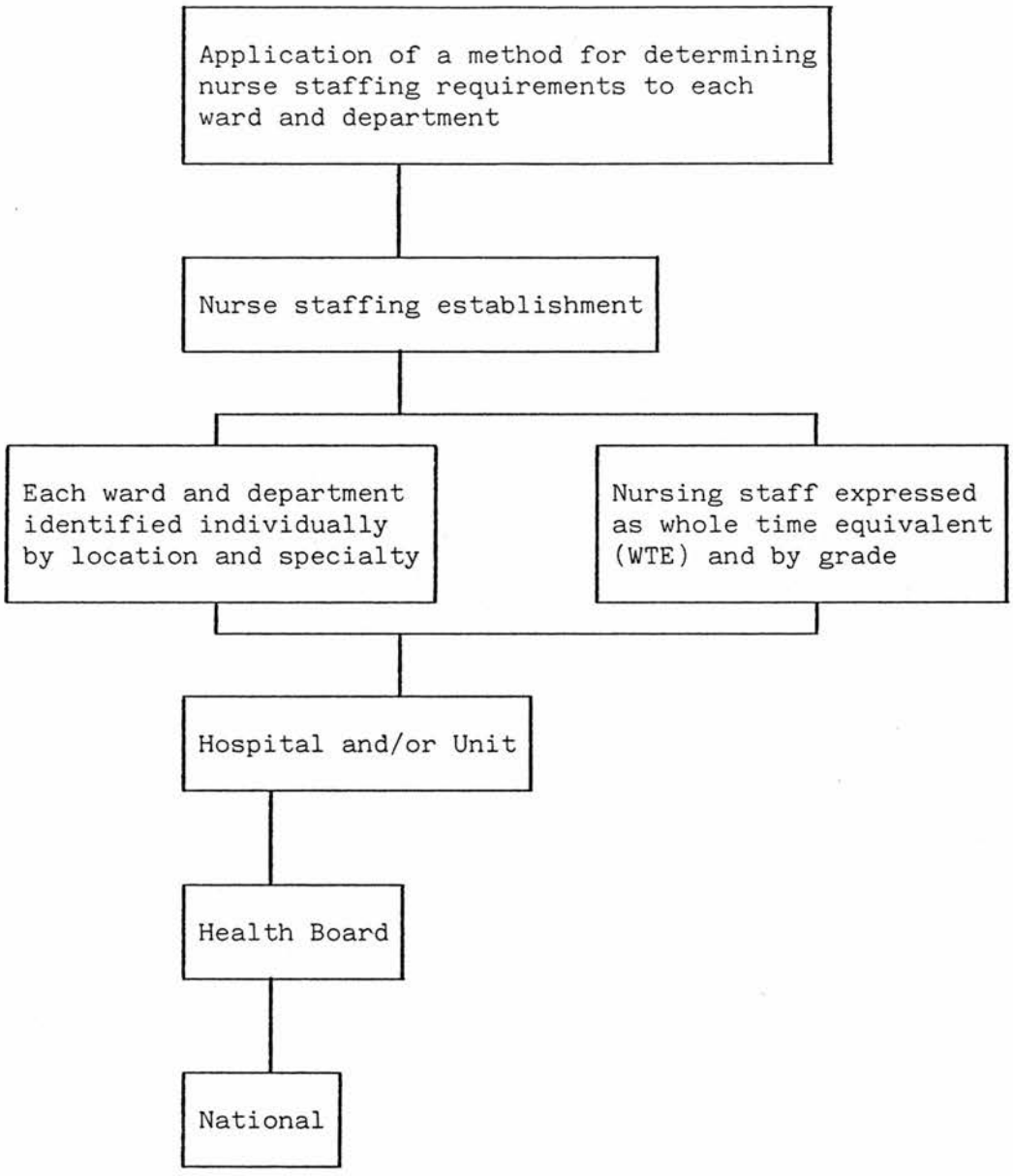


Each of these five components which together describe a cycle for manpower planning in nursing can be considered individually as a basis for determining in greater detail the information which will be required to ensure that manpower planning can take place. In addition, any further detailed work which is necessary to answer specific questions will be identifiable within one of these components and, provided this is done, a functioning system for manpower planning, if it cannot be developed in total in the first instance, can be created incrementally. Each of the components in Figure 2 will be discussed separately in the following sections.

IDENTIFICATION OF THE NEED FOR NURSING MANPOWER

The concepts of need and demand are difficult in the Health Service - whose need and who is making the demand? As previously discussed, the absence of qualitative measures of outcome is a serious defect in being able to measure and match the quality and quantity of nursing required by patients with the quality and quantity of nursing staff required. This cannot be resolved in the short-term; therefore some assumptions will have to be made which may be open to criticism in theory but which nonetheless must be made to permit work to proceed without unnecessary delay. Despite this acknowledged limitation, and whilst work on the development of other components may proceed at the same time, it is suggested that the basis of any manpower planning exercise is the application of an agreed structured method (which has as much objectivity as current knowledge will permit) for identifying the nurse staffing requirements in every hospital ward and department. The wards and departments should be described individually within an agreed range of specialties by hospital and Health Board, with the staffing requirement being expressed as a whole time equivalent by staff grade and work location, that is each individual ward or department. Using the ward or department as the base, it will then be possible by means of a coding structure to aggregate this information to any level in the service (see Figure 3, p.121). The need for coding and explicit definitions as a means of facilitating aggregation will permeate the whole exercise.

Figure 3. Structure of potential data flow of information about nursing staff



Definition by specialty for each ward and department is required for a variety of reasons. As already stated, basic nurse training leads to a qualification to practice in one of four major specialty areas: general; mental illness; mental handicap; and sick children. If any qualified general nurse

wishes to work as a midwife, she must undertake a further period of statutory training. Information about clinical areas which are sub-divided into these five major groupings is therefore essential in respect of determining the number of learners who have to be recruited to the different types of training.

These wide groupings, however, hide many relevant sub-groups. For example, in mental illness there are three quite distinct categories - acute psychiatry, long-stay psychiatry and care of the mentally infirm elderly - and each of these areas might have quite different manpower problems. In the general area there are many sub-divisions and perhaps the extremes of the intensive therapy unit and care of the physically frail elderly serve as examples of the diverse nature of work undertaken within the general field. Little is known about the characteristics of staff in the different sub-specialties; for example, do some of the sub-specialties have chronic difficulty in recruiting staff or do others have a high turnover? An understanding of the dynamics of staff movement in the different sub-specialties is an essential prerequisite for both manpower planning and management. While additional statutory qualifications are not required by staff to work in the sub-specialties, some post-basic courses are available, for example care of the elderly, and some press advertisements are now appearing stating that possession of a certificate from a particular post-basic course would be desirable. It seems reasonable to assume that demands for additional preparation will increase rather than diminish as a

requirement for employment in some situations. Therefore the application of manpower planning techniques will be necessary to determine, for example, the number of training places which will be required on different types of post-basic courses each year. In addition, the clinical areas which constitute the SHAPE priority categories need to be known for monitoring purposes. The ascription of a specialty label to each ward and department will yield information necessary for all these purposes.

It is suggested that the specialties listed in the Scottish Health Statistics would offer a viable outline upon which to develop the necessary coding structure and would have the added advantage of being compatible with information already used for another purpose. Using these specialties, it would be possible to aggregate them into broader groups relating to major areas of nurse training and by SHAPE category (see Appendix V, p.179). This suggestion is made, however, on the basis of two assumptions which would have to be tested:

(a) that the majority of wards are in fact identified by these broad specialty groups; and

(b) that the majority of nursing staff (excluding learners) move, if they move at all, within specialties and not between specialties as a routine aspect of their employment.

If these two assumptions are shown to be correct the proposal as made would be an appropriate means for incorporating specialty information about nursing staff in hospital into the manpower information system.

MONITORING OF EXISTING MANPOWER

Attempts have been made on an ad hoc basis to monitor staff movement and some other aspects from data available at present, but if this monitoring is undertaken outwith knowledge of the establishment and information about work location and specialty, the output will be incomplete and may be of limited value. Before being able to determine the details required about staff which have to be monitored there is a need to understand the purpose for which the information is being sought.

The basis for this is the determination of the nursing establishment as located in Figure 2 (p.119). Using this approach, the number of staff required and expressed as WTE and by grade is implicitly the number deemed necessary to provide an acceptable standard of care. If establishment in this context is equated to 'demand', then the activity of monitoring is going to focus on the 'supply', that is the staff, with a view to being able to relate 'supply' and 'demand' to each other. Assuming then that 'demand' is expressed as establishment, the information about 'supply' which will permit monitoring falls into three distinct categories:

(a) The availability of staff. Identification of staff in post is not the sole measure of manpower input to the nursing service. The number of hours of overtime worked and expressed as a whole time equivalent has to be known by location, specialty and staff grade. Similarly,

the contribution of bank nurses and agency nurses should also be described. Only with this additional information is it possible to identify the total availability of the nursing hours.

(b) The non-availability of staff. No member of staff will be available all of the time. All staff have annual leave and staff will have varying amounts of sick leave, study leave, maternity leave and so on. Essentially therefore for manpower planning purposes, there is a need to know by WTE, grade, location and specialty, the amount of time that staff are not available. This information will have a direct effect upon the setting of establishments as in all known structured methods for doing this there is an add-on allowance for non-availability. Many use the figure of 20% as being a satisfactory addition but, to be strictly accurate, the figure used should be the one which is relevant to the area for which the establishment is being determined. A difference of even 1% with a total staff of 60,000 would be 600 staff or approximately £3,600,000. So if the actual allowance figure should be higher or lower than 20%, there will be consequent effects on patient care if the the allowance is too low and on cost

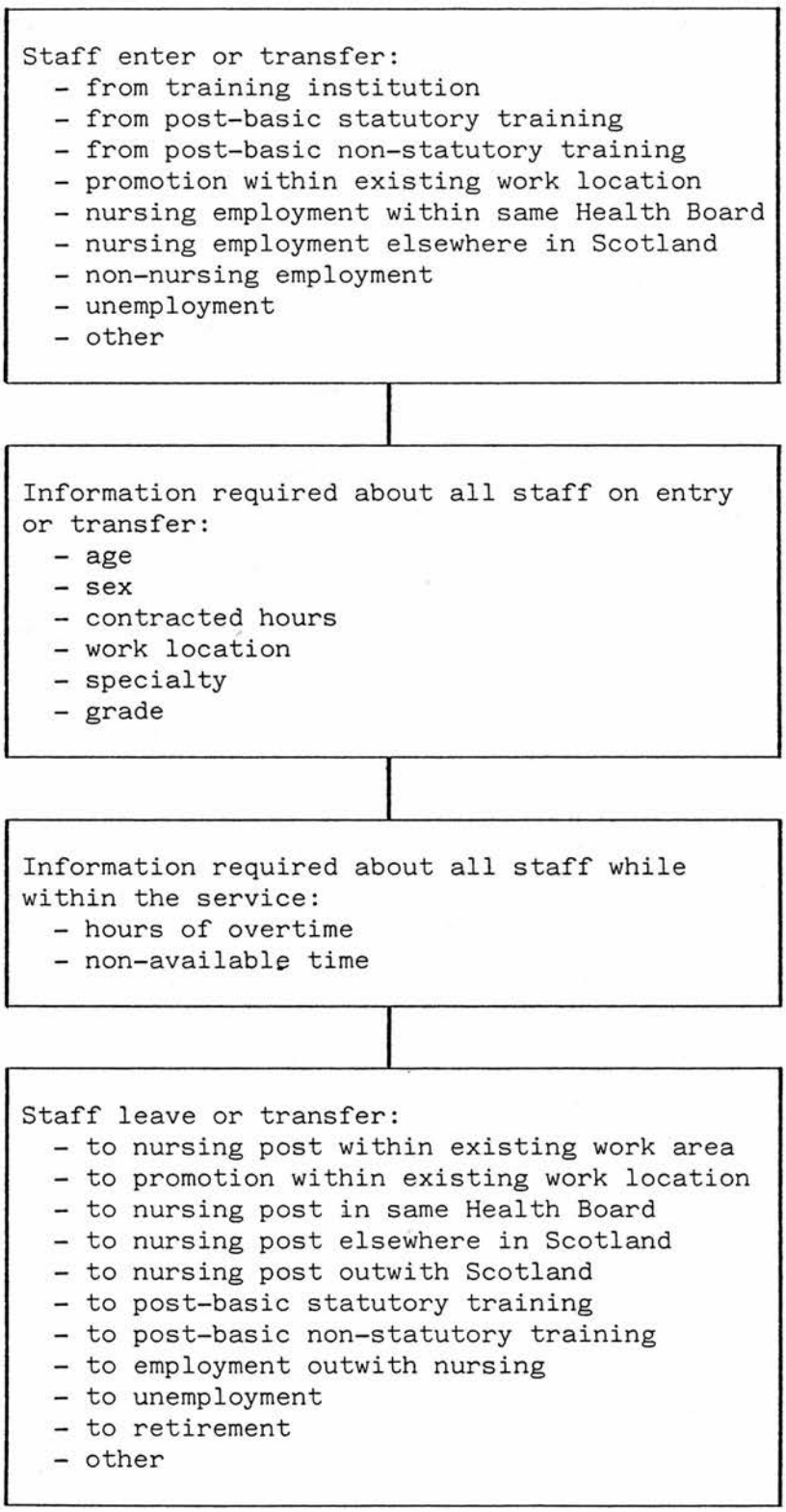
if the allowance is too high. It could be argued that perhaps over the country the effects average out but lack of information denies a facility to test out this assumption. In addition, a national average will hide local variations which will detract from the efficacy of manpower planning at local level.

(c) Movement of nursing staff. The nursing workforce is not static; therefore detailed knowledge about staff movement will be required if reasoned management decisions are to become possible. For example, contemplating the opening of additional hospital facilities with documented evidence that over a given period staff in certain grades have left at higher rates than they have joined would indicate that in the absence of some additional recruiting drive or whatever, either the new facility cannot open or it will open at the expense of other existing facilities. Knowledge of this movement into, out of, and within the service is therefore essential. Further movement which has to be identified concerns that between grades. For example, it is likely to be from the ward sister/charge nurse grade that tutors and managers will be recruited and it will be from those who are registered on the general part of

> the register that health visitors and district nurses will normally be recruited. All these, and other different grades will have to be separately identified so that the movement and effects of the movement can be described.

Information is therefore required in considerable detail about these three areas and an example of the type of information which will be required for each employee is given in Figure 4 (p.128) relating to permanent staff. It will be noted that qualifications are omitted from the information outlined in the figure. The reason for this is that with appropriate coding, information about grade and specialty can equate to qualification for most manpower planning activities. For example, someone employed as a staff nurse in one of the general sub-specialties can be assumed to be a registered general nurse; and someone employed as a staff nurse in mental illness can be assumed to be a registered mental nurse. The specialties of mental illness, mental handicap, sick children and the general areas all require a specific qualification which is not interchangeable between the major groups. Of course a nurse working as a staff nurse in mental illness may also be a registered general nurse and while this information may be necessary at some stage, it is suggested that it should be contained within a personnel system rather than being an integral part of a manpower planning system at the initial stages of development.

Figure 4. Information required about all permanent staff



Some further additional material might be deemed to be necessary in respect of certain items of information. For example, with regard to promotion it is obviously going to be necessary to know what that promotion is, but the method of obtaining this information will be dependent largely upon the mechanics of whatever system is adapted/introduced to handle the data, that is it may be from information recorded on entry/leaving or from grade code and time in post. Further more explicit detail will therefore only be identifiable once the outline of the system to be used has been agreed.

Information about the learners will require the development of a similar kind of information structure, but again the details should be addressed later. For example, in Figure 4 there is a reference to post-basic training and the final solution may rest in either bringing together information about all staff or, alternatively, permanent staff and staff undertaking basic or post-basic training may be separated. What will be required, however, will be the determination of a minimum data set with standard definitions and a standard input document to meet the data requirements for monitoring on the basis of that outlined in Figure 4. Also, if different systems are to be used for permanent staff, casual staff and learners, they must be constructed in such a way as to allow data from each system to be used by the other systems. Only in this way will it be possible to obtain a complete picture of the workforce.

REGULAR DATA OUTPUTS INCLUDING INFORMATION ABOUT TRENDS

The outline of information needed for manpower planning has been identified in the previous sections. This information is only valuable, however, if it serves a purpose and in the context of manpower planning the purpose may be described in the context of outputs from the system which handles the information.

Two fundamental principles must permeate discussion about outputs:

(a) The information required for manpower planning will be created from information about staff in each individual ward and department. Outputs should therefore be available at individual ward level and at every management level above this. The degree of detail and frequency of output will vary depending on the management level concerned. For example, it may be desirable to have named data at ward and/or hospital level, depending on the size of the particular hospital, and to have the output monthly, whereas at national level the need will be for aggregated data, perhaps on a three- or six-monthly basis. Named data would not normally be a requirement for manpower planning purposes, but a major advantage of providing this at local

level is that errors can be identified and rectified. As these are the data from which aggregates will be generated, maximum accuracy must be assured.

(b) Great care must be taken not to try to make the system do too much. Even if it were feasible in terms of resources, the amount of paper generated could be such that it would become more of a nuisance than a benefit. Only minimum output requirements should be identified in the knowledge that ad hoc study to answer more specific questions is possible if the database is sound and that, as a result of experience, local users may request additional outputs. Provided the correct minimum data are available, future possibilities are considerable.

Combining all the issues discussed to date it would be possible to describe in simple terms the information requirements about each individual ward and department from which aggregation will be possible and upon which manpower planning can take place. Essentially there has to be knowledge about the nursing establishment; about the location and specialty of each ward and department; and about staff availability, non-availability and movement.

Within such a structured system where each item of information could be considered as an index, it then becomes possible to analyse the information to yield outputs using

whichever index is wanted. Unfortunately, this could become very complicated if done on a routine basis and bearing in mind the feasibility of ad hoc study provided the information base is sound the routine monthly output should contain the following information:

(a) location to which output refers;

(b) the establishment (funded) by whole time equivalent and grade;

(c) staff in post by number, whole time equivalent and grade;

(d) staff joining during period by number, whole time equivalent, grade and source from which joined;

(e) staff leaving during period by number, whole time equivalent, grade and destination on leaving, e.g. to further training, giving up work, to private sector, etc.;

(f) number of hours worked during period expressed as whole time equivalent and including overtime and hours worked by agency or bank nurses, all expressed by grade; and

(g) amount of time staff are not available and the reasons, expressed as whole time equivalent and by grade.

This information should be presented on a monthly basis but also containing cumulative information, probably related to the financial year. It would be desirable for other relevant

information from other systems to form an integral part of this routine output; for example, the budget, actual and anticipated expenditure and balance.

Initial discussions about the potential availability from existing systems of some of the items of information identified as being necessary took place in 1983/84. The potential sources identified then were Payroll, the Personnel Information System being developed in the West Coast Information Services Consortium, Financial Management System and the National Manpower Statistics System, and the availability of the information from these systems is summarised in Appendix VI (p.181). Agreement in principle has been reached about the inclusion of work location, specialty and unit of nursing management in the Payroll, but no management action has been taken to determine the detailed content or mechanism for inputting the information. If any of the existing systems are to be considered as the source of information to facilitate manpower planning in nursing further discussion will be required once the definitive information needs have been determined and agreed.

In addition to a routine monthly output, an annual summary should be available with the information presented by specialty. For Health Boards this would be by hospital, and nationally as a standard routine publication this information should be available by Health Board. The annual summary should also contain information about the age and turnover of staff, identification of change from previous year(s) and a summary of trends over recent years.

APPLICATION OF A STATISTICAL MODEL FOR FORECASTING PURPOSES

If the database is sound, all the information required for any forecasting exercise will be available, though not necessarily identified as a routine return. This would be the subject of a separate annual output following application of a suitable computer program. Such a computer program should be designed to be user friendly and incorporate a facility for interaction with the user. For example, it should be possible to interrogate the data with 'what if' questions, such as "What happens if a particular training programme were to be terminated?", and the output from this should be expressed either as a consequent staffing need or as the effect upon the service. Such a program should be applicable to both Health Board and national data.

IDENTIFICATION OF THE NUMBER AND TYPE OF RECRUITS REQUIRED

If all the information as has been described were available, it should be possible to determine the number of recruits at either basic or post-basic level required by whole time equivalent, by grade, by specialty and by work location. Any chronic or emerging problem associated with any of these areas should be identifiable from the routine outputs when plans for action to rectify them can be developed. It is known, for example, at this time that there is a problem of recruitment at basic, and consequently at post-basic, levels in

the mental handicap and mental illness fields. Similar difficulties may also be experienced in some of the other sub-specialties but this is not known at this time because the data from these sub-specialties are not separately identified. In addition to determining the existence of problem areas, the main advantage of routine standard outputs is to permit monitoring of the effectiveness of management action and to guide future management decisions.

The whole question about determination of the number of recruits for basic training is one which needs to be addressed. It would be hoped that ultimately a means can be found for being able to relate the number of recruits required to the level of qualified staff identified as being necessary, but much further work is needed in this area. It is of particular concern to note the population projections for school leavers (see Appendix II, p.158), but this fall is also accompanied by a rise in other age groups. It is of paramount importance therefore that some means are found to monitor routinely the possible effects of this. The forecasting model eventually developed should create a good basis upon which management decisions can be taken.

SUMMARY

An attempt has been made in the foregoing sections to outline the rationale of manpower planning in nursing. While further work requires to be undertaken in some areas, the fundamental needs of any manpower planning system in nursing can be summarised as follows:

(a) agreement is required about the outputs necessary for manpower planning purposes;

(b) agreement must be reached about the concept of standardisation in relation to minimum data sets and explicit definitions;

(c) structured information is required about establishments, which can be said to be 'demand';

(d) structured information is required about staff, which can be said to be 'supply'; and

(e) a mechanism needs to be established for collecting, collating and sorting the foregoing information.

Only if these conditions are met will manpower planning become feasible.

INTEGRATION WITH OTHER SYSTEMS

Much of the information which is needed for manpower planning will also be needed for other systems, for example Payroll. While some aspects of manpower planning would be possible in a manual system, provided the data are suitably described, there can be no doubt that effective and comprehensive use of the data will only become a reality with computer assistance. The numbers of staff; the different grades; the different work locations and specialties; and the need for data about, for example, the non-availability of staff, all combine together to create a very complex situation

yielding large volumes of data. It will only be through the application of the unique facilities offered by the computer that maximum benefit will accrue. In recognising that it may be some time before such resources are available to all, data organisation and structure should nonetheless be addressed as a priority because, even for manual handling, the same data organisation and structure will be required, though the ease of handling the data and the potential analysis of the data will be severely limited in a manual system.

Integration of a nurse manpower planning system with other systems should be a goal. Full integration with other systems may not occur in the short-term but the desirability of such an outcome should be central to any further work and planning. An outline of possible linkages is shown in Figure 5 (p.138). Each of the areas referred to in this figure are at some stage of independent development within the Scottish Health Service apart from that entitled 'nursing administration'. Much of the information used in the present Payroll and Financial Management System, for example, originates from the local nurse manager who completes the starting, transfer and leaving forms about staff and, in addition, generates the information about staff absences. In doing this however, the local nurse manager, in most situations, gets very little feedback in any collated summary form from the information which she has dispatched. What little information she receives is often retrospective by a number of weeks — which might be of some value to managers at Health Board level but which cannot be said to be of value

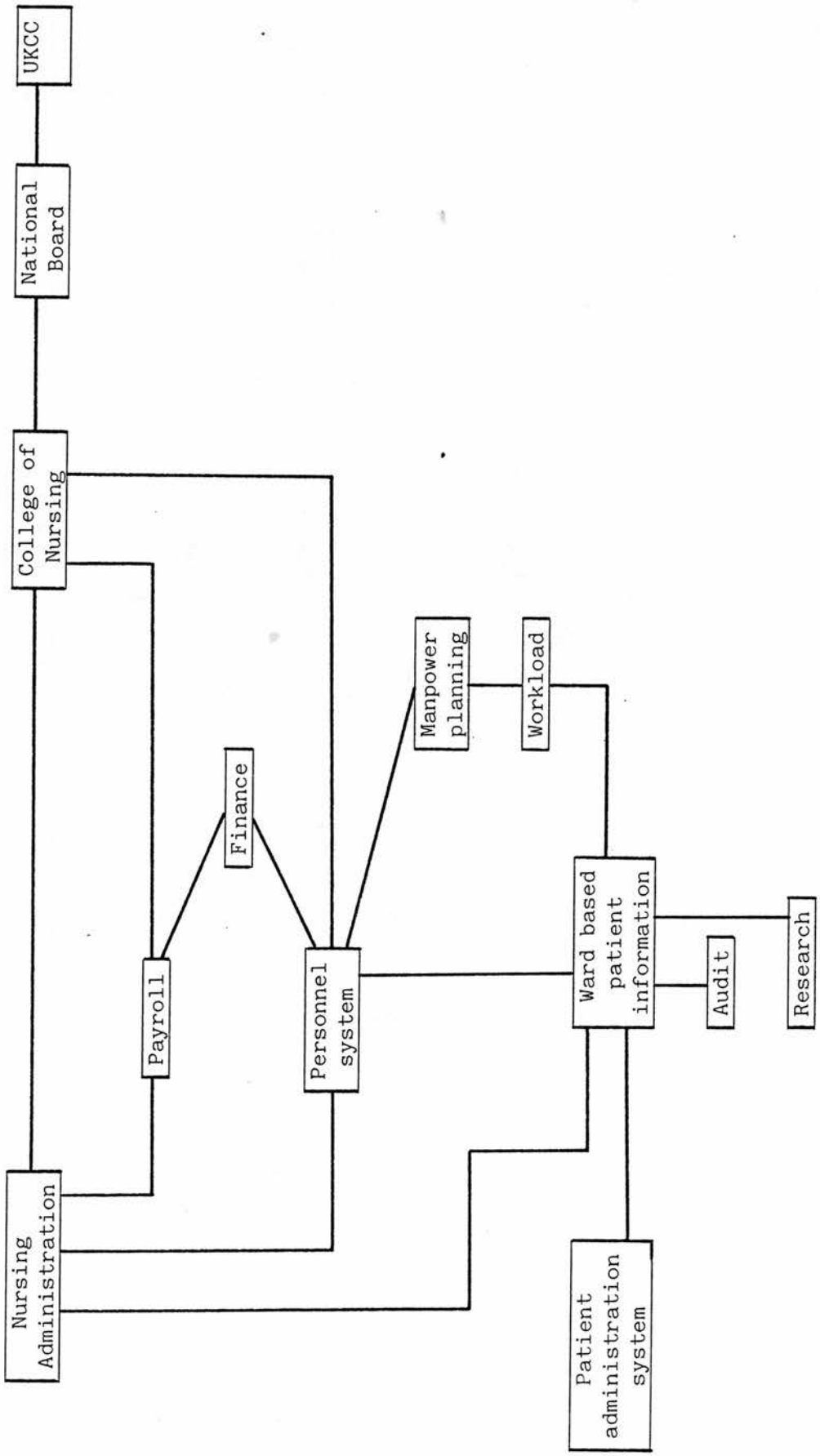


Figure 5. **Relationship and linkages of systems for the management of the nursing service in the future**
(From paper given by the author at the Annual Conference of Chief Area Nursing Officers in Scotland, June 1984)

to local managers. The information which will form the basis of manpower planning is going to flow from the local manager and must be made to be useful to her. This may mean the need to develop a locally-based computer system which will permit data entry to feed other systems, but which will also have an interactive facility for immediate feedback of updated information to the local manager. Only then will the information requirements of local managers be met.

Because so much of the information which is the base of other systems emanates from the local manager, a possible mechanism for improving the quality of information has been agreed by Chief Area Nursing Officers (see Appendix VII, p.190). It is considered that if the detailed information necessary for manpower planning and the other systems can be determined, restructuring and standardisation of the starting, transfer and leaving forms could be the basic input document for all these systems.

In considering this issue another important point emerges. At present the data which yields the only manpower information which is available is a by-product of another system, that is Payroll. Apart from the inherent time delay of using this source and the disadvantage of having only 'snapshot' information, there is the question about how much more information the Payroll can accommodate before it becomes corrupt. If manpower planning in nursing is indeed to become a reality in Scotland, any compromise on the detail of data will

result in compromise of the output which, in turn, could restrict the usefulness and value of the information for manpower planning purposes in direct relation to the amount of compromise reached.

Ultimately it will be for managers to recognise the importance of undertaking effective manpower planning in nursing and to make available the resources which will be required to accomplish this significant management activity. Technology now offers a vehicle for this operation but its implementation must also be accompanied by understanding, goodwill and effort if the supply of nursing staff is to meet the demand for nursing to ensure that an acceptable standard of nursing is to be practised at all times and in all places within the Health Service.

CHAPTER 6

Conclusions and Recommendations

It has been demonstrated that there is a paucity of information about the nursing workforce in Scotland, a workforce which accounts for a large proportion of the revenue expenditure in the NHS. What constitutes an acceptable standard of care has not been identified; the numbers of staff required to maintain an acceptable standard is not known; the optimum mix of staff has not been determined; and the number of recruits to training needed to maintain the stock of qualified nurses is not known.

While the focus of this thesis is centred upon the need for manpower planning and how it may be accomplished, many other issues have been identified as being pertinent to any consideration of the provision of a nursing service: the role of nursing; the role of qualified nurses; and manpower management, including conditions of work, shifts, etc. This finding is not surprising and confirms the need for a comprehensive review of the organisation as a vital element to the establishment of a manpower planning system.

Difficulties of measurement of the output from a health care system have been identified and the problems of determining quality acknowledged. While in the short-term information may be quantitative, there is a need to develop indicators of quality. It is inevitable that a manpower planning system will deal mainly with numbers, but these numbers should be a reflection of quality. For example, in a manpower planning system the number and grade of staff required will be expressed numerically but the method used to estimate

the staffing levels should be founded firmly in a qualitative approach.

It has been advocated that a systems approach is an appropriate way of identifying the relevant 'parts' of any sub-system and of describing the relationships of the sub-systems to each other. From this basis it has been possible to analyse the existing situation in regard to manpower planning in nursing and to identify gaps. It has also been possible to describe the different components of a manpower planning exercise and, from this, to develop a framework within which manpower planning in nursing may be undertaken.

It is acknowledged that computer assistance will be required if a comprehensive manpower planning system is to be developed and that much of the information needed for manpower planning will also be required for other purposes. Integration of the various computerised systems is necessary and introduction of the concept of database will overcome any need for multiple data entry of essentially similar information. The promotion of such a system on a national level requires agreement on minimum data sets and standard definitions.

Manpower planning does not of itself make decisions, but it will provide information which will enable managers to make decisions and will also provide a mechanism for monitoring such decisions. Any system developed should be simple to use at all levels, and it is essential that potential users contribute to the development so that the information generated will be of value to them. Failure to involve users could lead to a lack of

commitment on their part to use the system, in which case the information would not be accurate and its usefulness diminished which would undermine the whole exercise. Tricker (1982) has suggested that "technology has run ahead of management's ability to use it" (p.1). Managers should not need to be technical experts, but they should be computer literate to be able to understand the potential which the technology offers. It is unlikely that a perfect and comprehensive system could be created at the first attempt. It is suggested, however, that if the framework identified and the principles enumerated in this thesis were used, an outline system could be developed and any changes in the future would be changes in detail. In other words, if the principles promulgated were introduced, enhancements should be at the level of increasing detail rather than of a fundamental restructuring of the system itself. For example, to know the number of people, and their grades, leaving the service would be a major step forward on its own and if a broad category to reflect this were introduced this would be progress. Over time, however, it would be hoped to introduce sub-categories to reflect reasons for leaving. Obviously it would be desirable to incorporate this information from the outset but it is given as an example that implementation of the framework could start at a fairly broad level and be taken eventually to lower levels of detail by the development and enhancement of sub-categories.

An important aspect of manpower planning is forecasting, which will rely in part at least on trend data. It is obvious

therefore that any fundamental change in the structure of the system would compromise trend data and thus reduce its value in forecasting. Development of more detail within specific category heads would not lead to compromise and would indeed increase the value of the information.

The predicted drop in school leavers (see Appendix II, p.158), the traditional source of the majority of entrants to nurse training, gives cause for concern and underlines the need to introduce a system for effective manpower planning as soon as possible. The introduction of such a system to the Health Service in Scotland will be dependent on many factors. Do managers recognise the need for such a system? Do they fully understand what effective manpower planning is and recognise all the elements which have to be considered in a consistent manner? If managers do not recognise any need for manpower planning their commitment will not be forthcoming. And even if they do recognise the need for it, the resources required may not be readily available to develop the software and purchase the necessary hardware. Much negotiation will be necessary to introduce an effective system which should, in turn, be the key to providing information necessary for decisions about manpower which, in a labour intensive industry, will itself be the key to the delivery of a service of acceptable quality now and in the future.

In conclusion, the objectives of this work, as outlined on page 7, have been achieved. The purpose of manpower planning and how it relates to the nursing service in the hospital

sector of the NHS in Scotland have been described; the aspects about which information for manpower planning will be required have been described; and a framework within which manpower planning should take place has been developed. In addition, the areas where further empirical study is needed have been identified as follows:

(a) the determination of a means for identifying standards of nursing required by and delivered to individual patients;

(b) the determination of a means for relating the number of nursing staff required to achieve the required standard for individual patients;

(c) the determination of a means for relating the nursing needs of patients to staff numbers;

(d) there is a need to develop performance indicators for application to the nursing service which will measure quality as well as quantity;

(e) studies are required to determine the best means for temporarily augmenting permanent staff when demand exceeds supply, e.g. whether to use bank nurses, agency nurses, or to establish a 'pool' of staff;

(f) studies are required to find a means for determining the appropriate 'mix' of staff in different clinical specialties;

(g) there is a need to determine a method for reflecting accurately the contribution of nurse learners to the overall nursing workforce;

(h) a review is required of the allocation of learners to the clinical areas to see if the aim of the new scheme of training to reduce fluctuations has been achieved;

(i) studies should be conducted to determine the career pathways of nurses on completion of training and to ascertain more about qualified nurses who are not working;

(j) there is a need to describe in detail the information which would be required for inclusion in statistical models for forecasting purposes;

(k) a statistical model to determine the number of nurse learners required to maintain the appropriate number of qualified staff needs to be developed; and

(l) examination of the shift system and determination of constraints in altering them is necessary.

Only when the theoretical framework outlined in this work has been introduced; questions of the nature described have been answered; and other aspects of organisation addressed, will it be possible to undertake effective manpower planning.

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APPENDIX I

A Strategy for the Development of a System for Nursing Manpower Planning in the National Health Service in Scotland

SHHD/DGM(1986)24

Scottish Home and Health Department

St Andrew's House
Edinburgh EH1 3DE

Telephone 031-556 8501
ext
alternative ext
GTN 2034
Telex 72202

Health Board General Managers
General Manager, Common Services Agency

Your ref

Our ref NNU/7/9

Date July 1986

Dear General Manager,

I enclose for your attention a copy of a report "A Strategy for the Development of a System for Nursing Manpower Planning in the National Health Service in Scotland" prepared by Miss Margaret Clark, a Nursing Officer in the Department with responsibility for nursing manpower. The report has been adopted by the Nursing Manpower Steering Group which is looking in detail at the essential issues of manpower planning to be practised in Scotland. The paper does not attempt to address the issue of manpower modelling.

An additional 2 copies of the report are enclosed and I would be grateful if you would pass 2 copies to the Chief Area Nursing Officer. Further copies may be obtained from the Scottish Office Library Publications Section, Room 2/65, New St Andrew's House, Edinburgh EH1 3SX (Miss Fisher Ext 5901) price £3.00.

Yours sincerely,

B C S SLATER
Director
Scottish Health Service Planning Unit

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APPENDIX II

Population Projections

POPULATION PROJECTIONS. MID 1983 BASED. (SOURCE - GOVERNMENT ACTUARY DEPARTMENT)

TABLE 1

Projected population of females by age last birthday

Age last birthday	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
17	43399	43653	43335	42013	40614	40186	38003	34801	32333	31604	30770	28032	28466	30172	31611	32090	31351	30531	29958	30057	30786
18	45280	43408	43662	43344	42023	40625	40197	38015	34814	32347	31618	30784	28047	28481	30186	31625	32104	31365	30545	29973	30072
19	45198	45214	43343	43597	43279	41959	40561	40133	37952	34752	32286	31558	30724	27988	28422	30126	31565	32044	31305	30485	29913

Percentage change each year from 1983 baseline
Age last birthday

17	-	+0.6	-0.1	-3.2	-6.4	- 7.4	-12.4	-19.8	-25.5	-27.2	-29.1	-35.4	-34.4	-30.5	-27.2	-26.1	-27.8	-29.7	-31.0	-30.7	-29.1
18	-	-4.1	-3.6	-4.3	-7.2	-10.3	-11.2	-16.0	-23.1	-28.6	-30.2	-32.0	-38.1	-37.1	-33.3	-30.2	-29.1	-30.7	-32.5	-33.8	-33.6
19	-	NIL	-4.1	-3.5	-4.2	- 7.2	-10.3	-11.2	-16.0	-23.1	-28.6	-30.2	-32.0	-38.1	-37.1	-33.3	-30.2	-29.1	-30.7	-32.6	-33.8

Percentage change each year for the combined ages of 17, 18 and 19
Age last birthday

17 + 18 + 19	-	-1.1	-2.6	-3.7	-6.3	- 8.3	-11.3	-15.6	-21.5	-26.3	-29.3	-32.5	-34.8	-35.3	-32.6	-29.9	-29.0	-29.8	-31.4	-32.4	-32.2

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POPULATION PROJECTIONS. MID 1983 BASED. (SOURCE - GOVERNMENT ACTUARY DEPARTMENT)

TABLE 2

Projected population of males by age last birthday

Age last birthday	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
17	45339	46135	45331	44572	42679	42475	39678	37251	34496	33378	33078	30174	30028	32589	33485	34407	33144	32658	32060	32166	32940
18	47690	45206	46001	45198	44440	42550	42346	39552	37128	34377	33260	32960	30060	29914	32472	33367	34288	33027	32541	31944	32050
19	46761	47504	45023	45817	45016	44259	42371	42168	39377	36957	34209	33094	32794	29898	29752	32307	33201	34121	32862	32376	31780

Percentage change each year from 1983 baseline
Age last birthday

17	-	+1.8	NIL	-1.7	-5.9	- 6.3	-12.5	-17.8	-23.9	-26.4	-27.0	-33.4	-33.8	-28.1	-26.1	-24.1	-26.9	-28.0	-29.3	-29.1	-27.3
18	-	-5.2	-3.5	-5.2	-6.8	-10.8	-11.2	-17.1	-22.1	-27.9	-30.3	-30.9	-37.0	-37.3	-31.9	-30.0	-28.1	-30.7	-31.8	-33.0	-32.8
19	-	+1.6	-3.7	-2.0	-3.7	- 5.4	- 9.4	- 9.8	-15.8	-21.0	-26.8	-29.2	-30.0	-36.1	-36.4	-30.9	-29.0	-27.0	-29.7	-30.8	-32.0

Percentage change each year for the combined ages of 17, 18 and 19
Age last birthday

17 + 18 + 19	-	-0.7	-2.5	-3.0	-5.5	- 7.5	-11.0	-14.9	-20.6	-25.1	-28.1	-31.2	-33.6	-33.9	-31.5	-28.4	-28.0	-28.6	-30.3	-31.0	-30.8

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TABLE 3

Percentage change in 5 year age bands
from 1983 baseline figures
Females only

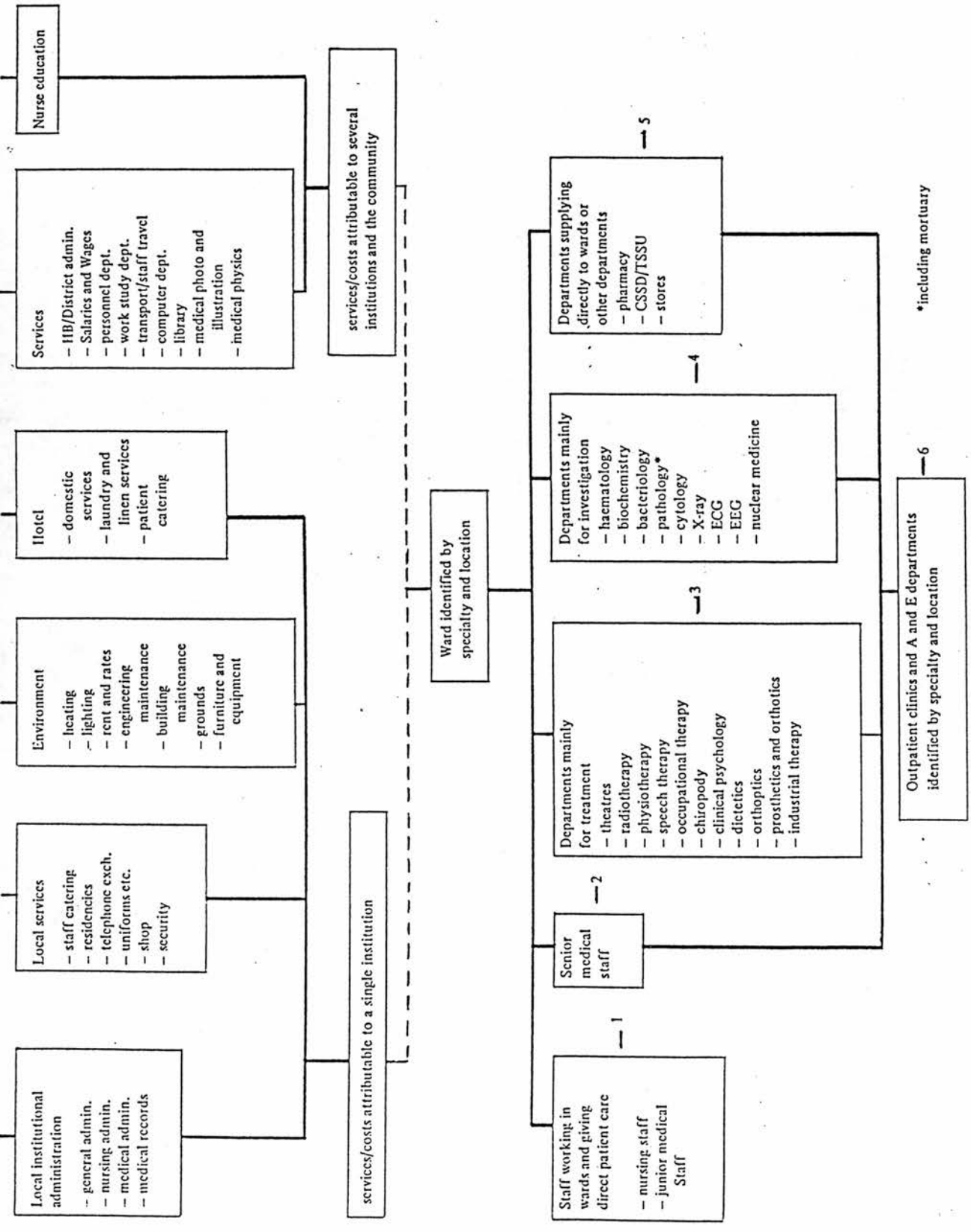
Age last birthday	20-24	25-29	30-34
Base No in 1983	210992	182307	171210
% change in following years			
1984	+ 1.7	+ 1.5	- 1.1
1985	+ 3.3	+ 3.2	- 1.4
1986	+ 3.3	+ 5.3	- 1.1
1987	+ 3.1	+ 7.4	+ 0.3
1988	+ 2.4	+ 9.4	+ 1.7
1989	+ 0.8	+ 11.3	+ 3.3
1990	- 1.4	+ 13.2	+ 5.1
1991	- 2.9	+ 13.2	+ 7.3
1992	- 5.5	+ 13.0	+ 9.5
1993	- 9.6	+ 12.2	+ 11.7
1994	- 14.2	+ 10.4	+ 13.8
1995	- 18.4	+ 7.9	+ 15.8
1996	- 22.9	+ 6.1	+ 15.7
1997	- 27.6	+ 3.0	+ 15.5
1998	- 30.6	- 1.7	+ 14.6
1999	- 31.6	- 6.9	+ 12.8
2000	- 31.6	- 11.9	+ 10.1
2001	- 31.0	- 17.0	+ 8.2
2002	- 29.4	- 22.5	+ 4.9
2003	- 28.4	- 25.9	Nil

APPENDIX III

Diagram of Grouping of Hospital Departments

DIAGRAM OF GROUPING OF HOSPITAL DEPARTMENTS

Source: Ward Data: A Report by the Scottish Health Information Feasibility Study Committee of the Information and Computer Services Advisory Group



APPENDIX IV

Learner Allocation to Wards in Acute Hospitals in Glasgow to Comply with Training Requirements as Laid Down by the General Nursing Council for Scotland - 1976

LEARNER ALLOCATION TO WARDS IN ACUTE HOSPITALS IN GLASGOW TO COMPLY WITH TRAINING REQUIREMENTS AS LAID DOWN BY THE GENERAL NURSING COUNCIL FOR SCOTLAND - 1976

In October 1974 an enquiry regarding nurse staffing shortages in Glasgow was carried out, the results being based on subjective observation rather than being formed by using any objective method. At that time it was reported that the fluctuation in numbers and grades of learners to the different clinical situations was a major aggravating factor in staff shortages and though this problem has long been recognised by qualified nurses working in the clinical situation concern is being expressed that patients' needs are being placed secondary to the nurses' programme of practical experience and that the learning environment in which the students are placed is frequently unsatisfactory as a result of these fluctuations.

This paper aims to document the actual allocation of learners to the clinical areas of one major teaching hospital over a period of one year and to try to highlight the specific problems resulting from this varied allocation.

It must be stressed that these figures relate to one general hospital only and that inferences should not be drawn in relation to other situations. Discussion has however taken place with all the Principal Nursing Officers of the general hospitals in Glasgow and they are agreed that the pattern of allocation as described in annexes 1-3 is similar in all these hospitals.

With regard to the training programme, the General Nursing Council state specifically the number of weeks which must be

spent by student nurses in the clinical situation. The 'clinical situation' is further categorised by wards and departments, i.e. every ward to which a student nurse is allocated is inspected and classified by the General Nursing Council as are the hospitals to which the students are seconded during their training. The programme for each student is drawn up at the beginning of their training when holidays, blocks, clinical experience and secondments are planned. Many situations to which students are seconded are small and also have to take students from different Districts; this results in the hospital to which the students are seconded stating quite definitely both the number they can take and when they can take them and this immediately raises problems with allocation. This factor, together with the need to have large classes in block and to fit holidays into a full and rather inflexible programme, results in severe fluctuation both in numbers and grades of staff allocated to the general wards of the parent hospital (see annexes 1-3).

1. The Learning Environment for the Learner in the Clinical Situation

If it is accepted that nursing is essentially the practical application of a variety of skills where a great deal of learning and teaching takes place at the bedside then by implication the quality of that learning is adversely affected by the present system of allocation, e.g. compare weeks 28, 35 and 45 in annex 2 where the allocation to eleven medical wards is as follows:-

	3rd Year	2nd Year	1st Year	PEN	Total
Week 28	19	3	4	8	34
Week 35	45	15	1	16	77
Week 45	6	3	26	2	37

These figures highlight the fluctuations in both numbers and grade and it should be remembered that the workload remains unaltered and the expectations of patients and medical staff alike do not rise and fall with the number of people available to meet these needs.

In this example in week 28, the 3rd year students must function at a level lower than they should because of lack of junior staff while in week 45, the junior students are required to function at a level considerably in excess of that for which their stage of training has prepared them. It is not intended to imply from this that lines of demarcation exist in any way, rather to state that in the example of week 28, the senior students should be participating at a more senior level to prepare them for their role as staff nurses rather than being required to cover ground in which they will already have gained considerable experience.

The effect of situations as in week 45 on student nurse wastage is uncertain as this has not been documented but many believe that if this is not a cause it is certainly a contributing factor.

The nurses themselves frequently express confusion and find difficulty in adapting from being senior to junior from week to week.

2. The Effect on the Ward Sister

The prime role of the ward sister is to co-ordinate the management of patient care. To ensure that this is done with maximum efficiency and minimum stress she should have a stable ward team from week to week in order that she can plan ahead. Whilst many would argue that this stability should be afforded by permanent staff, i.e. staff nurses, enrolled nurses and auxiliaries, there is still a need to have stability at learner grade as well. There are frequent occasions when, as a result of these fluctuations, the ward sister is subjected to excessive stress which is infrequently understood by others in the patient care team. When severe shortages occur, the needs of the service are such that the ward sister's role as a teacher of nurses cannot be accomplished.

Criticism is often levelled against nursing administrators about their inability to have off-duty rotas made up well in advance but this is not possible because of the fluctuations and results in some cases in nurses being given shorter notice of off-duty than is desirable. Many other management problems could be highlighted which are a direct result of the present system of allocation.

3. Role Conflict

All grades of ward staff from sister to auxiliary are subject to frequent role alteration in order to continue to

meet the needs of the service and this can lead to friction, uncertainty, insecurity and subsequent low morale which in turn will affect standards of patient care.

4. The Effect of the Allocation on Attempts to Define Establishments

There is a real need in the nursing profession to be able to state how many nurses are required to achieve and maintain an acceptable level of patient care and considerable work is being undertaken at present in an attempt to find some formula or system which may be applied to obtain an answer to this but one must question whether or not a final answer can be achieved while fluctuations in allocation occur.

A practical example of this can be seen in annex 3 which describes the allocation of learners to night duty. On night duty in many situations, the grades of staff nurse, enrolled nurse and senior student nurse are interchangeable with supervision being given according to need by the night sisters. Assuming that this is the case in the 23 wards to which learners may be allocated on night duty and that each of these wards should have one senior nurse on duty each night (of any of these grades stated) the calculation of establishment is relatively simple, e.g. $(23x7)\div4=40$. This means that if the number of learners allocated is maintained at an even level throughout the year, the calculation about trained staff is also simple. The situation cited in annex 3 however, shows the severe fluctuation which exists and while the mean of the allocation shows 18 x 3rd year and 12 x 2nd year student nurses it can also be seen that of the 52 weeks examined this level or

above is reached on 26 weeks. This shows that it is very difficult to define an establishment and there are weeks when there are more nurses on night duty than are required and weeks when shortages are extreme when agency nurses are required to maintain the service and also as in weeks 50-52 particularly when junior nurses with very little experience are required to take charge of wards with the previous implication of the effects on wastage rates.

5. Are Enough Learners Being Trained?

This is an extremely difficult question to answer and is not within the scope of this paper but identification of the mean of allocation by grade and place of work would certainly indicate that considerable 'levelling off' would be of great value to both the learner and the clinical situation.

6. Allocation to Clinical Areas

In the hospital studied, learners are allocated to the following clinical areas:

(a) general surgical wards - day duty;

(b) general medical wards - day duty;

(c) general medical and surgical wards - night duty;

(d) special wards - day duty. These include ENT; dermatology; orthopaedics; accident wards; burns unit; cardiovascular surgery; urology and renal dialysis;

(e) casualty, i.e. accident and emergency; and

(f) theatre.

Each of these areas will be considered separately.

(a) General surgical wards - day duty:

In annex 1 the weekly allocation of the different grades of learners to general surgical wards is shown. There are 12 wards with a total of 255 beds.

The mean weekly allocation by grade is:-

3rd year students	=	22 (R = 9-38)
2nd year students	=	6 (R = 0-17)
1st year students	=	15 (R = 2-25)
Pupils	=	12 (R = 0-25)
Total	=	55 (R = 37-75)

The overall average weekly allocation to individual wards is therefore 5 (R = 3-6).

(b) General medical wards - day duty:

In annex 2 the weekly allocation of the different grades of learners to general medical wards is shown. There are 11 wards with a total of 227 beds.

The mean weekly allocation by grade is:-

3rd year students	=	18 (R = 6-45)
2nd year students	=	5 (R = 0-20)
1st year students	=	14 (R = 1-29)
Pupils	=	10 (R = 1-24)
Total	=	47 (R = 34-82)

The overall average weekly allocation to individual wards is therefore 4 (R = 3-7).

(c) General medical and surgical wards - night duty:

In annex 3 the weekly allocation of the different grades of learners to night duty in general medical and surgical wards is shown. There are 23 wards with a total of 482 beds.

The mean weekly allocation by grade is:-

3rd year students	=	18 (R = 1-40)
2nd year students	=	12 (R = 0-44)
1st year students	=	2 (R = 0-13)
Pupils	=	5 (R = 0-14)
Total	=	37 (R = 15-69)

The overall average weekly allocation to individual wards is therefore 1.5 (R = 0.5-3).

(d) Special wards - day duty:

There are 14 such wards in 8 specialties representing a total of 244 beds. The allocation to these wards has not been shown in histogram format but the mean weekly allocation by grade is:-

3rd year students	=	13 (R = 2-21)
2nd year students	=	1 (R = 0- 4)
1st year students	=	2 (R = 0- 4)
Pupils	=	16 (R = 5-32)
Total	=	32 (R = 17-52)

The overall average weekly allocation to individual wards is therefore 2 (R = 1-4).

(e) Casualty:

This clinical area is a combination of the accident and emergency department with two short-stay casualty wards. Learners, while allocated to either the department or the wards, will usually gain experience in both. The learners have not been broken down by grade in this instance but the mean weekly allocation is 14 (R = 5-24).

(f) Theatres:

Learners are allocated to 10 of the hospital's theatres. Again the numbers have not been broken down by grade but the mean weekly allocation is 16 (R = 9-29).

(g) Overall allocation of learners to the hospital:

The foregoing breakdown demonstrates the learner allocation to the different clinical areas in the hospital. The availability of the learner component of nursing manpower to the overall nurse staffing in the hospital can be seen if the allocation to the whole hospital is totalled. This shows that the mean weekly allocation of learners of all grades is 201 (R=142-302) - a difference of -29% and +50% respectively between the minimum and maximum compared to the mean. Expressed in another way this means that on average there is one learner for every 3.6 patients with a fluctuation from one to 5.1 to one to 2.4.

7. Conclusion

Many points come to light from this exercise as requiring further discussion:

a. The service commitment expected to be given by learners requires definition; if it is accepted that learners should give service then the allocation must be rationalised and if it is considered that learners should not give service, a considerable reduction in service based on availability of trained staff would result.

b. Although secondments have not been examined in this exercise, reference has been made to some of the difficulties which arise in allocation as a result of the

secondments. Students are frequently supernumerary while on secondment but work as part of the team when within the parent group of hospitals so it would appear that some re-examination of this aspect would perhaps ease the fluctuation in allocation.

c. The inflexibility of the present training requirements means that nurses complete, on paper, such requirements but the value of the clinical experience gained in a frequently unsuitable learning environment must be questioned.

d. The role of the nurse remains undefined and tends to evolve as local situations and personalities dictate. The effect of technology and the ever increasing number of para-medical and technical staff giving care to patients in the wards has further increased the complexity and lack of definition of the nurse's role. There is a real need to examine this role and the question must also be asked whether the present scheme of training with its accompanying inflexibility meets the need.

e. The possible implementation of the proposals of the Committee on Nursing (Briggs) highlights the urgency with which some remedy to the present situation must be sought and implemented.

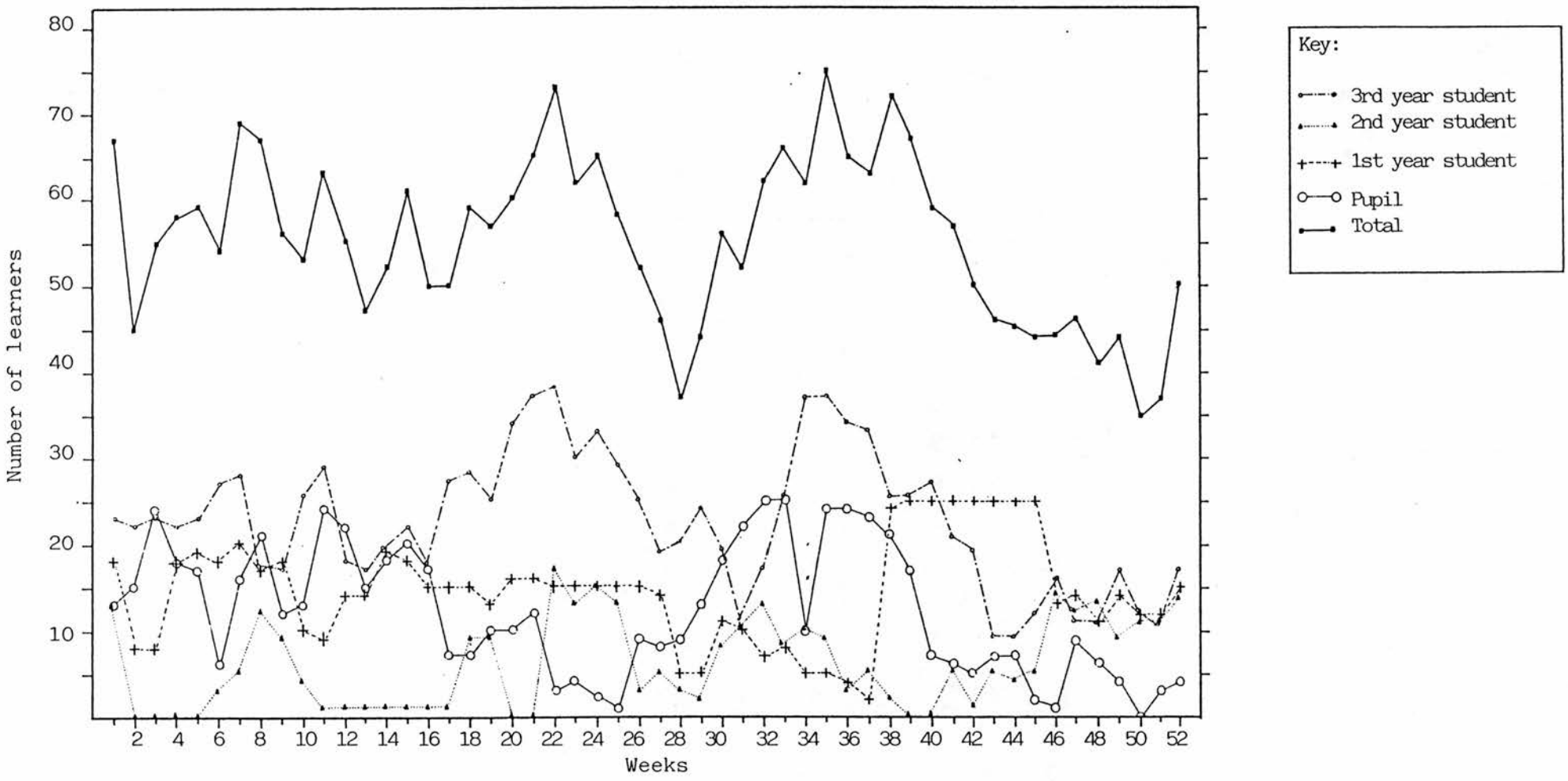
f. Shortage of nursing staff is frequently rejected by administrators and medical staff alike but an understanding of the figures which are frequently quoted as showing that there are more nurses now than ever before is necessary:-

(i) With regard to learners, it should be remembered that fifteen years ago, student nurses left the parent hospital on secondment for eight weeks whilst they are now required to spend 32 weeks on different secondments.

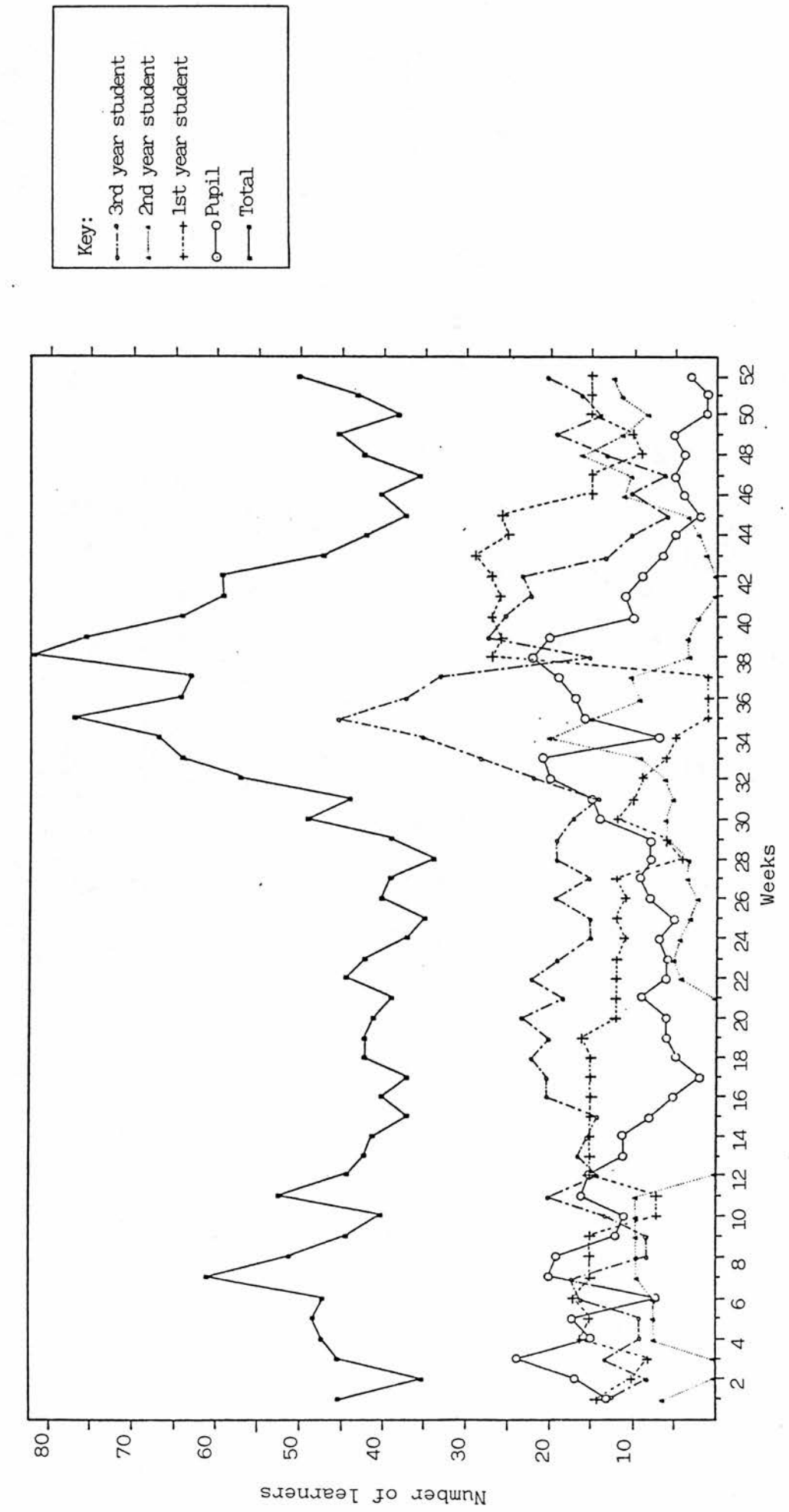
(ii) With regard to trained staff, the expansion of intensive care units of all kinds should be carefully understood and the following example is given to show that such units are very costly in trained staff, e.g. in a medical ward with an average occupancy of 22 patients, 2 registered nurses are required to give 'cover' for a 24-hour period, seven days a week either directly or by delegation whilst in an intensive care unit with an average occupancy of 3 patients, the number of trained staff is 15. This example is quoted from an actual situation.

8. Finally, the situation pertaining in Glasgow requires definite rationalisation and there appears to be a need for one person to examine ways of improving the situation and co-ordinate all aspects of learner allocation in order that the standard of patient care can be maintained.

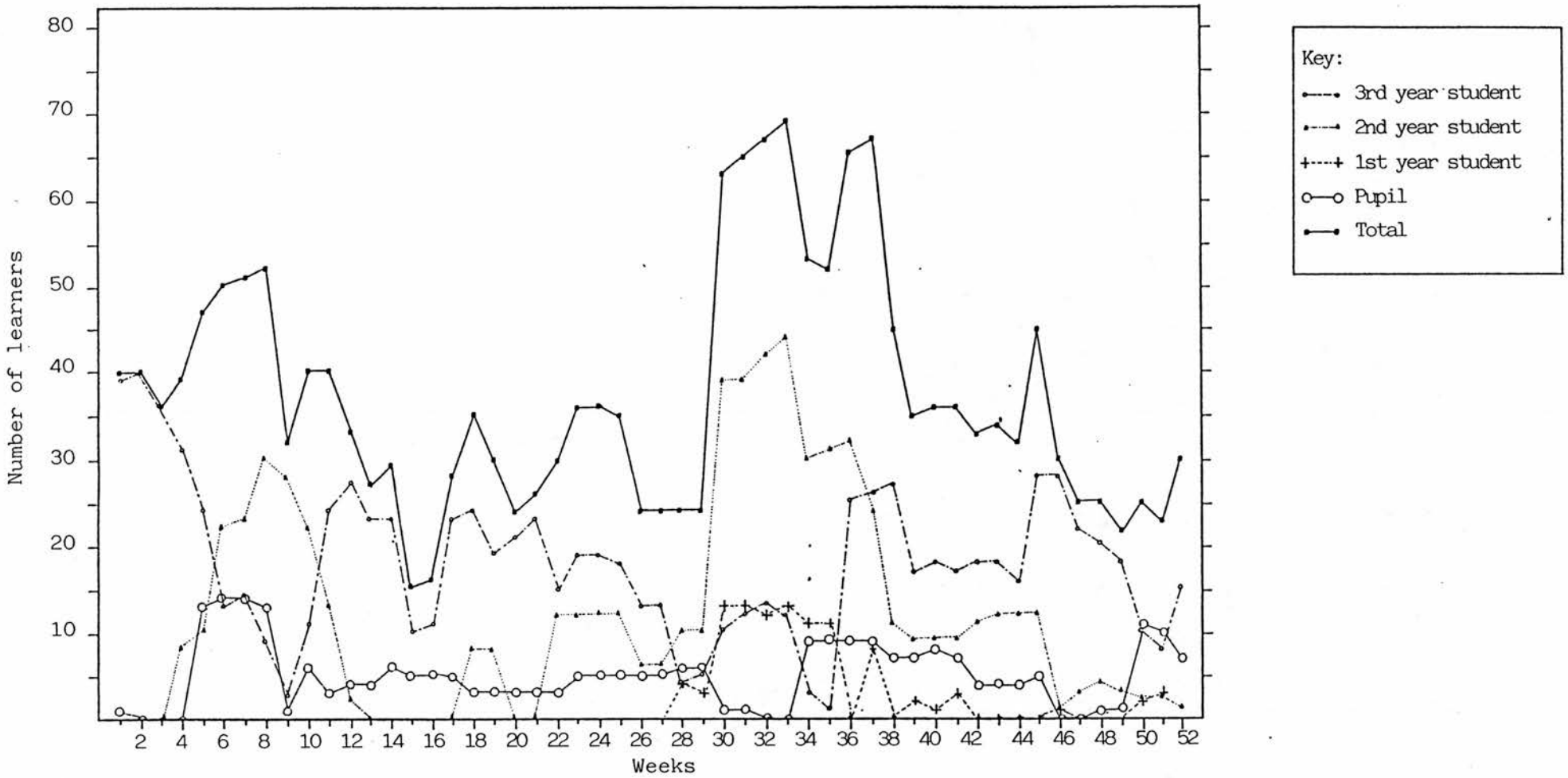
Annex 1. Weekly allocation of learners to 12 surgical wards (255 beds)



Annex 2. Weekly allocation of learners to 11 medical wards (227 beds)



Annex 3. Weekly allocation of learners to general medical and surgical wards - 23 wards (482 beds)



APPENDIX V

Specialty Categorisation to Yield Information for Nurse Training and for Monitoring 'SHAPE'

SHAPE category	Specialty	Categorised by nurse training
C	General surgery	General nurse training
C	Orthopaedic surgery	
C	ENT surgery	
C	Ophthalmology	
C	Urology	
C	Oral surgery & medicine	
C	General medicine	
C	Dermatology	
A	Rehabilitation	
C	Convalescent	
C	Respiratory medicine	
C	Gynaecology	
C	GP acute	
C	Acute mixed	
C	Other	
C	Neurosurgery	
C	Cardiothoracic	
C	Plastic surgery	
C	Neurology	
C	Radiotherapy	
A	Spinal paralysis	
A	Geriatric assessment	
A	Geriatric long stay	
A	Young chronic sick	
C	Communicable diseases	
C	Intensive therapy unit	
C	Accident and emergency	
C	Paediatric surgery	Sick children nurse training
C	Paediatric medicine	
A	Mental illness	Mental nurse training
A	Psychogeriatric	
A	Child psychiatry	
A	Adolescent psychiatry	
A	Mental handicap	Mental handicap nurse training
B	Specialist obstetrics	Maternity training
B	GP obstetrics	
B	Special care baby unit	

APPENDIX VI

Information Potentially Available from Existing Computerised Systems in the Scottish Health Service

CLASSIFICATION OF MANAGEMENT INFORMATION BY AVAILABILITY FROM SYSTEMS

Item (with reference to the SHIFS paper from nurse management) (1)	Availability (X = available) (NA = not available) Payroll 1900 (2)	Payroll 2966 (2)	Personnel Information System (3)	Financial Management System (4)	National Manpower Statistics (5)	Comment (6)
1. Indicators commonly required in analysis output headings (3.2.)						
a) Whitley Graded (3.2a)	X	X	X	*	X	*Data are available at financial code level, not individual employee (detail = grade).
b) Work Location (3.2b)	*ϕ	*ϕ	*	*	*	ϕPaypoint, sub-unit (nursing eg) and unit codes (hospital eg) are available but the sub-unit is not only used by Finance Department. *Paypoint is not passed to FMS but if an expenditure head on FMS is examined then PMS files can give such detailed analysis.

	Item (with reference to the SHIFS paper from nurse management) (1)	Availability (X = available) (NA = not available) Payroll 1900 (2)	Payroll 2966 (2)	Personnel Information System (3)	Financial Management System (4)	National Manpower Statistics (5)	Comment (6)
c)	Contracted Hours (3.2c)	X	X	X	X	X	This item is not entirely necessary to produce the correct pay. When an employee works variable hours from week to week zero or a constant figure are often used as a temporary variation made each week or month to achieve a paybill. The new payroll will have contracted hours in decimal WTE form but this will not affect pay and therefore may not be monitored closely.
d)	Sex (3.2d)	X	X	X	NA	X	FMS do not receive this variable.
e)	Nominal list (3.2e)	X	X	X	NA	X	This may not reflect leavers and joiners accurately because of pay conventions.

Item (with reference to the SHIFS paper from nurse management) (1)	Availability (X = available) (NA = not available) Payroll 1900 (2)	Payroll 2966 (2)	Personnel Information System (3)	Financial Management System (4)	National Manpower Statistics (5)	Comment (6)
f) Cost (3.2f)	X	X	NA	X	NA	FMS amend cost data by journal entry PMS remains unamended. PMS costs relate to the paybill which does not usually match the period eg March pay includes Feb enhancements.
2. Analysis Headings						
a) Staff Establishment (3.3(i)) No.	NA	ϕ	ϕ	NA	NA	ϕ This is a possible development of these systems (see para 6). * Budgeted WTE is available from the ledger
WTE	NA	ϕ	ϕ	*	NA	
b) Staff Disposition (3.3(ii)) (Location)	See 1(b) above					See 1(b) above.
by (i) No in post (3.5(i))	NA	NA	X	NA	X	Because pay departments' main responsibility is to pay staff there can be different procedures in different pay offices to

Item (with reference to the SHIFS paper from nurse management) (1)	Availability (X = available) (NA = not available) Payroll 1900 (2)	Payroll 2966 (2)	Personnel Information System (3)	Financial Management System (4)	National Manpower Statistics (5)	Comment (6)
						deal with joiners and leavers for example. This means an "as at" figure can be at variance with reality. Policy should be decided by management and pay department on a national basis.
(ii) Expenditure (3.5(ii))	See 1(f) above					
(iii) Turnover (3.5(iii))	See 2(c) below					
(iv) Vacancies (3.5(iv))	NA	ϕ	ϕ	NA	NA	ϕ Possible development (see 2(d) above).
c) Joiners/Leavers (3.5)	X	X	X	NA	X	NAMS refers to six month snapshot comparisons.
by (i) Location	See 1(b) above					
(ii) Grade	X	X	X	NA	X	
(iii) Contract Status	X	X	X	NA	X	WT and PT only although PIS may develop further.

Item (with reference to the SHIFS paper from nurse management) (1)	Availability (X = available) (NA = not available) Payroll 1900	Payroll 2966 (2)	Personnel Information System (3)	Financial Management System (4)	National Manpower Statistics (5)	Comment (6)
d) Absence Data (3.6)						
(i) Certification Type (3.6(i))	NA	ϕ	X	NA	NA	ϕ Possible new payroll development if advocated. Input by personnel required.
(ii) Maternity Leave (3.6(ii))	NA	X	X	NA	NA	
(iii) A/L absences etc (3.6(iii))	NA	ϕ	X	NA	NA	ϕ Possible development of PMS if management (personnel) input achieved.
(iv) Study Leave (3.6(iv))	NA	ϕ	X	NA	NA	
(v) Excess Leave (3.6(v)) (eg sickness)	NA	NA	ϕ	NA	NA	ϕ Possible development? depending on policy adopted locally.
(vi) Summary (3.6(vi))						As per above comments.
e) Allowances (3.7)						
(i) Extra Duty payments by No of hours	X	X	NA	X	NA	
Weekends	X	X	NA	NA	NA	
Evenings	X	X	NA	NA	NA	
Night Duty	X	X	NA	NA	NA	
Public Holiday	X	X	NA	NA	NA	

Item (with reference to the SHIFS paper from nurse management) (1)	Availability (X = available) (NA = not available) Payroll 1900 (2)	Payroll 2966 (2)	Personnel Information System (3)	Financial Management System (4)	National Manpower Statistics (5)	Comment (6)
(ii) Overtime by No of hours	X	X	NA	X	NA	The control of overtime should occur prior to payroll action through an administrative system controlled by the nurse manager with reports produced from PMS or FMS on a broad basis. Time of day and day of week cannot be contemplated because of sheer volume of data required.
Time of day	NA	NA	NA	NA	NA	
Day of week	NA	NA	NA	NA	NA	
f) A/L Entitlement (3.2(v))	NA	NA	NA*	NA	NA	See 2d(iii) above. *Not available in PIS but is available from the payroll dependent sickness absence system developed in Paisley.

Item (with reference to the SHIFS paper from nurse management) (1)	Availability (X = available) (NA = not available) Payroll 1900 (2)	Payroll 2966 (2)	Personnel Information System (3)	Financial Management System (4)	National Manpower Statistics (5)	Comment (6)
g) Major Staff Changes (3.9)						
(i) Retirals	X	X	X	NA	NA	(i) Variety of prints produced is needing co-ordination on a national basis.
(ii) Nurse Training	NA	NA	NA	NA	NA	(ii) Source: Colleges of Nursing and Midwifery.
(iii) Major developments	NA	NA	NA	NA	NA	
h) Allowances etc (3.10)						
(i) Bank/Pool/Agency Nurses	NA	NA	NA	NA		
(ii) Geriatric/psychiatric head	X	X	X	NA	X	
(iii) Regular car user	X	X	X	NA	X	
(iv) Travelling expenses	NA*	X	NA	X	NA	*Depending on local policy repayment.
(v) Telephone rental	X	X	NA	NA	NA	
(vi) Training expenditure	NA	NA	NA	ϕ	NA	ϕ Partial data are available
(vii)&(viii) Uniform allowance Laundry allowance	NA	NA	NA	NA	NA	
(ix) Study Leave	See 2(d) above					
(x) Mental Health Officer Status	X	X	?	NA	NA	

Item (with reference to the SHIFS paper from nurse management) (1)	Availability (X = available) (NA = not available) Payroll 1900 (2)	Payroll 2966 (2)	Personnel Information System (3)	Financial Management System (4)	National Manpower Statistics (5)	Comment (6)
(xi) Learner wastage	NA	NA	NA	NA	NA	Source: Nursing Board
(xii) Registered disabled	X	X	X	NA	X	Not a pay related item
(xiii) Trade Union/Prof Organisation	X	X	X	NA	X	
(xiv) Trend analysis	NA	NA	X	X	X	
(xv) Waiting lists (employment)	NA	NA	NA	NA	NA	
(xvi) Special qualifications	NA	NA	NA	NA	NA	

Entry of eg overtime hours

APPENDIX VII

Notification of Staff Appointment, Transfer and Termination to Treasurers' Departments

NOTIFICATION OF STAFF APPOINTMENT, TRANSFER
AND TERMINATION TO TREASURERS' DEPARTMENTS

1. Background

1.1 Recent discussion in the context of the Scottish Health Information Review Committee about the use of payroll as a source of management information for nurses has re-emphasised the well recognised fact that useful output from the system depends on the quality of input. If payroll and information systems dependent on it is to become a prime source of management information for nurses replacing manual data systems, wherever possible, then nurses must have a role in the input system. It is believed that such a positive role in some inputs can be developed with minimal upheaval and little, if any, increase in time required at the original data input point.

1.2 There are 3 principal areas where improvement of inputs would render more useful outputs for nurses:-

a. The identification of the appropriate payscale and suffix for each employee. This in most instances is undertaken by a clerk (usually in the finance department) using the various forms of new employee notification. The payscale and suffix determine the grade and function of the nurse in payroll terms, for example the suffixes E and J used in conjunction with the same payscale D188 mean Senior Enrolled Nurse and Staff Midwife respectively.

b. Input codes describing the location (or unit) within which staff are working. These are often tailored to finance requirements; for example it may be used to identify a district function such as home nursing rather than the management unit of interest to nurses.

c. Information on staff movement or changes (for example where the unit code or payscale suffix may change thus affecting statistical output).

1.3 An additional problem is that, as far as can be ascertained, feedback of information from the finance department to line managers is insufficient and in many cases absent altogether. Thus staff involved in submitting information to the finance department receive no benefit from a potentially productive system and are unable to pick up discrepancies. This often forces the development of duplicated systems with credibility of the 'official' system often being in doubt. Only with the establishment of a dialogue between the finance department and nursing line managers will confidence in and use of the information grow.

1.4 In order to obtain a more detailed picture of the present position, to try to identify the validity of the assumptions at para 1.2 and to use the present system as a basis for recommending future action, Chief Area Nursing Officers were invited to submit copies of the engagement, transfer and termination forms in use in their Boards.

2. Forms currently in use

2.1 It had initially been planned to undertake a full content analysis of all the forms. However the variation of content of forms between and indeed within Health Boards renders this a major exercise so only those items identified as relevant to para 1.2 have been reviewed.

2.2 Returns were received from all Health Boards though in some cases it was pointed out that various forms were used within the same Board and copies of all forms were not submitted. Despite this, a total of 23 engagement forms, 21 notification of change/transfer forms and 17 termination forms were scrutinised.

2.3 Identification of payscale and suffix.

2.3.1 Only one engagement form refers to 'payscale code' and one to 'pay grade' in that part of the form which is completed by the appointing officer; in the case of nurses it is assumed that this will normally be the appropriate line manager. It can therefore be inferred that in the majority of cases ascription of payscale and suffix is undertaken within either the Personnel Department or the Treasurer's Department.

2.3.2 The situation with regard to transfer is similar. It is postulated that some of the discrepancies may arise when a member of staff transfers from one post to another with a similar salary entitlement. In such a move the payscale and suffix may not be altered to reflect the different function of the new post.

2.4 Identification of work location.

2.4.1 All the engagement forms make reference to some or all of the following: location, district, hospital, department, specialty, unit etc. The main point to be considered here would be interpretation of 'department'. In some instances it is known that this will state 'nursing' whereas in others it might be noted in greater detail, i.e. by specialty.

2.4.2 Identification of work location is orientated towards financial and pay administration rather than being designed to generate the potentially available management information within whatever category is required, e.g. by ward, specialty, management unit. The payroll has scope for flexibility in the specification of unit and sub-unit code but the non-financial users, in this case the line managers, must identify their needs. Current discussions about optimum 'location' for information purposes favour ward as being the most appropriate site as aggregation from that source to most other relevant groupings would be feasible. There would be little difficulty in incorporating such codes on the starting, transfer and leaving forms. However, development of the financial information systems to take these codes and reflect the other costs with wards, currently part of the Scottish Health Information Review Committee discussion, is probably some way ahead.

2.5 Information about staff movement.

2.5.1 When returning the forms, some Boards included copies of the NHS staff transfer certificate. How this is used to

provide any of the information required is not clear; it is assumed however that no direct use is made of this form but that the information contained is used for confirmation rather than as a direct source of information.

2.5.2 All termination forms reviewed have a category within them - 'reason for leaving'. A few specify options for the reasons while others leave the question open-ended. It is known that this information is used for superannuation purposes and that little, if any, management use is made of what is available. Again the potential exists to structure the information to yield relevant outputs for use by managers and this is being arranged within the redesigned payroll system at the behest of the Abbott Committee on Personnel Information Systems.

2.5.3 It is recognised that the forms submitted are used for all health care staff and not exclusively for nursing staff. Despite this present exercise being focused on the information needs of nurse managers it is considered that many of the points raised will be applicable to most other employment categories.

3. The issues which arise

3.1 The main issue arising is that comparatively minor amendments to an existing system could yield valuable management information. Whilst the amendments themselves are in principle minor, the time invested in identifying the changes and how to affect them should not be underestimated. In addition it is suggested that a more structured approach would yield better information.

3.2 Whilst better input could be achieved by involving line managers using a structured form, some coding would still be undertaken in the finance department. There is a need however to develop greater confidence in the output and this will only be achieved by establishing dialogue between finance and other departments based on regular, relevant and timely feedback of information.

3.3 Some of these aspects will undoubtedly be addressed as computerised personnel information systems are developed but on the assumption that these will take some years before full implementation, updating of existing systems would be a natural and necessary precursor to computerised systems.

3.4 Whilst the format of the different forms is varied, similar core information appears to be present on most. If all the details could be encompassed into a standard form, much better use could be made of the information contained and unnecessary transcription and the need for extrapolation from incompatible styles could be avoided.

4. The way ahead

4.1 Essentially at this stage there are 3 basic questions to be answered:-

a. Is the idea that managers are involved in payroll inputs in principle one which should be pursued?

b. Would those responsible for the payroll be prepared to consider changes which would not affect the payroll but which would enhance the potential output of information?

c. If yes to a. and b. what is the best way forward?

4.2 Whilst this exercise has looked at the data input forms no review has been undertaken of what is presently produced from existing information either in terms of content or accessibility to different management levels. Such a further review would be advantageous.

M O Clark
August 1983