PATTERNS FOR UNCERTAINTY?

Planning for the greater medical profession

PAPERS BY J. PARKHOUSE; J. S. PARKINSON
P. A. POLLALIS, R. FLYNN, AND E. G. KNOX
A. J. WILLCOCKS; BARBARA STOCKING
B. L. E. C. REEDY; S. R. ENGLEMAN; R. F. A. SHEGOG

Edited by Gordon McLachlan, Barbara Stocking
and R. F. A. Shegog

Published for the Nuffield Provincial Hospitals Trust
by the Oxford University Press

Contents

Editorial

This collection is an attempt from outside the government machine to provide a wider perspective than presently exists to a general problem which is serious enough at present but likely to be more acute in its implications in a relatively short time. It also seeks to draw attention to the limitations of research and information available and therefore the inadequacy of the 'intelligence' base for manpower planning.

Manpower is the major resource in any service organization. For the NHS not only does it directly constitute some 70 per cent of total expenditure but it represents an enormous range of professions and skills. Its consequential requirements in terms of education, training, and personnel management in general, have widespread, deep, and tangled roots, some of which reside in areas over which the DHSS, the essential Department for matters of health, has no control. Such policies as exist with regard to professions have been largely concerned with numbers related to possible shortages, or chronically over the years with terms and conditions of service, sometimes with recruitment and training but principally in essence with questions of pay differentials. In any event such policies meet in a treacherous sea of forces which present vast navigational problems to those at every level concerned with the management of the NHS. The total problem in effect is of too great complexity for simple solutions, made more so by what, despite the recognizable importance of the issue, seems to be an apparent general policy of *laissez-faire* implying there should be no comprehensive, far-seeing strategy: and that perhaps reflects the truth too often ignored, that the NHS itself is not analogous to a large-scale organization. It is essentially a large number of independent authorities and organizations lacking a nerve-centre to provide cohesion, and seeming to depend on the flimsy structure of an almost spiritual entity—the 'NHS'—which since its inception has always meant all things to all men. Health policies tend to be the resultants of various pressures,

not all perfectly formed, having their several effects on the various professions concerned. In the case of manpower, the checks on growth, and balances to differentials are provided by the form of budgetary control which exists at both National and Local level, and the mechanisms which fix remuneration.

Since this book was planned, there have been two publications (1, 2) worthy of note, which together confirm the slenderness of the 'intelligence' base. The DHSS publication *Medical Manpower in the Next Twenty Years*, published as a 'discussion' document falls considerably short of what is necessary at this time for manpower policies. The significance of the Royal Commission's research paper *Doctor Manpower 1975–2000* lies not only in the fact the research was required to be commissioned at all, but principally in its main conclusions that better data are required and that all policy objectives concerning the NHS should be analysed according to their implications, not only for service but for the capital and labour needed to provide them. It is somewhat astonishing that at present this point requires to be made and that thirty years after the institution of the NHS, the comment can be made 'at present some policy changes do not seem to be monitored or they are monitored in a casual way with poor quality data'.

Both publications include 'models' but there is no clear indication of whether the DHSS model has been used or of its likely use in the future. It is interesting to compare the discussion of these models with the three contributions in this volume on model-building, particularly the severe limitations to the use of the technique exposed in Professor Knox's paper. The paper for the Royal Commission particularly draws attention to the weakness of the assumptions regarding demand, which seem to rule in the Department.

The DHSS paper provides for the first time officially, a considerable amount of new data on medical manpower but there is only a passing reference to the key question of possible substitution of professional skills, which, as is clear from the Stocking and Reedy papers, is not only a matter of the greatest importance for the future of the NHS, but has been hitherto neglected as a topic to be exhaustively explored as an issue of policy. Calling it a 'discussion' document cannot excuse its concluding on a notably lame note, with a summary consisting of a series of unsolved issues about which comments are sought. Many of these overlap with the problems foreseen in the Royal Commission paper, which are pointed to as

awaiting analysis. Is it not, however, well beyond the time for general discussion and more for action? There have surely been enough policy analyses already to indicate the next steps necessary—if not for definitive purposes at least for specific research commissions. Without such immediate action, what hope can there be for the development at an early date, of a coherent, comprehensive strategy the need for which seems compelling? The neglect of research in this field which is pinpointed in some detail in the essay by Mr Shegog, does not warrant any more delay for 'discussion', for it has long been known that certain essential information was urgently called for. Trust history shows that, as long ago as 1973 (3), the issues were evident and discussed. Negotiations which had been pursued for some time with the Health Departments for a joint venture in establishing a research unit at Glasgow to study the use of manpower and human resources in the NHS, broke down because the research had seemingly not enough priority to attract Government support! Oh Rothschild!

It is evident, too, from a reading of the 'discussion' document that certain general assumptions which have seemingly been made with the kind of force and authority of tablets of stone brought down from Mount Sinai, need to be looked at afresh. Some of the basic concepts are discussed by Dr Engleman. Some, such as the policy actions taken following the Royal Commission on Medical Education's Report of 1968 (4)—particularly the numbers of doctors needed—are possibly now questionable in the light of the passage of time and experience. Indeed, and the narrowness of the base of the DHSS paper raises the question, and Miss Stocking places it firmly in perspective, has it not become increasingly evident that to examine one profession in isolation, in the many-faceted services of the NHS is an ineffectual, if not a positively dangerous exercise? What is surely needed if the modelling technique is to be pursued and eventually be used effectively to inform policy, is a model of skilled health manpower generally, or rather more realistically, a series of interrelated models dealing with a range of health-related professions, specially where the practice of those professions may overlap or involve substitutions for others.

Further, it would be to take too simple a view to believe that manpower policies could be effectively adopted without an exhaustive review of the *conditions* under which the NHS is likely to operate for some considerable time, which is an underlying thesis of the same

character, if a much larger order than that explored by Maynard and Walker. It will be, above all, a measure of the Royal Commission's own credibility how they deal with it. If it is truly the case that we are in a substantial period of effectively zero or little economic growth, the conditions which apply on assumptions made during the period in which the NHS was thought likely to continue to burgeon steadily will have to be modified. In this connection, it is astonishing there is so little mention in the DHSS document of the effect on manpower of the policies advocated in the RAWP report (5) and in the *Priorities* (6) and *Way Forward* (7) documents, which together indicate definite lines of government policy already drawn, which have to involve the Greater Medical Profession.

Yet, even for the medical profession, the political environment in which the NHS operates has no mention in the DHSS paper. The Department seems to be relating policies at the basic level, in association with the University Grants Committee to the acceptance of the Todd Commission proposals about the number of medical students entering medical schools in the 1980s. Yet, to avoid possible hardship through eventual unemployment, the assumptions for employment up to the year 2000, even if there is a small controlled rate of growth, but ignoring possible substitution policies, have to be based on the likelihood that *medical immigration* will be slowed down considerably. This is a major presumption of some importance, which would have to entail a complementary response in the area of general government policy. It is not difficult to gain the impression from a reading of the Discussion document that the DHSS are only *hopeful* that the number of doctors being produced will not introduce unemployment among British doctors. It may be embarrassing to discuss the concomitant issues openly, since these include not only postgraduate educational opportunities for doctors from the Commonwealth countries, but possible control of employment opportunities which may infringe the Race Relations Act. These issues would seem to be in the realm of Cabinet policy and of the concept of Joint Action for Social Policy. Again, a measure of the Royal Commission's credibility will be its observations on these matters, particularly any proposals they made for policies for further medical education and medical employment generally, related to what seem to be the economic realities of the next two decades.

One can see the need for bodies like the Trust to fulfil a general role of independent commentator on specific issues and for pub-

lishing sober and responsible critiques. The Trust's own tradition in its appreciation of the complexity of the NHS is one more of raising the eyebrow in surprise at the seeming lack of policies, than the wagging of the admonishing finger; but experience suggests that the NHS system warrants something more to sustain debates. The case of manpower is yet another example of the need for a continuing focusing mechanism, since there is not much evidence of serious discussion about the problems of this major resource of the NHS. In the absence of a central constant focus within a cohesive service, there is not even at present a widely based forum to discuss comprehensive manpower issues. On the current evidence, one might wonder whether it exists even within the Department itself. Yet for the health of the Service as a whole, the case seems to be strong that it is necessary to have such a means to concentrate on the extent of the problem and what can be done about it. The rough outline of the brief can be distinguished from the over-all conclusion of this publication, which is that there will have to be rules drawn up for the complex numbers game entailed, in which *all* the professions take part, along with the DHSS, and the DES, to integrate service and educational policies and relate them to reality. It is not inconceivable that in the present economic climate there may indeed eventually be considerable employment problems as a residual to over-optimistic expectations and unco-ordinated recruitment to educational and training programmes, for with some notable exceptions there seems to be little or no regard to policies relating educational to job opportunities and requirements.

References

1. MAYNARD, A., and WALKER, A. (1978). *Doctor Manpower 1975–2000.* Royal Commission on the National Health Service, Paper no. 4 (London: HMSO).

2. DEPARTMENT OF HEALTH AND SOCIAL SECURITY (1978). *Medical Manpower—The Next Twenty Years* (London: DHSS).

3. NUFFIELD PROVINCIAL HOSPITALS TRUST (1975). *Ninth Report, 1970–1975* (London: NPHT).

4. ROYAL COMMISSION ON MEDICAL EDUCATION (1968). *Report 1965–68* (Todd Report), Cmnd. 3569 (London: HMSO).

5. DEPARTMENT OF HEALTH AND SOCIAL SECURITY (1976). *Sharing Resources for Health in England.* Report of the Resource Allocation Working Party (London: HMSO).

6. —— (1976). *Priorities for Health and Personal Social Services in England.* Consultative document (London: HMSO).

7. —— (1977). *Priorities in the Health and Social Services. The Way Forward* (London: HMSO).

THE DEVELOPMENT OF MEDICAL MANPOWER FORECASTING AND MODELLING IN BRITAIN

J. Parkhouse
MA, MD, MSc, FFARCS
Professor of Anaesthetics,
University of Manchester

The development of medical manpower forecasting and modelling in Britain

Since the Second World War a number of important reports have dealt with the numbers of doctors in Britain and required numbers of medical school places. The Goodenough Report (1944) reviewed the position as it appeared towards the end of the war and included actuarial estimates of the required numbers of doctors for future years. A modest increase in the number of available medical school places was recommended. The Cohen Report on General Practice (1955) expressed some concern about whether the general medical services would be able to absorb a sufficient proportion of the output of the medical schools and the Willink Report (1957), after reviewing the whole medical manpower position, concluded that a 10 per cent reduction in the number of medical school places available at that time would be advisable. Doubts were soon expressed, however, about the advisability of this recommendation; the 10 per cent was restored and further increases in medical school places were planned. The Platt Report (1961) was concerned with the medical staffing structure in hospitals and dealt largely with the relationship between the needs of training and the required numbers of doctors as 'pairs of hands' for the work to be done. A comprehensive survey of medical manpower requirements, including the hospital service, general practice and other forms of employment, was included in the Todd Report (1968) and this Royal Commission produced an interim report urging an immediate and large-scale increase in the number of medical school places. The details of these various reports, and the basis on which their recommendations were made, have been reviewed in recent articles (Parkhouse, 1978*a* and *b*).

One recurrent theme in these reports was lack of data. Each Committee, in turn, found that much of the information that would be necessary to arrive at solidly based predictions was unavailable. A special comment to this effect was made by Jewkes in the Pilkington Report on doctors' and dentists' remuneration (1960), which followed publication of the Goodenough Report. Jewkes remarked on

the completely unsatisfactory nature of the state of affairs in which no continuing analysis was carried out, so that each successive group of workers had to begin afresh; he urged that somewhere within the health service there must be provision for the systematic gathering together and analysis of data on medical manpower, so that an up-to-date statement of the position, with useful indications of future trends, could be provided at any time. In fact, the Platt Committee found it necessary to carry out its own survey of numbers of junior doctors in the hospital service; the Todd Commission likewise undertook its own survey of the probable career intentions of final year medical students.

A second feature of all the major reports concerning medical manpower has been an appropriate degree of humility concerning predictions. It was often stressed that conclusions could only be tentative, and the point was frequently made that the further into the future predictions are made, the more unreliable they become. Thus, the importance of further reviews in five years' time, or of continuing assessment of the position, was urged on several occasions.

The Cohen Report (1955) being concerned with general practice, represented an attempt to look separately at one part of the medical services. Both the difficulties and the advantages of this approach were apparent. The Platt Report (1961), focusing its attention on the hospital services, made recommendations that were mostly concerned with the senior registrar grade. The problem that seemed of greatest importance at the time was the numerical imbalance between numbers of senior registrars in training and available consultant outlets. The proposal that numbers of senior registrars should be reduced, and that a clearly defined relationship should be established and maintained, in the different specialties, between senior trainees and consultant opportunities, was the positive outcome of the Platt Report which has stood the test of time. In one sense it was an important contribution; but it might also be said that it merely shifted the problems of the career structure to a lower level and did nothing to resolve the numerical difficulties at SHO and registrar level which will, in the long run, prove critical. Nevertheless, the Platt recommendations were perhaps the first real attempt at the detailed manpower planning of one specific part of the system.

With the increasing output of the British medical schools there began to be considerable concern about numbers of pre-registration posts and the problems of allocating these posts to newly graduated

doctors. Several medical schools developed computer programmes for this purpose, so that the preferences of graduates for particular jobs could more easily and equitably be matched to the preferences of consultants for particular graduates (Clayden and Parkhouse, 1971). These exercises have continued to be done primarily at regional level, as is appropriate to the circumstances. But, although the position changes from year to year, there have always been some regions with more posts than graduates and others with more graduates than posts. Hence there is need for some form of national co-ordination, in order to accommodate some residual graduates and make the best use of residual posts. The Council for Postgraduate Medical Education experimented with the setting up of the 'clearing house' in 1970 and this has now been revived under the name of the 'safety net'. As the number of graduates from the British medical schools increases rapidly, the number of available pre-registration posts clearly becomes critical. This, then, is another specific sector of the system which requires detailed and continuing analysis. It may also have wider implications. The possibility of converting some SHO posts into pre-registration posts is under discussion; and the Merrison (1975) proposals envisaged the complete restructuring of the pre-registration year, to occupy two years of more varied experience. The feasibility of this would require further and quite detailed manpower planning. Although the use of computer-based matching schemes has not been without problems, the overall practicability and potential advantages of this approach would probably be generally conceded.

The Todd Report (1968) gave much of its attention to the SHO and registrar years—the critical stage of postgraduate training between the pre-registration year, and the senior registrar period which had been dealt with by the Platt Report (1961). The Todd recommendations for a three-year period of 'General Professional Training' as a restructuring of the current SHO and registrar years again raised questions about feasibility. This led to studies of whether there would be enough posts available, in various specialties, to make it practicable for trainees to pass through the sequences of 'modules' envisaged by the Todd Report (Parkhouse and McLaughlin, 1975*a*). Here was a further specific sector of the system requiring manpower analysis, and in order to study it in detail it was necessary to develop mathematical models that would take a number of alternative possibilities into account. The conclusions were interesting, in that

they demonstrated an overall feasibility of the Todd plan while showing so much elasticity, in terms of the numbers of jobs available, that no solution to the problem of having just the right number of trainees in each specialty could be envisaged merely through implementation of the proposals. The practical usefulness of the findings have, of course, been constrained by the fact that the Todd recommendations in their original form have never been implemented.

Models developed for the allocation of pre-registration posts and for feasibility studies on the Todd proposals could readily be adapted to other uses. One matter of interest, for several years now, has been the future promotion prospects of British graduates and the effects on this of an increased output from the medical schools. This was studied by constructing a transition matrix, based on available DHSS data for junior hospital staff, and applying various assumptions to it (Parkhouse and McLaughlin, 1975*b*). Once more, fairly detailed analysis of this specific part of the system is required, and a number of sub-divisions of the manpower structure have to be taken into account. For example, the facility with which overseas graduates occupying junior hospital posts obtain higher examinations and achieve promotion is not necessarily the same as for British graduates, and indeed current evidence suggests that there are substantial differences. Similarly, women doctors may have domestic commitments which interrupt or delay their training and these women may, of course, be either British graduates or overseas doctors. The main point about all analyses of this kind is that they require the study of flows rather than the mere estimation of stocks.

A dynamic model of the medical manpower system, capable of looking at how doctors move through the system and of analysing the influence of various factors on this progression, has a great deal more to offer than a crude actuarial estimate of the total number of doctors who will be available to serve the community at a particular time. In fact, models which look purely at overall stocks can be dangerously misleading since they tend to take little or no account of regional and specialty maldistribution, and give no real indication of the feasibility or otherwise of changing from one state of affairs to another. It is quite easy to say that there should be more consultants in the hospital service and less junior doctors, but during the years required for this change to take place the work still has to be done and the aspirations of individual doctors need to be taken into account.

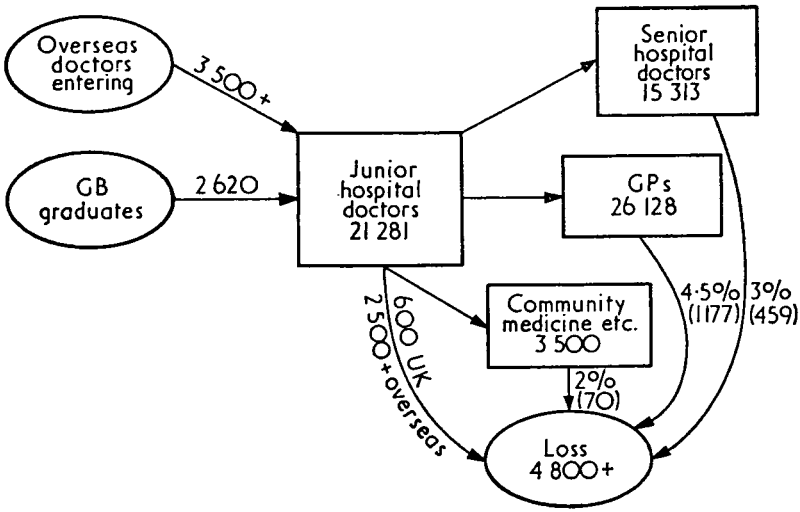

Figure 1. NHS medical manpower, Great Britain, 1975.
Reproduced by permission of the British Medical Journal

Dynamic analysis of individual parts of the system can in principle be built up into a complete analysis of the whole medical manpower system. But in practice, such an exercise becomes exceedingly complex as a result of the very large numbers of groups and sub-groups to be considered and the even greater number of possible paths of movement, between sub-groups and to and from the system as a whole. Hence there has been a desire to seek simplified models. A great deal of valuable information can be derived, for instance, from a model in which the posts occupied by doctors are divided into four main classes: junior hospital posts, senior hospital posts, general practice posts, and others. Such a model was recently described (Parkhouse, 1977) and is illustrated here in Figure 1 which depicts the NHS medical manpower situation in 1975. For the four broad classes a substantial amount of information becomes available, each year, from the Department of Health's manpower tables. A model of this kind is admittedly an over-simplification and assumptions do have to be made, but the resulting estimates need not be seriously misleading. One advantage is that the inter-relationship of stocks and flows can be examined and the outcomes of various alternative assumptions can easily be tested year by year. Details of some such models, and the conclusions derived from them, have been reported

(Parkhouse, 1976 and 1977). The last few years have seen the publications of some further purely stock-based forecasts of future medical manpower requirements and supply, for example in the BMA's evidence to the Royal Commission (*Br. med. J.*, 1977) and the evidence of the Hospital Junior Staffs' Committee (1977). However, the artificiality of this approach is increasingly apparent, especially in view of the now well-recognized need to consider a variety of alternative assumptions about the way in which certain factors may influence the medical manpower situation.

The most important factors about which differing assumptions need to be considered have to do with both the make-up of the medical workforce itself and the nature of the system in which doctors are employed. Firstly, there is the question of overseas doctors. Over the last twenty years the NHS has become increasingly dependent upon overseas doctors, so that now about one third of the total medical workforce is made up in this way. Many overseas doctors remain in Britain for only three or four years, but some stay considerably longer and may come to occupy permanent career posts. For a considerable time now the number of overseas doctors entering the country each year has exceeded the output of all the British medical schools put together; the annual loss of overseas doctors has also been very high, but there has been a progressive net gain. Doctors come from many countries, and there is evidence that the inflow is now less predominantly from the Indian subcontinent and shows more emphasis on the Middle Eastern countries. Recent legislation has influenced things both at home, through institution of the TRAB test, and abroad. At the same time, it has become much more difficult for doctors from this country to emigrate to a number of other countries.

What the future rate and pattern of inflow and outflow of overseas doctors will be remains to be seen. Its influence on the overall medical manpower situation provides a good illustration of the need to look at both flows and stocks. The inflow and outflow of overseas doctors in recent years have been such that at least an additional 1,250 have remained in this country each year (Parkhouse, 1978*c*). From this point of view, it would therefore be necessary to increase the output of the British medical schools by about 1,250 a year if this net gain were to cease. In stock terms, however, there are now about 25,000 overseas doctors in Britain. To reduce, and eventually abolish our 'dependence' on overseas doctors would require the production of an

additional 2,500 British graduates each year for ten years, or an additional 1,250 a year for twenty years, over and above the 1,250 a year needed in place of extra newcomers. The magnitude of this influence on the estimated requirement for British medical school places is such that there needs to be considerable discussion about policy with regard to numbers of overseas doctors. Meanwhile all that can reasonably be done is to produce ranges of estimates based on alternative assumptions about what is likely to happen to the numbers entering and leaving the country, and the average lengths of time for which various groups and sub-groups are likely to stay.

Secondly, alternative assumptions need to be made about future emigration of British doctors and our relationships with the EEC. Disillusionment with the NHS, and more attractive financial rewards and working conditions elsewhere might encourage emigration but a threatened over-supply of doctors in other countries, together with restrictive legislation, might make it more difficult. Whether or not over-supply in some Western European countries will result in a large inflow of doctors to Britain, when 'free movement' within the EEC becomes a reality, is also impossible to forecast with any certainty. Losses and gains through emigration, and immigration including the return of British graduates from abroad, need to be analysed in relation to specific parts of the health service, and indeed individual specialties; a full appreciation of the manpower implications therefore requires detailed knowledge of a kind that rarely exists in practice.

Thirdly, there is the somewhat related question of women graduates. There has been considerable discussion about the probable increase in numbers of women graduates in medicine when more egalitarian admission policies are adopted. Although it has been asserted quite confidently that within the near future 50 per cent of graduates will be women there are others who hold the view that in open competition men will tend to do better, and that girl school-leavers will become increasingly aware of the difficulties encountered by women in trying to pursue a fully satisfying career in medicine. There is insufficient information about the relative contribution of women doctors to the workforce, and the way that this may be changing with time. There have been broad estimates, for example, that women on the average contribute two-thirds of a full-time work load, but again it is important for planning purposes to know how this may vary from one specialty to another.

With regard to the system in which doctors work, it is now generally agreed that the key to the whole medical manpower 'problem' is the career structure. No satisfactory predictions can be made, and certainly not on a dynamic basis, unless alternative assumptions are made about the way in which the career structure will evolve. For example, it has been recognized for some time now that if the British medical schools were to produce just enough doctors to supply the needs, after appropriate postgraduate training, for general practitioners, hospital consultants, and other trained specialists, there would be large numbers of junior hospital posts that remain unfilled or still have to be filled by overseas doctors. If, on the other hand, the British medical schools produced enough doctors to fill all the junior hospital posts there would be no career outlets for many of these doctors. Many points of view have been expressed over the years about the future 'organization' of postgraduate training in this regard, about the merits and demerits of a 'sub-consultant grade', about the wider utilization of general practitioner services in hospitals and other alternative resolutions to the dilemma of having too many juniors in the hospital system and too few seniors. Postponement of a resolution has always been possible because of the availability of a 'cushion' of overseas doctors to fill surplus junior hospital posts, and this arrangement has on the whole provided comfortable working conditions for more senior staff. The days of this postponement may now be numbered, and the alternatives need to be examined in earnest.

References

BRITISH MEDICAL ASSOCIATION (1977). 'Submission of evidence to the Royal Commission on the National Health Service', *Br. med. J.* 1, 299.

CLAYDEN, A. D., and PARKHOUSE, J. (1971). 'Allocation of preregistration posts', *Br. J. med. Educ.* 5, 5.

Cohen Report (1955). *Report of the Committee on General Practice within the National Health Service* (London: HMSO).

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

HOSPITAL JUNIOR STAFFS COMMITTEE (1977). 'Present and projected numbers of medical students and doctors', *Br. med. J.* 1, 659.

Merrison Report (1975). *Report of the Committee of Inquiry into the Regulation of the Medical Profession.* Cmnd. 6018 (London: HMSO).

PARKHOUSE, J. (1976). 'Do we need more doctors or not?', *Proc. R. Soc. Med.* 69, 815.

—— (1977). 'Simple model for medical manpower studies', *Br. med. J.* 2, 530.

—— (1978*a*). 'Medical manpower in Britain. Parts 1 and 2', *Med. Educ.* 12, 40, 54.

—— (1978*b*). 'Medical manpower in Britain. Parts 3 and 4', *Med. Educ.* 12, 133, 143.

—— (1978*c*). 'Medical manpower in Britain. Part 5', *Med. Educ.* 12, 230.

—— and MCLAUGHLIN, C. (1975*a*). *Feasibility Study on Postgraduate Medical Education.* Proc. Ser. No. 10 (Southend on Sea: The Institute of Mathematics and its Applications).

———— (1975*b*). 'Future prospects for British graduates and the Health Service', *Lancet*, 1, 211.

Pilkington Report (1960). *Report on Doctors' and Dentists' Remuneration 1957-1960.* Cmnd. 939 (London: HMSO).

Platt Report (1961). *Medical Staffing Structure in the Hospital Service* (London: HMSO).

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

Willink Report (1957). *Report of the Committee to Consider the Future Numbers of Medical Practitioners and the appropriate intake of Medical Students* (London: HMSO).

THE PROVISION OF MANPOWER INFORMATION IN THE HEALTH SERVICES

J. S. Parkinson
Computer Systems Consultant,
Systems Informatics Limited

The provision of manpower information in the health services

Introduction

Terms of reference

This report attempts to survey the current availability of information about health services manpower and to assess the need for the provision of more or better manpower data, in terms of the uses to which such data can be put. It has involved the study of current and proposed sources of information and systems to process it, together with an analysis of the requirements of personnel and planning departments at a number of administrative levels. As a result of these studies, this report attempts to outline the problems inherent in the collection, analysis and use of manpower information and examines those systems that are being put forward to help solve these problems.

Outline of the problem

The health services are among the largest employers in the country and it is thus inevitable that a major cost of running the services comprises both direct and indirect staff costs. Thus, for cost effective management of the service it is especially important that these manpower resources should be efficiently controlled and deployed so as best to meet requirements. A relatively small improvement in the use of staff resources could have a significant effect on the overall cost of provision of services.

There are, however, several fundamentally different types of staff employed by the health services and each of them has different characteristics that need to be reflected within the information collected about them. Broadly speaking, there are three classifications to consider:

(*a*) Staff who require a professional qualification (specific to the health services) to occupy a post, and who, therefore, need to under-

TABLE 1. *Classification of staff types*

(a) Staff who require a professional qualification specific to the Health Services		
Doctors	Radiographers	Other allied professionals
Dentists	Physiotherapists	Senior laboratory staff
Nurses		Senior administrators
(b) Staff who require skills not specific to the Health Services who require both external and internal training		
Professional support staff, e.g.		
Architects	Auditors	Technicians
Engineers	Administrators	Drivers, etc.
Computer staff	Personnel officers	Secretaries (medical)
Accountants & treasurers	Training staff	Catering staff
(c) Unskilled or semi-skilled staff		
Clerical staff	Anciliary staff	

This table is by way of example only and is not intended to be exhaustive.

take specialized pre-employment training over a period of time.

(*b*) Staff who require a skill or skills of a type not specific to the health services, but who may still need to be trained.

(*c*) Unskilled or semi-skilled staff who can receive informal or in-post training.

Within each of these categories it is possible to identify a considerable number of further subdivisions, each with its own particular characteristics (see Table 1 above). The first factor that needs to be recognized, therefore, is that no single pattern of information collection and analysis is likely to be applicable to all types of staff, except at the most superficial level, and hence, the pursuit of a standardized detailed approach, rather than a general functional framework, is likely to be counter productive. It is therefore necessary to develop a general framework within which varying amounts of information about separate groups or types of staff can be accommodated. Before pursuing this point any further it is necessary to look in more detail at the uses to which manpower information can be put.

Types of usage

Two basic types of usage for manpower information can be identified.

(*a*) Management use, including personnel records, control of staff in post, overtime, sickness, turnover, etc.

(*b*) Planning use, including recruitment, training and deployment plus staff consequences of new capital schemes.

Both of these categories can, once again, be further subdivided into more specific uses. It should be noted that while the areas of activity denoted by this classification are mostly functionally separate, they are not mutually exclusive in terms of their information requirements, yet nor are they exactly equivalent. This leads to the second important consideration, that information provision must reflect the use to be made of the information provided. In this respect a single mode of analysis is unlikely to satisfy the needs of both categories of users described above.

It is also important to realize the potential volume of information involved. For line management purposes it is unlikely that more than summary information can be provided for meaningful use in real time. This means, effectively, that some kind of reporting criteria needs to be established and, because a dynamic system is involved, monitored and updated in the light of ongoing experience. This is an especially relevant consideration in those parts of the service which are subject to radical changes in procedures due to technological innovation or to changing clinical or administrative practice.

One further use not mentioned above concerns the servicing of central government statutory requirements which can on occasion entail major resource commitment, or even be infeasible, without computer system facilities. Since this type of use has been and is likely to continue to increase, consideration must be given to the provision of either raw or analysed data in a standardized form for DHSS analysis.

Review of the current situation

Currently there are two sources of information about those employed by the health services. These are contained within the payroll system, which is computerized and the personnel record system which is manual. A certain amount of this information is of course common to both systems, but there are significant differences in the type and extent of the information held by these two different sources. The primary differences are that the payroll record is basically only a cur-

rent state record with very limited historical information other than that implicit in cumulative recording and is hence virtually useless for retrospective analysis, especially for individuals or small groups of staff. The personnel record, however, is a complete historical record (provided that it is kept up to date) but, because of the bulk of data involved, is generally impossible to analyse regularly by manual methods.

It is for this reason that practically all the manpower information now provided on a regular basis is payroll derived and therefore limited to the following categories:

(*a*) Nominal roles,
(*b*) Staff turnover,
(*c*) Numbers employed, by unit, grade, etc.,
(*d*) Costs of staff,

with information normally being supplied on a monthly basis, but no cumulative or time comparative data being produced, and no performance against present criteria being monitored.

These analyses do provide considerable line management information and, with minimal modification would meet a large proportion of the identified day-to-day manpower control needs. They can also be used to perform limited planning exercises via manual collation of regular computer produced data. However, there are a number of areas within which these analyses are markedly deficient. Firstly they do not allow the analysis of purely personnel information (e.g. qualifications, intra-grade progressions, skill profiles, promotion and training criteria and establishment control). Secondly they do not allow detailed planning exercises of the type necessary to identify the requirements for staff far enough into the future to allow for training lags and long term financial planning. Since there is a perceived need for both these facilities it is necessary to examine the problems their provision poses and the current views on their solution.

Problems in the provision of personnel and manpower information

Information systems

Basically they consist of the following processes:

(*a*) Collection of data.

(*b*) Updating of existing files.
(*c*) Analysing files.
(*d*) Reporting.

Each of these processes has its own problems in relation to the provision of manpower information and these will be examined separately.

Collection of data

Currently the majority of data about an employee is captured when they join the health services. However, during the duration of employment, an individual's details are likely to change and expand in a variety of ways dependent upon their career progression. It is important to establish the range of relevant information that is to be captured initially and, likewise, what changes and additions to existing information should be captured at later dates. Clearly this will be highly dependent on the category of staff involved. Data collection is invariably an expensive process and only those items that it is known (or may reasonably be expected) will be used should be collected.

Updating of existing files

This is associated with the subsequent data collection exercises mentioned above. Not only is it necessary to decide what information should be used to update files, it is also important to establish procedures to enable this information to be captured reliably. Currently this is only possible if the employing authority is in some way responsible for the new information, say as a sponsor or financial provider, and there is, generally no perceived benefit by the employee to make changes in his personal data known to his employers. Indeed, the employee may not be aware that such changes are of interest. It should again be stressed that such procedures are often expensive to operate and hence the amount of updating done should be kept to a necessary minimum.

Analysing files

This is the first process wherein the computer shows a major advantage over manual methods. This advantage will only be apparent, however, if the nature of the analysis to be undertaken is well defined

and its purpose understood. It has already been mentioned that a single approach is unlikely to satisfy both the control and planning requirements for information and the two types of analysis should not be confused. This problem is further complicated in that, for control (i.e. line management) purposes an historical file (that is one that records past as well as current information) is likely to be necessary, while for planning purposes, regular 'state of specified parameters' reports will be needed to feed whatever predictive model is being used. Some of the planning statistics will also, of course, be of use to managers, especially in terms of short-term trends. Thus there is likely to be a 'conflict of interest' in that the processing associated with providing planning type statistics from an historically structured file can increase exponentially with time, whereas the type of processing associated with day-to-day management is less affected by increasing record and file sizes.

Reporting

It is all too easy for information systems to provide vast amounts of so-called 'management information' with little or no regard for the presentation or use to be made of the output. It is therefore very important to specify exactly the type and content of reports derived from the system, so that they provide well presented, relevant, and easy to use data. Two main types of reporting exist, regular and *ad hoc*, and whilst, by definition, *ad hoc* reports cannot be precisely defined in advance, general rules about the ways in which files should be interrogated can be formulated and should be adhered to. As far as regular reports are concerned, these should provide high level summary information such as performance against norms, changes in performance levels, changes in norms, etc., in a predetermined fashion. This, of course, requires the setting of realistic norms and the development of procedures to monitor them.

Specific difficulties

In addition to the above system problems, certain facets of the manpower and personnel system introduce specific difficulties that need to be taken into account. Briefly, these are:

1. The number of different staff types involved and the attendant complexity resulting from the different types and amounts of data associated with each type.

2. The need to deal with 'leavers' in a meaningful fashion. (How long should they stay on the file: problems with reappointment, etc.)
3. The 'overwriting' problem of data which supersedes in information value data which is already held but does not inherently duplicate it (e.g. qualifications, promotions, etc.).

Summary of planned approaches

STAMP. The development of a standardized manpower and personnel information system by Wessex RHA is currently under discussion with plans to have the system available about 1980/1. The system appears to concentrate on the personnel department requirements and much discussion has taken place on topics such as leavers, qualifications, and sickness recording. It is not clear at present how the system will interfere with a planning model or models. An interim version based on payroll files and presenting basic management reports is currently available.

MAPLIN. Much work has been done co-ordinated by the DHSS on setting guidelines for various aspects of personnel information recording. However the enforced adoption of a standardized approach to different groups of staff has produced rather complex methods whose relevance is not always easy to see. Too little attention seems to have been paid to the uses to which the information is to be put, and to methods of interrogation and presentation of results. However, it is likely that the work of this group will need to continue hopefully in a developing and educative fashion.

East Anglia RHA have a computerized personnel system in use by two health districts with plans to extend this to full regional coverage eventually. The system is linked to the payroll file and kept in step with it as necessary. Despite initial reservations users seem to like the system and have been prepared to keep records up to date. *Ad hoc* requests are catered for and are beginning to be generated as users become aware of the possibilities. There still appears to be only superficial use of the information potential, mainly within established patterns.

Most users currently have available payroll derived manpower information in varying quantities and qualities. Many personnel

officers and some planners need to be convinced that there is any benefit in greatly extending this level of provision without better planning models and objectives. There is also a need to train users in the use of information handling tools so that they can effectively apply the available data to their management tasks.

There are a number of other computerized personnel and manpower systems within the public sector, notably the civil service PRISM system. However, none of them have shown evidence of being particularly suitable for health service applications and the more comprehensive and large examples have proven unwieldly in use and expensive to maintain. It is therefore felt that none of the present approaches has yet demonstrated an awareness of the need to provide a flexible system that will service and adapt to user needs rather than merely pay lip service to them. There is also considerable evidence that user resistance will need to be overcome by extensive training before full use can be made of any existing or proposed system.

Interim measures

It seems unlikely that a comprehensive information system for manpower and personnel data can be introduced generally in less than five years. However, the need for such information is present now and will become more urgent the longer the delay becomes. Hence it is sensible to examine ways in which interested parties can develop interim methods to help with current problems without prejudicing the eventual introduction of a standardized approach. There is clearly a very great deficiency of the basic information required to support the use of standard systems and this interim period could be utilized to fill in some of the gaps and develop some of the new procedures required. There are three areas where this would be especially valuable.

Development of planning models

This needs to be done for each of the major groups of staff individually. (Current models are nearly all over generalized, crude, short term, and inflexible.) There is a strong need for the development of

more sophisticated modelling approaches that provide data independent model structures that can be easily used to study variations in the supply of and demand for various types of staff. Such models need to be able to look at least as far into the future as the supply or demand involved and should be capable of continual updating and refinement.

The establishment of norms

Many of the staffing standards applied to the NHS are out-of-date and were in any case established by highly unreliable procedures. The resulting set of norms is inflexible and poorly suited to the needs of a rapidly developing service where changes in procedures and new techniques are being introduced regularly. There is therefore a need to develop new standards and set up procedures whereby they can be monitored and updated as needed. The feedback effect that is essential to an accurate planning exercise is all too often missing from the NHS and management at all levels need to be educated to accept that the real world is not static and that assumptions made about it need to be revised in the light of new data.

The development of exception reporting

While there are instances where detailed and up-to-date information needs to be available to managers, this is not generally the case. What is of interest is the way in which information describes changes in the state of the service, but because of the essentially non-determinate nature of the demands made on the service, it is necessary to establish what constitutes a significant change that may be worth more detailed investigation. Information systems can be designed to produce this kind of exception reporting very efficiently but the data is only of effective use if the criteria are realistic to begin with and are regularly monitored to ensure that they remain so.

All of these exercises need to be got underway as soon as possible and they will have to be collaborative efforts with some measure of centrally controlled liaison to avoid duplication of effort and make known results. The development of each of these three activities and their effective co-ordination is as important, if not more so, as the development of the standardized information system itself.

Conclusions

Because of the wide variety of types and characteristics of staff employed by the NHS, the widely varying amounts of personnel information they attract and the differing manpower information requirements of different groups it is suggested that no single all-embracing system will be able to cope equally well with all types. Hence a general framework approach is recommended, using data base techniques to hold independent staff-type determined sets of information within a standardized access and updating system. Flexibility should be a major feature of the system.

There are at least two distinct types of use for manpower and personnel data and they require different approaches to information analysis. Whatever information system is adopted should take this into account as a fundamental design criterion.

Because of the lengthy consultative process needed to introduce a standard system that will be generally acceptable, it is likely to be five years before such a system is available. In the interim, payroll derived information can meet some needs but it is important that a number of parallel development exercises be undertaken.

These concern:

(*a*) The development of better planning models for various groups of staff.

(*b*) The review and resetting of staffing norms and the development of monitoring procedures.

(*c*) The introduction of exception reporting and the setting of exception criteria with appropriate review procedures.

(*d*) The education of managers to make use of the above information handling tools.

There will need to be some form of centralized liaison to oversee all these developments.

Acknowledgements

Many people contributed in a wide variety of ways to this report. To all those who provided information, advice, and their time I offer grateful thanks for their patient and willing help. Any unwitting distortions of the facts are mine alone, nor are they responsible for the opinions and recommendations arising from the details they supplied.

Thanks are also due to the Nuffield Provincial Hospitals Trust for their kind invitation to carry out this study and to WHTSO for the time and opportunities to do so. I hope that both organizations can feel that they have benefited from the result.

FOUNDATIONS OF MEDICAL MANPOWER PLANNING IN THE UNITED KINGDOM

P. A. Pollalis
PhD

R. Flynn
MSc, MB, ChB

E. G. Knox
MD, FRCP, FFCM
Health Services Research Centre in the Department of Social Medicine and the Centre for Computer Studies, The Medical School, University of Birmingham.

Foundations of medical manpower planning in the United Kingdom

Rational planning is based upon identifying alternative courses of action, and upon forecasting their effects. The forecasting depends first upon a knowledge of what the current situation is, and second upon the formulation of a model of the process of change. Both must be based upon data. Data for establishing the initial situation are characteristically 'static', and relatively easy to obtain; but data for formulating or validating models of change are necessarily 'dynamic', and may raise formidable technical problems.

Models of change take many forms ranging from mathematical equations through computer programs, flow charts, graphical relationships, and written verbal descriptions, to more-or-less vague mental images. The choice of modelling technique in any particular circumstance is defensible on pragmatic rather than upon analytic grounds, but where rationality is to be served we take it as self evident that explicit models are to be preferred. By an explicit model we mean one whose every component can be stated without ambiguity and where questions based upon the data, the premises, the arithmetic, or the form of presentation can be isolated for separate resolution. In such a model nothing is 'understood'; everything is written down and is openly displayed.

The present paper describes a technical explanation, in such terms, of the foundations of medical manpower planning in the United Kingdom. Since the static and dynamic data requirements, and the model-formulation requirements, are mutually dependent, and cannot be defined separately from each other, our exploration will cover both areas.

Orientation of the model

Manpower forecasting can concern itself either with questions of need (or demand), or with questions of supply. That is, (*a*) how many

doctors do we need? or (*b*) how many doctors shall we produce? Forecasts of need have their place in the process of determining limits on the numbers of doctors we *ought* to produce, but in this paper we are concerned with how many we *shall* produce. That is, we address ourselves entirely to the problem of supply. We are concerned with forecasting the effects of alternative policies relating to medical school intakes, immigration and emigration restrictions, retirement age, specialist training requirements, proportions of women admitted to medical schools, salaries, incentives, and the like.

The *general* format of a supply model is reasonably clear-cut, but there are two main ways in which it can be represented. First an 'iconic' representation takes the form of a flow chart indicating movements of doctors between different classes. These movements represent intakes of undergraduate students, transfers from undergraduate to postgraduate classes, transfers between training and career posts within specialties, transfers between specialties, immigration, emigration, permanent and temporary retirement, and death in service (Parkhouse, 1977). For computational purposes, however, the second form of representation is more convenient. Here, the movements are represented in a 'matrix' form. That is, we set up a list of 'n' classes in the form of a uni-dimensional table (the 'input vector') in which the initial numbers in different grades and specialties can be stored, and a similar table (the 'output vector') in which we shall store the result of a round of transfers. The probabilities of transfer from every input class to every output class are represented in a square $n \times n$ table (the transition matrix). At every step in the process (e.g. annually) the initial distribution is transferred to the output distribution according to the terms of the matrix, and the output becomes the input to the next step. This framework is illustrated in Figure 1. So far, everything is straightforward, but two basic questions must now be faced. They relate to (*a*) the nature and the degree of differentiation of the job-classification, as represented in the input and output vectors, and (*b*) the formulation of the forces which 'drive' the model, and on the basis of which the probabilities in the transition matrix are calculated.

The ways in which these questions are answered depend upon a compromise between realism (and complexity) on the one hand, and practicality (and simplicity) on the other. These problems are general to all models and the balance is determined by the pragmatic purposes to which the model is directed, by data constraints, by the

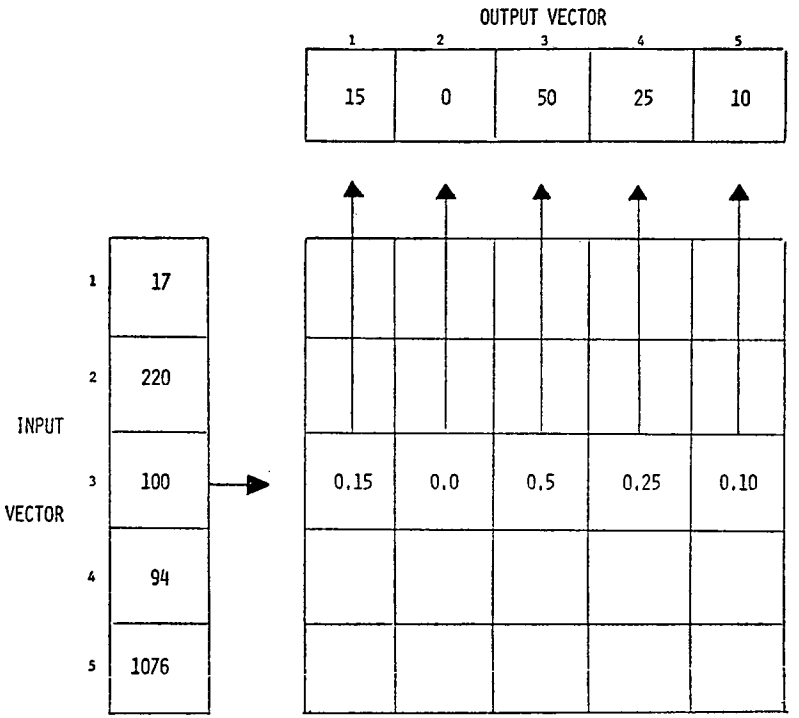

Figure 1. The figure illustrates movements of 'Class-3' doctors to classes 1 to 5. Half of them stay in the same class. A similar operation is carried out for each cell of the input vector according to the transition probabilities in the corresponding row of the matrix. The results of all the operations are added together in the output vector.

availability of computer time, and other practical matters. It is not possible to approach these questions from a purely analytic standpoint, and solutions must depend upon practical trials both of technical feasibilities and of operational utilities. For these reasons a practical investigation was undertaken at this Centre and the remainder of this report is based upon the subsequent developments and trials which were carried out along these lines.

Developing the model

The differentiation of jobs

The differentiation of medical posts can be accomplished in several dimensions. The first covers the broad area of work including, for example, (*a*) hospital, (*b*) armed forces, (*c*) general practice, (*d*) academic, (*e*) medical research council, (*f*) community medicine, and (*g*) 'other'. After several trials this was the structure on which we settled although, in a simpler scheme, several of these classes might have been amalgamated. Alternatively, if a planning interest demanded it, then 'other' could have been subdivided into 'industrial', 'Home Office', 'private sector', 'temporarily retired', 'freelance locum', 'ship's doctor', etc. Within most of these broad areas of work there are several 'grades' (usually four) and this provides a second dimension of classification. It does not, however, intersect evenly with the first taxonomy because general practice has only three grades (trainee, assistant and principal), and 'community medicine' and 'other' doctors are subdivided on different principles.

A third dimension of classification applies to the hospital and armed forces posts, where there is subdivision according to specialty; at a coarse level these posts are divided into main groups (medical, surgical, psychiatric, pathology, etc.), and these themselves are subdivided into small specialties. Finally, the occupants of the posts, as opposed to the posts themselves, may be sub-classified; the most important criteria are age, sex, country of origin, specialist qualifications, current geographical locations (of occupants, vacancies, and applicants), and a summary of professional experience to date.

In practice, we found that restrictions were necessary. We found that by taking account of broad area of work, specialty, and grade, and including successive annual stages of undergraduate medical education, we had assembled 132 classes. When this was repeated for UK males, UK females, and immigrants (both sexes together), the vectors and matrix demanded 157,000 computer locations, and even when the three classes of doctor were dealt with separately in three non-interacting matrix systems, 53,000 variables were required. This was without taking account of geographical data, of specialist qualifications, of age, or of experience prior to that of the current post. Many of the transition values within the matrices can be regarded as effectively zero, so there is room for space-saving, although this adds

considerably to the programming. We encountered problems of computer time as well as computer space. For example, we found a computer-library linear-programming scheme which, when adapted to our purpose, took twelve minutes per annual cycle of calculating and operating a transition matrix, and a great deal of developmental effort was necessary to reduce this to practical levels.

There are two other important critical constraints upon the degree of job-differentiation which can be attempted. The first is the common-sense misgiving which arises when the number of transition-classes in the model approaches or exceeds the number of doctors in the real-life (UK) system. The second hangs upon the limited availability of suitable data from which to 'distribute' our model population, and from which to validate a model pattern of transitions. There are two main sources. The General Medical Council keeps records of registered doctors, ages, sexes, registrable higher degrees, addresses, and a few other details, but does not record posts or changes of posts. The DHSS (jointly with the BMA) keeps a much more detailed index of transfers of doctors from post to post, but this has become operational and accessible only recently. At the time we were conducting our studies the only available stastitics related to doctors employed in the NHS. This material is not published, but was kindly made available to us, and it proved to be our most important source of material. It fell short, however, in respects other than its limitation to the NHS. The material was based upon year-to-year job-transfers of doctors employed in the NHS in *both* of successive years. For this reason it did not comprehensively record fresh transfers into the NHS (newly qualified doctors, immigrants, doctors transferred from outside employment), nor outward movements (deaths, retirements, emigrations, transfers to work outside the NHS), nor periods of unemployment. Furthermore the matrix of transfers related essentially to 'grade' transfers and did not in detail specify changes of job across specialties within equivalent grades.

The limited availability of suitable data, equally with the technical/computational problems referred to earlier must go someway towards explaining why a detailed medical manpower simulator for the United Kingdom has not been constructed and used before now.

Driving the model

If the 'input vector' and the 'transition matrix' can both be written down, then the 'output vector' is determined without ambiguity. A process operating on this principle, usually through repeated steps, is called a Markovian process. The probabilities within each *row* of the matrix add up to 1·0 (Figure 1) so that *all* individuals in each 'input' class are 'transferred' once, and once only. (This includes transfers to the same class, representing 'no change'.)

A Markovian process is used classically to describe (for example) natural histories of disease-state sequences, or any process in which the future is seen to be determined solely by the initial distribution and the laws of the process. In medical manpower planning, however, this approach has a limited use because it would imply that the original distribution of doctors in different posts, and the transition probabilities associated with these posts, themselves determined the subsequent pattern of appointments. In fact, the only part of the medical manpower process which is amenable to simple description in these terms is that which passes through the successive years of the undergraduate medical curriculum and through to the end of the first (pre-registration) year following qualification. There is a degree of wastage at each step but, apart from this, the doctors do in effect create the jobs because there is very little in the way of true specialization, and because it is inconceivable that the universities and the NHS would ever, up to this stage, fail to provide the numbers of posts necessary for completion of training.

Beyond this point, progressively, a different principle begins to operate. This is known as a 'Renewal' process. Here, an establishment of senior posts is vacated through death, retirement, or emigration, and the vacancies are filled, in cascade, from below. The transition matrix must now be looked at in reverse; it represents the probabilities of the vacancies being filled from different sources. The Markovian process operates on a 'push' basis, and the Renewal process on a 'pull' basis. The first may be seen as a driven movement of people from left to right, and the second as a driven movement of vacancies from right to left. There are analogies with the physics of semi-conductors. The boundary between the two processes is located at about the level of the senior house officer.

In real life the boundary is somewhat blurred; neither the Markovian nor the Renewal processes operate in a pure manner, and in this

way they achieve a pattern of (illogical) co-existence. Even in what are substantially Renewal processes, the creation and closure of vacancies in different parts of the health-care system are determined to some extent by the availability of doctors to fill the posts. Conversely, in processes which are substantially Markovian, the behaviour of the doctors in applying for posts is determined to some extent by their assessments of immediate and longer-term prospects. Real-life transfers are determined by a form of iterative bargaining rather than by a Markovian or a Renewal process alone. The problem of representing the real-life process is the central issue, both from a theoretical and a pragmatic point of view. A realistic model must be interactive and dynamic, the transition pattern changing at every step. Although some existing model systems have recognized the nature of this problem, none has as yet provided a generally applicable solution.

The interactions between a model and its environment may also be arranged—to some extent optionally—upon a push—or a pull—relationship. The environment of any system or model consists of those external elements or systems which interact with one or more elements of the model itself. In this case the main external interactions relate to (i) the maximum growth rate permitted for the medical manpower establishment, and especially the senior posts, (ii) detailed external direction of the relative growths of particular broad areas or specialties, (iii) numbers of available candidates for medical school courses, (iv) the duration-requirement for undergraduate medical training, (v) minimum specialist training requirements, (vi) terms of service affecting the balance of desirabilities between different specialties (including general practice) and posts abroad, as well as between medicine as a profession and other careers.

Some of these elements are entered as 'data' to the model, while others are allowed to 'float' and are determined as a result of the model process; the latter are observed as 'outputs'. To this extent the 'output-variables' have been 'pushed'. However, it is possible to investigate certain variables in an inverse manner by setting them repeatedly as 'inputs' over a span of values, until the outputs which result are seen to correspond with real-life observations. The manner in which the model is constructed, and the ways in which the different variables are explored, depend to a large extent upon the particular planning purposes for which the model is envisaged.

Applications and purposes of model usage

The purposes of a planning exercise depend upon who is doing the planning. One group might be concerned to manipulate long-term growth rates in order to meet external economic constraints, while others may be more concerned with maintaining employment among personnel, or meeting changing population needs. Others might accept the growth rate, whatever it might be, and adapt their staff training programmes to meet it. The purposes also depend upon the planning level; one group will be concerned chiefly with maintaining a long-term balance between manpower needs, manpower supply and economic resources, while another will be chiefly concerned with the immediate future of a particular clinical specialty. Different groups may require different models, or will use the same model in different ways. Where bargaining situations arise the processes, or the fact of their usage, or the data on which they are based, may be handled in a confidential rather than in a public and open way.

Eventually it might be possible to construct a comprehensive and publicly available manpower model which different experimenters could use in different ways for different purposes, and be free to choose which of the environmental relationships of the system were to be declared as premises (i.e. inputs), and which were to be calculated as consequences (i.e. outputs) either directly, or through an iterative process. Ideally, such a model should permit options regarding the degree of resolution ascribed to the range of posts. However, the model would certainly be complex, the inputs would be tedious and difficult to prepare, and the data for preparing these inputs and for fully validating various combinations of premises would at present be difficult or impossible to obtain. In the short term each application will require a different simplification of the idealized requirement and we must envisage rather the preparation and usage of a family of related models, each adapted to a different purpose. Our own model must be seen as one member of this family.

Implementations

Our model was designed as much to explore the methodological and data-requirement aspects of medical manpower planning as to meet the requirements of current policy decisions. It is to be seen as a

prototype. The planning issues to which it was directed relate to the provision of doctors in the right numbers, with the right patterns of training, for a wide range of NHS and other employments. This, and a picture of the career structure for the doctors, is the output, or 'prediction', which the model supplies. The 'inputs' determining what these outputs shall be, fall into two notional groups. The first specifies a range of policy options which are seen to be within the planner's powers to change, and the second describes the factual constraints under which the policy options have to operate. The distinction between an option and a constraint depends upon the point of view, and upon who is using the model but the policy options which the model invites include the number of medical school places provided, the ratio of males to females accepted, the duration of the undergraduate course, the duration (i.e. tenure) of junior and senior training posts, the tenure of career posts as set by the normal retirement age, the immigration rate, the maximum permitted growth rate of the medical staff establishment and modifications of the balance between broad areas of work with respect to permitted growth. The constraints—which may be set repeatedly at different values to represent differing appreciations of what the facts might be—include a variety of wastage rates (emigration, voluntary and temporary retirement), the relative desirabilities of different posts in the eyes of applicant doctors, the relative acceptabilities (in the eyes of selection committees) of different doctors, and a description of the initial staffing position—that is the current 'stock' of doctors in different classes.

The transition process

After a number of experimental formulations we adopted a combined Markovian/Renewal transition process for our model. A pure Markovian process was used for undergraduate and for junior medical training posts as far as senior house officers so that, up to this point, the numbers of available doctors were allowed to determine the number of posts. Beyond this point the transitions were based upon a combined process in which the Markovian or Renewal component was allowed to dominate in conditions of under- or over-supply. In conditions of local or general over-supply total movement is limited by the number of vacancies occurring through wastage (i.e. death, emigration, and permanent and temporary retirement)

and through increases in establishment (i.e. growth). These limiting rates are set as inputs, and are not allowed to vary as a result of the model process. Because of this, unemployment of doctors would not occur (for example) if the rate of growth were inadequate; instead, there would simply be a build-up of doctors in junior posts through inability to advance. At the present time this represents real-life processes reasonably well, although if in some future circumstances a policy were adopted of discharging trainees before their training was completed, or immediately upon its completion, in order to avoid a 'surplus' of trained doctors, the model could still be usefully employed. It would be necessary to vary the wastage rates iteratively as a series of alternative inputs in order to determine what level of wastage would be compatible with any particular staffing structure.

It can be seen that the predictions of any particular run of this model must be interpreted with discretion; experiments will sometimes be designed in a *reductio ad absurdum* mode, and the predictions which follow upon certain combinations of premises (i.e. inputs) will be used to demonstrate that one or more of the premises is untenable.

In conditions of local or general under-supply of doctors, as opposed to surplus, the distribution problems will be of a different kind. They will relate to the existence of 'shortage areas' which will be determined less by questions of growth, emigration, and tenure, as by the relative desirabilities of different posts as seen by applicants, and the relative suitabilities of different applicants as seen by selection committees.

There were considerable problems in devising a transition function with the necessary properties, capable of responding realistically to conditions of general over- or under-supply and to simultaneous over- and under-supply in different parts of the system. A full technical account of the model will be published elsewhere, and is provided in a PhD thesis written by one of us (P.A.P.) at the University of Birmingham.

The transition matrix elements are calculated in two steps. First, a 'Markovian' transfer function is computed for every cell of the transition matrix on the basis of three parameters. They are, (*a*) the 'tenure' rating (T) of the current post, (*b*) the difference in 'job desirability' ratings (S) of the current and prospective posts and (*c*) the 'job-relevance' (R) rating of the first job with respect to the second. Next, the results of the matrix operation are compared with

the available vacancies, and the matrix is readjusted to prevent the vacancies from being overfilled. In effect, irrational transfers are converted to 'no-transfers'. Each step of the transfer operation interacts with the next in that overfull and 'blocked' posts contribute a proportionate excess to the next round of transfers, so that a measure of diffusion away from overfull career channels, into less full career channels, occurs.

Validation

The main instrument for validating either the model, or any particular set of 'factual' inputs, is the pattern of transition values. These values are *not* entered directly as inputs, but are *calculated* on the basis of other premises. Once calculated they can be printed as intermediate results which can then be checked against *real* transition data to indicate how far the subsequent outputs—those intended for planning and predictive purposes—can be trusted. The inputs on which the transition values are based have already been described, but two of them require further comment. These comments relate to the 'desirability' and 'acceptability' criteria.

These assessments are necessarily subjective, yet have to be expressed in numerical terms; we used a single-digit scale (0–9) and the values were 'loaded' through the use of exponents which were adjusted until the calculated transitions provided a reasonable match with such data as we could obtain.

The initial digital assessments were based upon a consensus of personal experience, and this is probably the chief weakness of the approach. Although a reasonable match with available data was obtained, this system of values cannot be regarded as unique; that is, other formulations, with suitable adjustments of the exponents, might have proved equally capable of achieving this 'fit'. We see the assembly of attitudinal data, equally with the assembly of more comprehensive transition data, to be a fundamental requirement for further advances in the field of manpower prediction.

Example of an application

We wish now to illustrate, through an example, the kind of predictive experiment for which the simulator may be used. The experiment

examines the effects of different permitted growth rates. The growth rate was entered as a single parameter (i.e. as one of the standard inputs of the model) and its value was varied by steps of 2 per cent from 0 up to 20 per cent per annum. This is not to say that such growth would actually be achieved, but that expansions as great as this would be permitted to occur for all types of medical posts in the service. No differentials were imposed on growth rates in different parts of the service although once more, this does not mean that differential growth might not occur. It was assumed that entries to medical schools, the proportion of women admitted, immigration, emigration, retirement, and rules of tenure, would remain constant. The experiment was conceived as commencing in 1970 and terminating, after a period of constant (compound) growth, after ten years, in 1980.

The results of this experiment, in so far as they concern the hospital service, are summarized in Figure 2 where the numbers occupying different grades at the end of the ten-year period are related to the growth rate explored. Because of the way in which the model 'fixes' both the suppply and the wastage of doctors, the permitted growth rate does not in itself affect the total number, but only (in this experiment) the manner in which that number is distributed.

These results show that the number of consultants rises with each increment of permitted growth although the rise is not linear; that is, the increases are less at each successive increment.

The numbers of doctors in junior training grades (senior house officers and registrars) exhibit a precipitous fall as the growth rate increases up to 10 per cent, after which the expected numbers level out. These effects are due to rapid promotions through the training grades, together with large movements into general practice posts, which have been subjected to the same growth limitations as career posts in the hospital services. The numbers of senior registrars show a more complex pattern. At moderate growth rates the numbers increase but at higher growth rates there is a fall as senior registrars become consultants and as the numbers of junior staff from which they should be replaced, fall.

The question what staff ratios are desirable, or likely to be acceptable, is a difficult one to answer. For pre-registration traineeships we clearly need about the same number of posts as the annual output from the medical schools—that is, about 3,600 in the next few years. For subsequent traineeships the numbers depend upon the structure

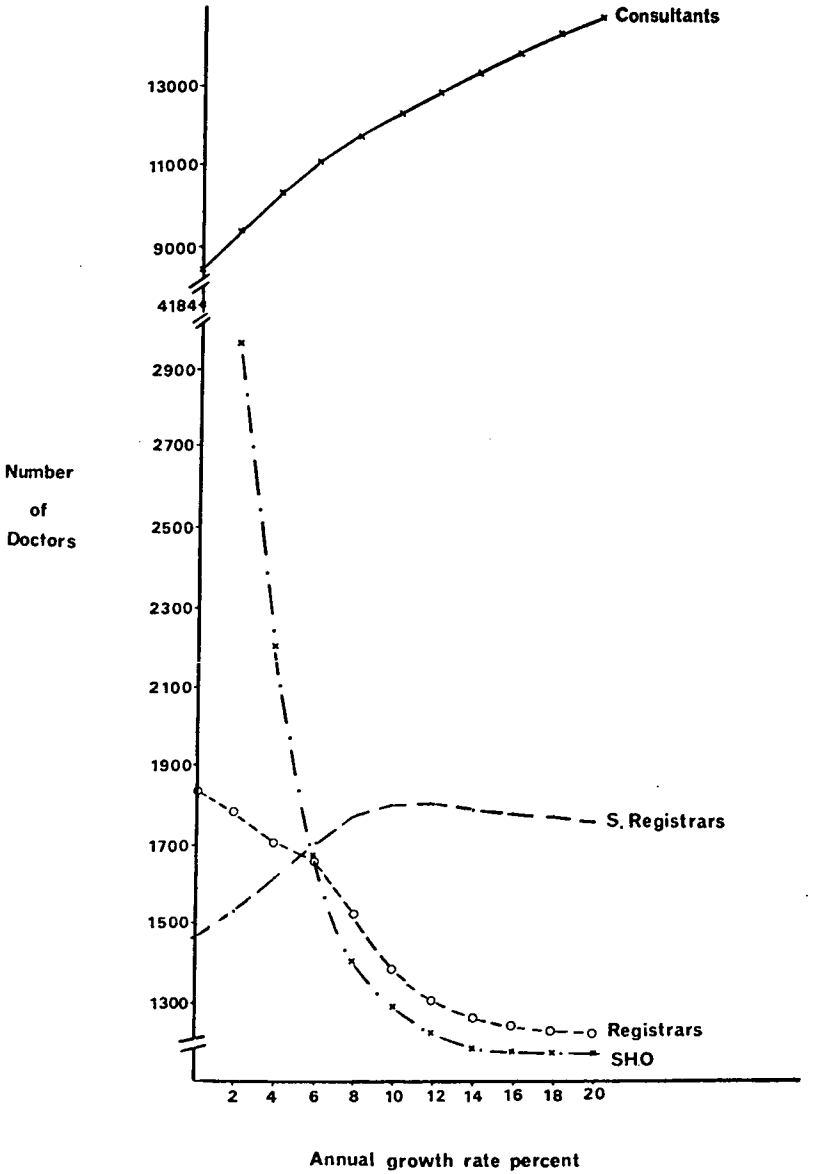

Figure 2. Numbers of male doctors in different NHS Hospital grades in 1980. Results of applying different growth rate ceilings over a period of ten years.

of the future service and requirements differ if we envisage 1:1 or 2:1 ratios between career posts in general and specialist practice. If we aimed at a 1:1 general specialist ratio, if general practitioner trainees first undertook two years of post-registration hospital work, and if consultant trainees each undertook eight years, then the ratio between hospital consultant and hospital trainee grades would eventually settle out at about 3·3:1. For a 2:1 general/specialist ratio the career/traineeship relationship would be 2·7:1. Both ratios would be modified if there were substantial numbers of overseas trainees who returned home after they had completed their training, or if there were substantial emigration or wastage of British doctors.

These estimates refer to an eventual 'steady state' with no growth and with an even age distribution.

In fact our medical staff structure is *not* in a steady state. In the last twenty years we have been producing and training junior doctors at rates far greater than those which generated our present corps of senior doctors. There has also been substantial emigration of doctors who have completed their training and a changing retirement pattern due to the increasing proportion of women doctors. Altogether these changes have resulted in the widespread development of a pyramidal age and seniority structure which is the inverse of the steady state requirement, and which previously existed only in special training establishments. This structure has now become so institutionalized as the normative pattern of the medical or surgical 'firm', that a full appreciation of its temporary and abnormal nature has become obscured. The pyramidal 'firm' structure is in fact quite incompatible in the longer term with training patterns such as those indicated above, and widely agreed by the profession. Our model indicates that if we are to approach a situation, within ten years, where our doctors can follow a satisfying career path, and in which the bulk of patient care is carried out by fully trained doctors, then the consultant establishment must be expanded with all vigour at a compound annual growth rate of about 12 per cent. Growth rates less than about 4 per cent will maintain absurd ratios in which the numbers of trainees in hospital practice (excluding house officers) approach the number of consultants.

The crisis of incompatibility between the medical staffing structure of the United Kingdom and the current growth rates permitted in the NHS, is an immediate one. This has been widely recognized without the aid of simulation studies, but the dynamics of change in

response to growth rate limitations, have not been expressed in such quantitative terms as a model of this kind permits.

It is unfortunate that the predictions are so uncompromisingly dismal. It is difficult to see at present how the situation can be retrieved without waste, within our current economic constraints, or how a satisfactory pattern of higher medical training can be established. It may not even be possible to maintain the unstable equilibrium of the last two decades as trainees respond to the realization of what their career prospects truly are.

Conclusions

The model described above is a prototype rather than a fully operational planning tool, and it was constructed to meet a range of purposes. They were (*a*) to explore the feasibility and technical requirements of the simulation approach, (*b*) to investigate possibilities of technical elaboration and to identify limits to the process, (*c*) to investigate the validity and adequacy of the data on which a credible simulation depends, and (*d*) to make a limited enquiry into the utility of a manpower model for current predictive and planning purposes.

Technical matters

The exercise reported here constitutes a demonstration of the feasibility of constructing and operating a model sufficiently complex to mimic the intricacies of the real-life scene. The investment required for its construction and development were reasonable. That is, the whole of the preliminary analysis, model development, and model construction, including initial developments which had subsequently to be abandoned, took less than two years. The actual writing of the model was essentially the work of one person (P.A.P.). The model was written in a standard language (Fortran IV). The most important technical facet was probably the demonstration that the combination of the Markovian and Renewal processes as observed in real life, could be accommodated with a unified model.

At the same time the process of development and usage of the model has indicated a number of improvements which ought to be included within an improved version. First, the design option of stratification, separating UK males from UK females from immi-

grants, created a problem. The device was adopted in order to limit the size of the transition matrix and to avoid the attendant problems of excessive computer storage-space, excessive computer time, a large volume of input, and a complex validation task using limited real-life data. However, the effect was to permit each of the strata to operate independently and to impose a stable balance between them which may not in the long run continue. There is therefore a need for a device which would enable the stratified population of doctors to compete for the same posts, and to devise rules for the competition which would mimic the real situation. The transition matrices for the three strata are of course calculated separately in the existing model but we found it difficult to mimic the complex circular career patterns which appear to govern immigrants and UK females, in particular. Demotion seems to be an important element of many career pathways and some doctors appear to be trapped in circular routes (e.g. SHO to Registrar to GP trainee to SHO . . . etc.).

A re-designed model might also deal with immigration, emigration, and wastages in a more convenient manner. At present they are set as 'inputs', perhaps over a range of values, and any predictions are conditional upon these premises being 'correct'. Although immigration and emigration rates can thus be explored in an iterative mode, it would probably be better if, their determinants having been investigated and defined, they emerged as 'outputs' from the simulation. For some envisaged circumstances an 'out-of-work' class might also be defined.

Another major area for development relates to outputs in general. The outputs of the prototype represent only a small part of the processes and of the intermediate and final results which might be displayed. Their selection and formatting for presentation are matters which can be determined only in real planning contexts, and will require a long period of development. Even from a technical programming point of view, and from the point of view of computer time and storage space, the design of outputs is a major task.

Finally we encountered a number of dynamic problems in running and 'tuning' the model. Some of the early formulations of the transition function which were tried resulted in rapid year-to-year oscillations in the numbers of doctors occupying different posts. This was eventually overcome, mainly through resetting the 'exponents' described earlier, but we suspect that the model is now 'over-damped'. We found that by altering some of the inputs in a step-wise fashion

(e.g. numbers of general-practitioner-trainee posts) we obtained slower responses than we expected. We do not at this stage know whether our expectations were misguided, or whether the model was in fact sluggish, and further technical explorations are necessary. Thus, the exponents might be readjusted; or a half-yearly cycle might give more rapid responses; or, on the other hand, a three-year cycle might more accurately represent training-patterns and career-aspirations. These changes would also require new data, not currently available.

Levels of elaboration

The detail and complexity of any model depend jointly upon the purposes for which it is envisaged and the resolution of the data on which its construction and its validation depend. The present model strains the available data to their limits, and in places beyond. The question therefore arises whether our main problem is in fact a shortage of data or whether the complexity of the model exceeds the requirements of practical planning. It is a difficult question to answer. However, it is quite clear that an effective model must be a dynamic one rather than a purely stock-based actuarial forecast and much of the complexity of the present development hinges upon that requirement. Second, analyses which have limited themselves to individual parts of the system without studying interactions with other parts, and models which study the system in gross without achieving satisfactory resolution of detail, each avoid issues which are real concerns of planners. The price of simplicity in an individual model is that many such models have to be constructed and related to each other. For reasons such as these it is our own judgement that models as complex as the one presented here, and possibly even more complex models, are indeed required. Simple models still have a part to play, but even here the more complex approaches serve a 'supervisory' purpose. That is, complex models can be used to validate simple models, just as the super-intricacies of real-life must be called upon to validate the complex models.

Data requirements

Data limitations provide the chief constraints upon further technical development of moderately complex manpower models, upon their

validation and performance, and thus upon the credibility and utility of their predictions. Paradoxically, almost all the factual data which could be desired are already collected in connection with numbers of medical school places, medical registration, salary payments, and insurance and superannuation records. The only uncertainties relate to temporary retirement, emigration, part-time work, and employment in a number of numerically minor specialties, such as ships doctors and advisers to drug firms, and also complex employments where doctors engage in multiple jobs. The main problems relate to the release of the data and their assembly in a manner which the requirements of planning, prediction, and simulation dictate. These matters are considered in detail in other papers in this volume.

The acquisition of attitudinal and behavioural data is much more difficult. These data relate to job preferences (on the part of doctors) and attitudes to candidates (on the part of selection committees). Ultimately, these preference rankings have to be determined through iterative adjustment and through matching outputs to observed transition data, but it will always be difficult to assert that any 'solution' is unique. The position would be much stronger if survey-based attitudinal data could at least be used as the starting point of these iterations, and we envisage that if manpower simulation is to progress effectively, investigations on these lines will have to be carried out. Despite the 'softness' of these kinds of data we see no way of avoiding their usage in any realistic scheme.

Utility

The approach to medical manpower planning described in this paper has evident prior virtues. Both the method and the premises are public and explicit: the data requirements are accurately defined: the outcomes are quantitative: a wide range of policy options can be explored and set against varied appreciations of the factual constraints: it offers a means of conducting a continuous review rather than relying upon intermittent commissions. However, prediction remains an uncertain science and, especially in view of the inadequacies of available data, there is no prior guarantee that the predictions of a computer simulator will *necessarily* be better than those derived in more traditional ways; nor is there any guarantee that rational action is more likely to follow. The utility of the simulation approach will only be determined in a context of practical applications.

In the meantime, we can argue in part from the sense of desperation which the traditional approach has engendered. Parkhouse (1978) describes the series of *ad hoc* reports which have had to serve us in the past and which have succeeded each other at intervals sufficiently long to call the previous report in question. The intractible consequences of actions (and inactions) consequent upon these studies were demonstrated in our illustrative example of the simulator application.

One of the more valuable features of an automatic simulator is the way in which it permits exploration of the effects of a range of inputs. It allows us to display a variety of absurd and unacceptable outcomes as well as the more desirable. We use it thus in a *reductio ad absurdum* mode, from which position we focus attention upon the inputs which determine the absurdity. In our illustrative exercise we saw that the outcomes of a projection based upon an existing set of premises revealed an absurd disparity between our medical staffing structures and the patterns of growth to which they are appropriate, and it therefore follows that one or more of the premises will have to 'give'. There is a limited number of ways in which this can occur. The option of relieving the situation through reducing the numbers of doctors to be recruited is for the time being closed and the government has recently committed itself to a continuing *increase* in the numbers to be trained. It would in any case be a misinterpretation of our results to infer that we were producing too many doctors. Such questions must be decided on other grounds and a *supply* model is fundamentally not capable of supporting such a conclusion. The model simply demonstrates that our staffing structure cannot accommodate the doctors which we have. Increased emigration which, however wasteful, might relieve the situation, is also coming to be resisted by the main recipient countries. The main pressures relating to the inflow/outflow of doctors are therefore likely to be exerted in respect to immigration. There is likely to be a growth of resistance to the promotion of overseas trainees to career posts in this country. Next, the pressures on the situation will enforce an increase in consultant posts and possibly a reduction in trainee posts. The second is the less certain action of the two, since there is a good deal of professional ambivalence on the matter, and in any case it is difficult to say whether deliberate closure, or simply the non-availability of applicants, will call the pace. If career prospects remain limited, and as junior doctors realize more clearly the intractable nature of their

situation, it is possible that there will be a major migration of doctors from junior hospital posts into general practice. It could also be a very rapid migration, and a transfer of 5,000 junior doctors (say) in the course of a few years will create a secondary round of pressures, both financial and social.

Apart from major wastage through unemployment these options exhaust the possibilities. Our experiments therefore suggest that the position is very serious indeed and that any plan of extrication will be both painful and expensive. Our failure in the past to develop and use effective predictive methods must in some measure be to blame for our present situation, and without their urgent development and application we are the less likely to identify the least unsatisfactory means of coping with the next ten years.

References

PARKHOUSE, J. (1977). 'Simple model for medical manpower studies'' *Br. med. J.* 2, 530.

—— (1978). 'Medical manpower forecasting in Britain: The background', in *Manpower for Health: Plotting the Coordinates* (London: Nuffield Provincial Hospitals Trust).

RECRUITMENT TO SHORTAGE SPECIALTIES

A. J. Willcocks
BCom, PhD
Professor of Social Administration,
University of Nottingham

Recruitment to shortage specialties

Medicine has within its confines a considerable array of differing careers: as different as paediatrics and geriatrics or community medicine and surgery. For those who join its ranks it is not a case of being a doctor without qualifying adjectives: the branch of medicine has to be chosen before a career can be followed (indeed in most cases before any employment can be obtained). The process and timing of such choices can be influenced by many factors, some internal to the doctor: his abilities, his likes and dislikes, and some external to him: the vacancy position, the chances he gets of seeing the specialties in action and so on. Somewhere among all these factors, there is one which is the central but not exclusive theme of this essay: the image the doctor has of a specialty. That image will be in part based on reality, in part on a diluted form of reality and almost, on occasions, unreality. To see something of this image was the main area of the study reported here. While it is possible to speculate about the image's impact on career choice, to go further and show directly this impact would require cohort longitudinal studies which were not possible. A specialty, however, which is seen as boring and uninteresting will, it is reasonable to assume, not get many recruits. A specialty that has an image of scientific excitement, research, and experience will attract—not all doctors, but some. In other words, the personal or collective image of a specialty, selectively recruits or discourages students and young doctors.

Shortages (or apparent shortages) of recruits are clearly matters of concern to the professional bodies concerned for the future of their specialties. Prominent among these have been the colleges and faculties concerned with anaesthetics, radiology, and pathology, and on their behalf an approach was made to the Nuffield Provincial Hospitals Trust for support for the research detailed in this essay. The colleges and faculties were kind enough to provide a considerable element of assistance in a variety of ways, but left the final responsibilities of the research methodologies to the author. The research

owes a lot to this assistance, but in no sense commits any of these bodies (or their members) to the conclusions drawn.

'Shortage' is, at first sight, a simple concept—it is the difference between the established posts and the numbers actually occupied. This, as a concept, often conceals more than it reveals—'shortages' may be artificially created or, equally, hidden by a variety of methods. In the research reported here no attempt has been made to define the 'shortages'—if indeed there are shortages—of the specialties studied. The colleges and faculties saw themselves as 'shortage specialties', and were anxious to discover some causes for this. The major attitudes studied are those of large samples of medical students and doctors at a point in time—the mid-1970s. These attitudes, encapsulated in the answers to many of the questions posed to the respondents, may be changing over time and as these doctors progress through their careers. Periodic sampling of these attitudes can add to the understanding of the successful or unsuccessful recruitment programmes.

Methods used

The data reported here is based on a series of postal surveys of medical students, house officers, senior house officers, registrars, and senior registrars, and of consultants. The first two groups were selected from seven medical schools (1) in Britain, the group of more senior trainees from selected regions (2) in England, and the final group from the major professional associations for the three 'shortage' specialties studied: anaesthetics, radiology, and pathology. By a series of cross-sectional surveys of doctors before, during, and after their choice of specialty, it was hoped to see something of the image of the specialties at each stage and to be able to suggest the elements of those images favouring or handicapping recruitment. The opportunity was taken to ask about other features relevant to recruitment: some of these will be dealt with later in this essay. There was at no time any intention to produce figures which would be used for manpower projections.

Postal surveys are notoriously difficult for ensuring a full response. When, as was the case in this survey with all but the consultants, the distribution was in the hands of others than the research team, the response rate is not only likely to be lower, but in each case, cannot

be accurately calculated. The survey of senior house officers, registrars, and senior registrars, produced an apparently very low rate of response (something over 25 per cent), so any data for this survey is treated with particular caution: the other surveys produced response rates of 60 per cent or so (3). Although the moderate response rate makes certainty of conclusion difficult, no apparent bias in the responders could be discovered and provided no statistical extrapolations of the figures are made, the results can be regarded with some confidence.

Entering the medical profession

As a preliminary to the main theme of the specialty images, some picture can be given of the medical students surveyed, of their background and of their reasons for entering the profession.

In all 954 students responded to the survey and of these, 30·9 per cent were females. Of the pre-registration house officers, 27·5 per cent were females, of the more senior trainees, 25 per cent, and of the consultants, the proportion ranged from 16·8 per cent among anaesthetic consultants to only 4 per cent among chemical pathologists. These figures demonstrate the extent to which the early percentages of women are not maintained into the senior posts. Whilst figures published by the DHSS support the thesis that this is a common feature of specialties in the hospital service, the survey described here shows the percentage of women in anaesthetics, haematology, and to a lower extent in microbiology, to be considerably higher than the overall percentage.

A common element in the findings of most surveys of medical students is the biased social background from where they came. Almost two-thirds (65 per cent) came from homes where the father was an employer, manager, or professional worker: only 11 per cent came from homes whose fathers were (or had been) in manual occupations. The figures for the housemen and the more senior trainees were similar.

Familial pressures may direct career choice, familial occupational experiences may create pictures helping or hindering recruitment. 18·7 per cent had one or both parents in the medical profession, a further 18·6 per cent had doctors as other relatives and 5·1 per cent had siblings in the profession. In other words, 42·4 per cent of the

students had relatives in the profession (4), a surprising testimony to family recommendations and examples from a profession often notorious for its public pronouncements on the declining position of the doctor.

What brought this group of students, more than twice as many males as females, largely from the 'higher' social classes and with high academic achievements, into medicine? They were asked, firstly, for their reasons in an open-ended question and later asked to say if certain listed factors applied to their choice of medicine. The reasons they gave inevitably will be 'tainted' by their experience of the medical school, and by their ability to recall decisions of several years before. That there was no significant difference in the answers of the second and fourth year students suggests no cumulative biasing of the answers with increasing knowledge and experience of medicine.

Many and varied reasons for wanting to take up medicine were given in the open-ended question. In summary, for a third of the students, medicine is seen as an interesting, exciting, or fascinating job, for a quarter as worthwhile, rewarding, and useful, and for a fifth, they could only say they had always wanted to be a doctor. Relevant perhaps to some of the arguments that follow, it is interesting to note that only a fifth specifically mentioned working with people and fewer still saw medicine as a scientific career. Considerably more of the women students said they wanted to work with people and that they had always wanted to be a doctor than did the male students. The minority reasons of job security and good prospects were given by many more men students than women. Unfortunately in the pattern of answers given there is little to link with possible motivations for, or interests in the three specialties of this study. Conversely, there is little which would appear, *prima facie*, to discourage recruitment.

In an attempt to get behind the expected generalities, the student respondents were asked to say if certain listed factors influenced their choice of medicine. Of these factors nearly two-thirds of the sample agreed that they wanted to work with people rather than with materials or machines. This proportion is, however, much lower for the men (58·6 per cent) than for the women (77·4 per cent): these high but different percentages may help to explain something of the unattractiveness of these specialties (with their lack of contact with patients) to doctors in general and to women doctors in particular.

TABLE 1. *Present first choice of specialty area—students*

Area	*Second and third year students*	*Fourth and later year students*	*Males*	*Females*	*No.*
Patient care in their homes	32·2	39·0	33·0	41·4	340
Patient care in hospital	56·7	55·0	58·3	50·2	533
Laboratory services	0·4	0·6	0·6	0·3	5
Other hospital work supportive of clinical work	2·2	0·8	1·2	2·0	14
All other	8·8	4·6	6·8	6·1	63
Total:	100	100	100	100	955

Few of the students admitted that the high status of the medical profession in the community and their good incomes had influenced their choice, but within the minorities who did admit to these reasons, the majority were male students.

It seemed that one measure of the 'popularity' of the studied specialties might be obtained by asking students about the branch of medicine which they intended to follow. Broad areas of specialization were drawn up and the students asked to indicate which was their current first choice. As will be seen in Table 1, patient care is the overwhelmingly popular choice whether in hospital or in the community, with very few of the student group opting for less direct forms of medical care. Whilst this survey can offer no evidence as to their actual, as distinct from presently preferred choices, it is clear that the specialties of interest in this essay have to seek their recruits from a field of less than one in ten of medical students.

These answers can be elaborated by a brief reference to second and third choices given by the respondents. The very tiny minority who have laboratory services as their first choice are joined by others giving them as second and third choices, making in all 7·1 per cent of students with some real interest in pathology. The supportive services (of which anaesthetics and radiology were mentioned as examples), rise with second and third choices to 36 per cent. Little is known (and without detailed cohort studies little can be known) of how important are second and third choices, or of the factors influencing the final real choice. It is perhaps enough to note that although few put them as their first choice, the three shortage specialties nonetheless have considerable support when lower choices

TABLE 2. *Present first choice of specialty or branch of medicine—selected specialties—students and pre-registration housemen.*

Specialty	*Second and third year students*	*Fourth and later year students*	*Total no**	*Pre-registration housemen*
Surgery	16·6	17·1	163	15·2
Medicine	8·8	12·5	104	20·0
General practice	20·6	27·8	234	28·5
Anaesthetics	2·2	0·8	14	5·4
Radiology	0·0	0·8	4	0·7
Pathology	3·7	2·4	29	3·1

* Other specialties than those listed attracted responses, but these are excluded. It is not uninteresting to see that another 'shortage' specialty, psychiatry, attracted more. responses (61) than the three specialties studied here.

are included. It may be that it is those who put these specialties on their lists but not at the top who should be concentrated on as potential recruits.

When the answers are examined by the medical school attended by the respondents, some interesting differences emerge. Hospital medicine tends to be more popular among the students at London medical schools and general practice among those at provincial schools. Two schools (one in London and one provincial school) produce significantly more students choosing laboratory services (5) whilst two out of the three London schools have more choosing the supportive specialties. The figures are too small (and represent only one group of students at one point in time) for conclusions to be firmly stated, but the evidence is such as to suggest that the medical school could well have some effect on the choice patterns of their students. No attempt has been made to relate this to the differences in courses or syllabuses of the schools concerned.

The respondents were next asked to indicate their current choice of specialty: as Table 2 shows, the direct patient care specialties top the list of preferences with the relative popularity of the shortage specialties added for comparison. Few figures display quite so starkly the paucity of real interest in these shortage specialties, both among the students and among the pre-registration housemen.

As already noted, no attempt was made (or planned) in this research to measure the extent of shortage or to predict the future intake to the specialties concerned. Table 2 may be set in context however by noting that, in 1976, of hospital consultants 13·0 per cent were

anaesthetists, 6·5 per cent radiologists, 1·9 per cent radiotherapists, and 10·7 per cent pathologists. Yet in the study described here, of the students wanting a hospital career, only 5·3 per cent opted for pathology, 2·5 per cent for anaesthetics, and 0·7 per cent for both branches of radiology. These figures must, of course, be treated with extreme caution (e.g. they take no account of change in choice between hospital and general practice posts), but they suggest a clear shortage at the student-level. There is little improvement at the pre-registration stage, except possibly for anaesthetics—but again the percentages fell short of the consultant demand. Studies by other research workers have found similar levels of interest in these specialties; it can only, therefore, be later choices (or forced choices) that have maintained recruitment, and will in the future maintain it.

Having allowed the student respondents free rein to express their choices, they were next asked specifically about the specialties studied—had they seriously considered them as a career, and did they feel they had had enough opportunity to see the specialty and learn about it to make a realistic decision? Their responses to the first of these questions showed that more had considered them as careers than put them as first or subsequent choices, suggesting that a significant number had been forced to reject them as possible careers. There are some differences between the sexes in their answers to this question, with more women having considered them than men. This is particularly noticeable for anaesthetics, a specialty where one finds some consultants complaining of too many females in the specialty giving it the 'wrong' image. For most specialties the proportion who have considered it as a career rises with seniority of the respondents. It would need a cohort study to discover the important aspects of the question why, with so many admitting to seriously considering these specialties, so few apparently take them up. The very poor response of registrars and other senior trainees to the survey makes even speculation difficult.

To enable him to choose a branch of medicine, an individual should ideally have sufficient knowledge of that specialty and possibly an opportunity to see it at work. As shown in Table 3, especially with disciplines not too common in the undergraduate curricula, few students in their early years were prepared to say they had enough knowledge and experience to make a realistic choice. For each specialty the proportion with enough experience and knowledge rises through their later years and on into pre-registration house posts.

TABLE 3. *Knowledge of and opportunity to have seen the specialty, students and pre-registration house officers.*

Specialty	*Second and third year students* %	*Fourth and later year students* %	*House officers* %
Anaesthetics	18·6	69·0	80·0
Diagnostic radiology	7·4	33·0	45·4
Radiotherapy	2·8	19·4	13·9
Histopathology	10·1	23·9	25·4
Chemical pathology	10·5	21·1	22·0
Haematology	7·9	25·4	40·7
Microbiology	12·7	27·2	21·0
Immunology	9·2	8·7	10·2

However, with the exception of anaesthetics, no specialty listed here has a half of the house officers with enough knowledge and experience, and in the case of radiotherapy and immunology very few indeed have such grounds for realistic choice. Whilst knowledge and opportunity to see the specialties at work will not guarantee more recruits, there can be little doubt that such widespread ignorance together with the image of the specialties (to be discussed later) can do little to help recruitment and will almost certainly hinder it.

Thus far then, this essay has looked at the students, where they have come from, their reasons for entering the medical profession and their career hopes early in their medical training. The analysis has few rays of encouragement for those looking for more recruits to these specialties. Unlike the more popular specialties they have work patterns which do not immediately fit in with the reasons given by the students for entering medicine, nor do they make a sufficient contact with the student during their early training. Against this background it is possible to begin the analysis of the image which these specialties hold for the students and housemen and its relationship to the realities as seen by the consultants.

Specialty images

The use of the word 'image' must of necessity be imprecise: here it is used to indicate that picture, that set of impressions and value judgements which the individual holds of some other individual or group.

These pictures may or may not coincide with the reality but when discussing the actions of an individual in making choices it is clear that through ignorance, lack of opportunity, or through some distorting factor, he bases his decisions on that image. To explain, or to help to explain why a particular job does not attract the potential recruits, not only the wage levels, for example, but the recruits' image of wage levels must be taken into account. Earlier studies in nursing recruitment (6) showed many who thought nursing salaries were lower than they were because of the image of nurses as poorly paid.

There can be no completely satisfactory method of discovering the exact dimensions of what is called here the image of a particular specialty, which may in any case include a lot of idiosyncratic elements. Therefore, it was decided to present the respondents with a series of statements and ask for their assessment of the statements' validity. For each specialty, some dozen such statements were put to sub-samples of the student sample, and to the house officers. The consultants were only asked to assess the truth of these statements for their own specialty.

Arguing that a well-regarded specialty would be one in which success needed a high degree of ability, the respondents were asked about the validity of the statement that 'to become a "specialist" one needs a high degree of ability'. Clearly the statement leaves room for argument about meanings and implications, but the respondents were asked for their immediate impressions of it.

Although no clear pattern emerges, it is common of each specialty that the need for a high level of ability is accepted by far fewer of those in training than among those who have become consultants. The lower student percentages result partly because of the numbers who felt unable to accept or reject the statement, but in many of the specialties there is no evidence that increasing seniority (and therefore, presumably more knowledge) significantly increases those accepting the statement. Nor is there an increase in acceptance of the statement among the group of house officers. Except in anaesthetics and diagnostic radiology, it is encouraging to note that those students who also said they had enough knowledge of and the opportunity to see the specialty, were much more likely to accept the need for a high level of ability. Whilst there is no comparable evidence from the more popular specialties about perceived need for ability, it seems a reasonable hypothesis that this image of the 'shortage'

specialties will not encourage recruitment among those of a high ability and may serve to encourage only the less able.

The argument that the status of a specialty can affect recruitment may be more persuasive than that concerning the perceived need for ability. Other things being equal, low status could well discourage would-be recruits. A statement, therefore, alleging that the specialties enjoy high status within the medical profession was put to the respondents. The results show that there seem to be a surprising degree of unanimity at all levels of those surveyed on the low status of these branches of medicine in the profession, although again a large number of students were unable to answer one way or the other for some specialties. These figures are worrying for the recruiter, but at the same time they confirm the general feeling about these specialties. On this point, many of the consultants were quite bitter in their comments, with some suggesting ways of improvement. It is not something which is amenable to statistical analysis as many did not comment, but of those that did, they seemed to be looking for improvement in one of two partially conflicting directions. There were those, apparently in a majority, who sought a 'patient' role for the specialty to improve status—claiming beds for the specialty, more involvement in the clinical ward activity or an explicit recognition by clinicians of the specialties' contribution to clinical medicine. For these respondents status was in some way linked with the patient and with clinical medicine, but there were others who looked for a more 'scientific' approach to achieve status, demanding higher qualifications, removal of routine work and concentration on laboratory, or scientific work.

Perhaps as an acceptance of the shortage of recruits and perhaps in part as an extension of the comments about the low status of these specialties, a very high proportion of each consultant group was prepared to admit that consultant grade came fairly quickly—only for histopathologists was there a majority against this thesis. Student percentages are lowered by the numbers unable to answer either way, but with increasing seniority and with knowledge and experience, more and more see the specialties as having fairly quick routes to consultant grade. Among some of the comments of consultants, a sense of regret that this should be so could be detected. It is not difficult to believe this attitude to the specialties is one which would not encourage the good doctors and may only encourage the poorer would-be recruits.

Of the various statements about training one is taken for discussion here as it is about an issue which could discourage would-be recruits: the feeling that they are regarded more as a pair of hands than a learner. The overall result is probably a pleasing one for the recruiters. Trainees are not seen as a pair of hands and if, as might be suspected this would discourage recruitment, the specialties do not seem to face this particular hazard. The original statement excited some comment among many of the consultants, particularly those in pathology. They were anxious to discourage this impression of their training system, often adding that if it took place at all it was in other laboratories than their own. At the same time, they pointed out the importance of the practical skills in some of these specialties and of the need to get practice in these skills during training. Working, as many of the specialties do, with technicians and other non-medical but skilled staff, many consultants were at pains to emphasize the need for the consultant to be able to do what his subordinates were doing. In a few of the comments one almost heard the additional comment that to prevent a take-over by these technicians, the doctors must have technical skills in their armoury as a form of defence.

Two statements about the remuneration of the doctors in the specialties were included. The overwhelming number of students and young doctors displayed an ignorance about remunerational issues, both on the question about the distribution of distinction awards and on the availability of private practice. Among those who were able to answer the question on private practice, the majority saw these specialties as having little opportunity for it (except to an extent for anaesthetics). It is the responses of the consultants which are the more interesting of these statements.

Given that the system of distinction awards is a confidential one and that some consultants felt unable to answer, there are some interesting differences between the specialties. In all the pathology specialties except haematology, only a third of the consultants accepted that the distribution of awards was unfair to their specialty. For haematology about half accepted the statement. Anaesthetists accepted overwhelmingly (83·2 per cent) that the distribution was unfair, with diagnostic radiologists not far behind (76·8 per cent). Radiotherapists on the other hand were closer in their answers to the pathologists. The figures suggest that dissatisfaction with the system of distinction awards increases as the specialty nears, in its work, the

clinical specialties. In their laboratories away from the clinical specialties which have more distinction awards, the pathologists appear least unhappy, the haematologists and the radiotherapists, each in some degree of clinical contact, have more dissatisfaction but it reaches its height among the specialties whose working life is alongside the clinicians. As few students or housemen appear to know the distribution of awards, the actual distribution is unlikely to affect recruitment, but the dissatisfaction of the senior doctors could well indirectly help to discourage some from following in their footsteps.

It would seem logical that the recruit would or ought to have some regard to the future of the specialty he thinks of joining. It seems unlikely that he will join a specialty he believes to be on the decline. To test this thesis a statement 'that the specialty is an area of service which will greatly expand in coming years' was put to the respondents. Chemical pathology (clinical biochemistry) has a future expansion according to the majority of consultants, students, and housemen. Although the immunology consultants are few in number, the overall picture here is again of agreement about an expansion in the future for this specialty. Interestingly, haematology is a specialty which is seen as having an expanding future by the majority of consultants, but this view is not shared by students and housemen.

On the other side of the coin, minorities of consultants in diagnostic radiology, radiotherapy, histopathology (as few as 18 per cent), and microbiology accept the expansionist future for their specialties. Their pessimism is shared by students and housemen in the cases of diagnostic radiology and microbiology, but in radiotherapy and histopathology the learners are somewhat more optimistic about the future than the consultants. All in all many students and doctors share doubts about the future expansion of some of these specialties, in itself, perhaps not an encouraging factor for recruitment.

Finally one further dimension of the images of the specialties must be added. As mentioned earlier, direct patient care is an important if not crucial part of what most students claimed to be looking for in a specialty. It seemed from their indicated choices that these specialties of anaesthetics, radiology, and pathology were being rejected as careers as they had, by implication at least, no direct patient care. To test this, a statement was included alleging that these specialties were the choices of doctors who did not wish to accept much direct patient care. Not surprisingly perhaps, the majority of consultants rejected the thesis that they are escaping from direct patient care.

The virtual unanimity among radiotherapists marks a mistake in the questionnaire—radiotherapy is a patient care specialty, as many of the consultants pointed out. In anaesthetics the answers are remarkably similar for all levels of respondents, showing the belief that anaesthetists are to a degree involved in direct patient contact. Among diagnostic radiological consultants very few accepted the statement, but among the students and housemen, and particularly with increasing seniority, the number accepting the statement was higher. That three out of five house officers believed that radiologists did not wish to accept much direct patient care is hardly a feature of a specialty likely to attract a group predominantly concerned for a career involving direct patient contact.

In each of the pathology specialties there were more students and house officers accepting the statement than consultants. Among pathology consultants however (and indeed in other specialties too), there were some who commented on missing direct patient care and contact. Few felt strongly enough to say they regretted the specialty they were following; other consultants were honest enough to admit they did not like, or were not easy with, patient contact, and so found satisfaction in these specialties. There would seem, therefore, to be a difficulty for these specialties in that the lack of direct patient contact and care (or the belief of its absence), makes recruitment among those dedicated to patient care inevitably limited. As mentioned earlier, for some consultants the solution was to seek to extend the amount of patient care where possible (ward rounds, beds, etc.) and even to rename the specialty to include clinical in its title.

In the wording of the statement put to the respondents, the nature of direct patient contact was not explored. For some doctors it is of a continuing kind, for others continuing during an episode of illness, for others briefly at moments of importance (e.g. anaesthetics). For some it is the kind of contact that offers chance of cure and of receiving the gratitude of the patients, for others it is continuing care which can offer no hope of cure, and for yet others, it is the care of ensuring a pain-free and dignified death for the patient. Radiotherapy consultants were apt to comment on the widespread impression of their specialty as merely a last ditch attempt at treatment after all else had failed, and the resultant gloomy image of patient care in their specialty. Anaesthetists complained of the brevity of their contact and of their apparent sub-servience to other doctors, the surgeons, in the care of the patient. This study has therefore

touched on the generalized importance of direct patient contact and care to most doctors and the drawbacks for recruitment to those specialties which cannot (or are believed not to be able to) offer it, but it has not been possible to go deeper into the variety and nature of the doctor/patient relationship.

To conclude this discussion of the image of the various specialties studied, it must be reiterated that the 'image painting' done here is, of necessity, sketchy and often indistinct. There is, however, enough detail to suggest some of the aspects of the different specialties' images which make for recruitment problems. In some cases the image is 'right' in the sense that the image and reality coincide. In others, it is less correct and it is here that professional bodies and medical training establishments may be able to improve the situation. However, as will be seen later, perhaps the most crucial factor in recruitment is the individual consultant. He is likely to be questioned and watched by those seeking a career in his specialty and he will influence those juniors with whom he comes into contact by his own attitudes and beliefs.

The mechanics of recruitment

Having examined something of the images held of the specialties that form the subject matter of this study, it is now possible to turn to the mechanics of recruitment. What are the sources of advice available to and used by the young doctor, what information has he, what does he seek, what does he regard as essential in deciding on his career? Again, full answers to some of these questions and their significance in the actual recruitment decision would require a cohort longitudinal study of the type that was not possible here.

As a person seeks to decide on the career he is to follow, certain information is known to him, or can be discovered by him. Some of this he would regard as essential in the decision-making process, some useful and some of no use whatever. A list of pieces of information possibly relevant to their recruitment decision was given to students and the trainee doctors and they were asked to indicate which items they regarded as essential, useful and of no use. Table 4 sets out the results. For the students and pre-registration doctors, two pieces of information are regarded by the majority as essential: the opportunity to see the specialty at work and the degree of patient

TABLE 4. *The usefulness, etc., of certain information for career decisions. Students, pre-registration house officers, senior house officers, registrars, and senior registrars. Percentages.*

	Students		*Pre-registration house officers*		*Senior house officers, etc.**	
	Essential	*Useful*	*Essential*	*Useful*	*Essential*	*Useful*
Average age of becoming a consultant.	13·8	56·0	18·3	53·9	18·4	52·5
Likely number of consultant vacancies.	26·5	49·5	38·3	38·0	34·6	41·3
Opportunities for research.	17·0	46·6	20·0	43·3	21·4	42·8
Chances of distinction awards.	5·8	40·9	5·0	30·1	4·0	22·7
Opportunities for private practice.	9·3	31·7	8·4	29·5	9·8	26·5
Opportunity to see specialty at work.	70·0	14·3	67·1	12·9	NA	NA
Difficulty of requisite qualifications.	40·7	37·2	40·3	30·5	30·3	51·3
Pressure of work.	28·9	44·5	32·9	41·0	NA	NA
Chances of posts in or near medical school.	5·0	30·9	9·8	37·3	9·2	22·3
Compatibility of hours with home and other commitments.	36·9	38·8	45·4	40·9	44·2	30·4
Degree of patient contact.	67·8	15·7	62·7	17·0	44·8	27·3
Opportunity to pick locality of work.	30·8	47·4	35·6	41·4	33·9	37·4

* The very low response rate on this survey means these columns must be treated with caution.

contact. By the registrar and similar grades, doctors have committed themselves to a specialty so the first of these two elements was not put to them, but the degree of patient contact remains as the most frequently mentioned essential element in their career choice decision making. Thereafter there is less agreement on what is essential and, interestingly, practical points begin to emerge. Compatability of hours with home and other commitments is an essential piece of information for almost half the house officers and the more senior trainees. The difficulty of the examinations is an essential piece of information for about 40 per cent of the pre-registration house officers, but their seniors are less in need of this information.

The more senior trainees, the senior house officers, registrars, and senior registrars, were already committed to a specialty and they were asked what, of the listed information, they had sought. Not surprisingly the majority of them had sought out the information they had listed as essential and had done little or nothing to seek out less essential information. It appears clear that the doctors' classification of information as essential is validated by the fact that they positively sought out such information and rarely sought out information they classed as merely useful.

In this list there is both comfort and concern for recruiters. Some of the poorer aspects of the specialties: the lack of opportunities for private practice and availability of distinction awards, rarely feature as essential elements in the decisions of the would-be recruits. Opportunities for research, possibly a good selling point for some of the specialties, attracts few candidates as essential information for decisions. Unfortunately the degree of patient contact, the specialties' weakest point, is the most essential part of the information needed for decision making. The impression overall is that the task for the specialties' recruiters is somewhat worsened by the pattern of answers about essential information for deciding which specialty to follow.

As was shown in Table 3, those who felt they had sufficient knowledge of, and had opportunity to see, the specialty at work, were, with the exception of anaesthetics, a minority. The gaining of such knowledge and experience is, of course, in large part the responsibility of the medical school at which students or housemen are training. When the results are analysed by the medical school being attended, it appears that this responsibility is variably assumed. Overall 45·1 per cent of the students said they had knowledge and experience of anaesthetics, but this covered a range from 32·0 per cent in one medical school to 54·1 per cent in another. For diagnostic radiology, the range is from 12·4 per cent to 28·2 per cent (around an average of 20·9 per cent) and for radiotherapy from 3·9 per cent to 33·1 per cent (around an average of 11·5 per cent). Not greatly dissimilar ranges occur for each of the branches of pathology. Interestingly, for almost all the branches of pathology it is one of the provincial medical schools that has the lowest percentage and one of the London schools with the highest.

It was not the intention in this survey to relate responses of this kind to the particular curriculum or teaching methods of individual

medical schools. It was hoped to see if variations existed and this seems to be the case. If, as students claim, knowledge and experience of the specialty are essential items in making a career choice, then some medical schools appear to make their students better able to make these decisions than others. Whether this superior preparation influences the actual decision cannot be shown in this survey and again a cohort study could be used to investigate the outcome of and the factors influencing career decisions.

How had the students and pre-registration trainees gone about seeking advice on career choices? The largest group (56·1 per cent) had turned to the consultants and other senior doctors for advice and a further 30 per cent to medical school staff, their tutors or Dean. The post-registration house officers said they turned to consultants (69·5 per cent), to the Postgraduate Dean (17·3 per cent) and other postgraduate staff (14·9 per cent) for advice on careers. Few mentions were made of formal advisory systems. Undeniably, then, the informal contact with consultants is of major importance to those seeking guidance. This finding underlines an earlier claim that the attitudes of individual consultants can prove important because of this career advisory service they perform. In the comments of the consultants themselves, particularly when asked for suggestions to improve recruitment, many consultants spoke of the need for time to take an interest in students and give attention to their need for advice.

Asked if they wished to suggest improvements in the careers advisory system, 15·5 per cent of the students and 20 per cent of the pre-registration house officers saw no need for improvements. Little of a pattern of desired improvements emerges, but 13·9 per cent of the students asked for a careers adviser, 11·3 per cent for more information on specialties available as a matter of routine, and about 7 per cent in each case asked for more contact with doctors in the various specialties and for more encouragement from, and accessibility to, tutors to discuss careers. Among house officers, about 12 per cent each asked for more information about the type of work involved in various specialties, more advice at the undergraduate level, more contact with specialists during the undergraduate course, and more statistical information setting out job availability and requirements.

Similar questions were put to the more senior trainees and their answers mirror those of the other two groups, being different only in

a greater sense of dissatisfaction with the advisory systems. One might sum up this point by noting that 20·8 per cent claimed there were no facilities for advice on careers in their medical schools. This overall response included within it students from a London medical school where only 5·5 per cent said there were no facilities, to another London medical school where 40·5 per cent of students made this claim (7). No attempt was made to verify the students' claims, but it is difficult to believe that similar proportions of non-medical students would make this response in the face of considerable university investment in career advisory services.

In conclusion, it appears that there is some dissatisfaction with the unevenness of the 'system' and at the same time a demand for more formalized channels for information and help than at present. The continued reliance on informal methods not only makes each consultant an unwitting recruitment agent, but may also leave the shortage specialties relatively neglected when more formalized channels could at least ensure their needs are brought to the attention of students.

The consultants

In designing the research it was considered important to see something of the successful end of a recruitment system: the consultants in these shortage specialties. In the survey there was an opportunity for describing the successful recruits, their own interpretations of the recruitment process, and their 'image' of the specialty of which they were senior members. For a variety of reasons not all these aims were fulfilled. Past career experience, for example, proved difficult in many cases to interpret. The impact of war, and the imposition of the NHS and its career structure on a scene where no such common structure existed make answers about career progress for many of the older consultants incomprehensible in terms of today's posts. However, there is much of interest in the answers of the consultants, who responded generously, often including lengthy essays or even printed papers.

The simplest way to emphasize the age distribution among the consultants is by reference to their mean ages. Diagnostic radiologists and chemical pathologists (clinical biochemists) are youngest with a mean age just under 46 years, and the oldest group are histopatholo-

gists with a mean age of 51 years. The other specialties share a mean age of approximately 48 years. There is, therefore, very little difference in age among these shortage specialty groups. The age of the consultant is, in part, a product of the time at which he became a consultant and the length of time he has held a consultant post. When those whose career history was difficult to interpret are excluded, the mean length of time that the remainder have held a consultant post divided the specialties into three groups. Haematology and microbiology (mean number of years as consultants ten and nine respectively) are significantly less experienced than the other specialties. At the other extreme is histopathology (mean 15·1 years) which has the greatest experience. The remaining specialties have means of around 13 years. The mean lengths of service correspond well with the thesis that haematology and microbiology are newer specialisms and that histopathology is a traditional one, perhaps on the decline.

New appointments depend in large measure on the retirement of previous holders of consultants posts, but it is nonetheless interesting to note the differences among the specialties. The two branches of radiology and microbiology have recruited half their current consultant strength in the last ten years; the other specialties have recruited a much lower proportion in the same time.

Another point about the sample of consultants (and the reader should perhaps be reminded that the sample is one using different sampling fractions in the larger and smaller specialties) is to underline the very low percentage of women in these shortage specialties. The highest percentage is in anaesthetics, where 15·1 per cent of the respondent consultants were women. Almost as high was the proportion of women among the few immunologists (13·3 per cent), whilst at the other extreme only 4·1 per cent of the chemical pathology consultants were women. The remaining specialties tended to group around the figure of 10 per cent being women. In other words, the numbers of women in the consultant groups were small, especially when compared with the current recruitment into medical schools, of a little over 30 per cent. There was, however, some indication that the proportion of women consultants was higher among the younger ones.

It had been hoped to analyse the careers of these doctors in their progress to consultant status, but the replies were unsatisfactory in far too many cases. In addition, for the older doctors, the status of their intermediate posts, compared with registrars and senior

registrars, could only be guessed at. One statistic which may be of interest is that, except for anaesthetics, half or more of consultants had not been senior house officers but appeared to have begun their climb at the registrar level.

It had been hoped to develop some way to tracing those doctors who had begun training for one of the studied specialties, but who had 'wasted' by transferring to other specialties or branches of medicine. Unfortunately, in a cross-sectional study of this kind this is impossible. Instead it was hoped to see something of those who had begun training in other specialties but who transferred during training to the shortage specialty under study.

For most of the groups, between a quarter and a third had had to fulfill National Service responsibilities of some kind, although among anaesthetists the figure reached 43·4 per cent. For most groups a further quarter to a third had had no training or experience, after pre-registration house jobs, outside their present specialty. Turning to those who had outside experience, for anaesthetists there was no clear pattern in the specialties tried en route. Not unexpectedly, because of the past tendency to double general practice and anaesthetics, a sizeable minority did come from a period in general practice. Diagnostic radiologists often included a period in surgery or medicine in hospitals during their training (39·4 per cent), so too did radiotherapists (33·1 per cent). Research and teaching took up part of the training time for as many as 59 per cent of chemical pathologists, and high percentages of the other pathology specialties.

The reasons for specialty changes were not always well provided by the respondents. Of those given, the major move outside the specialty—service in the armed forces—clearly was for most doctors not a matter of volition. For the rest there were those who explained these ventures outside their chosen specialties as part of a planned preparation for their career. Others admitted to uncertainty over career choice or a change of mind during an earlier training ladder. Over 27 per cent of radiotherapists admitted to this indecision, whilst only 9 per cent of haematology consultants admitted to an indecision or change of career. It would be wrong to draw too many conclusions from these differences, but it does appear that some specialties are much more likely to have recruits who have suffered from indecision and change.

There was a further group of doctors in each specialty who said that their choice owed a lot to chance factors: the arrival of a job at a

convenient time, the offer from an admired colleague, or the revelation of the attractiveness of the specialty, having come across it during some other activity. That chance has played a part is not unexpected, but the doctors who discover a specialty by accident are in a sense commenting that their training did not enable them to discover it in the arranged course of events. Perhaps recruitment should concentrate more on helping doctors to discover the shortage specialties other than by chance.

Asked if their current specialty had been their first choice when they came to train for it, four-fifths of histopathologists and two-thirds of anaesthetists claimed that it was. Even in the specialty with the lowest proportion the majority said that it was their first choice of specialty. For the minorities who admitted their current specialty had been a second choice, no clear pattern of reasons emerged. For some the competition for senior posts among their first choice specialties had led them to change, for others a recognition of lack of ability was the reason and for yet others it was a combination of personal or familial factors. It is clear that the changes which take place are fairly few (less than half, but often less than a fifth), and that those who change do it for a variety of reasons. Two special factors need a mention. In the first place, the role of national service, already discussed, could have caused changes in many doctors' choices before they had time to embark on training. Secondly, a minority of the consultants in this survey were affected acutely by the oversupply of registrars and senior registrars in some of the more popular specialties in the early days of the NHS. In other words the degree of changing of specialties during training may be peculiar to this sample of consultants. It is even possible that the shortage specialties may have abnormally benefited from such events.

Job satisfaction

In designing the questionnaire it was thought that the consultant would probably be one of the major but informal recruitment agencies. If this were to be true (and the survey supports this thesis) then his satisfaction with his job would tend to show itself and appear as a favourable recruiting factor to the watching and listening would-be recruit. It was, therefore, decided to make some effort to examine the consultants' job satisfaction. Out of a list of possible

elements the respondents were asked to indicate the most important elements *present* in their own job satisfaction and the most important elements *missing* in their job satisfaction.

The element most frequently chosen as most important in the respondents' job satisfaction was 'a wide variety of presenting problems'. This was the commonest most important element for anaesthetists, diagnostic radiologists, haematologists, and microbiologists. 'Intellectually stimulating diagnostic problems' was the first most important element for most histopathologists and chemical pathologists, and for radiotherapists the 'high degree of patient contact' takes first place—an interesting comment on the clinical nature and attraction of this specialty. The second most frequently chosen elements were those already quoted, except among anaesthetists who, in almost as many cases as for the element 'wide variety of presenting problems' chose the 'opportunity to use skilled techniques' as the most important element in their job satisfaction.

This part of the data can be reinforced in a slightly different way by looking briefly at each specialty and noting the elements which 70 per cent or more mentioned as of importance, although not necessarily first importance in job satisfaction. Anaesthetists voted the following elements as present and important in their satisfaction: opportunity to use skilled techniques, a wide variety of presenting problems, and opportunity for contact with other medical personnel. Diagnostic radiologists chose a wide variety of presenting problems and intellectually stimulating diagnostic problems. Radiotherapists chose a wide variety of presenting problems and the opportunity to use professional training fully. Among the histopathologists the choices were a wide variety of presenting problems and intellectually stimulating diagnostic problems. Haematologists chose the same elements and added to them a high degree of patient contact, opportunity for contact with other medical personnel, and opportunities for research. Microbiologists chose the same pair of elements together with the opportunities for research. Chemical pathologists could muster only one element where 70 per cent or more of the consultants chose it as an important present factor in their job satisfaction —namely intellectually stimulating diagnostic problems.

Except then for radiotherapy, the absence of 'clinical' satisfactions led the consultants to emphasize the basic elements of their disciplines concentrating on diagnostic problems and the variety of problems met. Did the absence of clinical satisfactions show itself in the

elements listed as important but missing? The answer must be both yes and no. The histopathologists, chemical pathologists, and microbiologists had the biggest number putting the 'high degree of patient contact' as most important, but missing. The other specialties did not give so much weight to this element, instead 'prestige and status of your specialty in the profession' was ranked as the most important missing element in their job satisfaction by over half of both the radiology specialties. Interestingly this element recurs in second place (that is the next biggest group giving it as their most important missing element) among anaesthetists, chemical pathologists, and haematologists. These latter specialties were most likely to put 'the opportunity to travel' as their most important missing element. Remuneration as a missing important element attracted considerable proportions of diagnostic radiologists and histopathologists. For each of these shortage specialties the absence of a high degree of patient contact, the lack of status and prestige within the profession and to a lesser extent the remuneration and travel opportunities are missing in the job satisfaction of significant numbers of the consultants in these specialties. In as far as they reveal these gaps in their satisfaction to the would-be recruit, they are, in large measure, helping to reinforce a low level of recruitment. Not getting enough choices to deserve ranking among the most popular was the element 'the opportunity for private practice'. Between a quarter and a third of each specialty group said however that they regarded this element as the most important missing in their job satisfaction. Private practice may not be an encouraging or discouraging factor for the students, but for their senior colleagues it clearly is of some importance.

The answers to the questions on job satisfaction were analysed not only in total group terms, as discussed above, but also in relation to the age of the respondents. This analysis shows a tendency for the younger consultants to take a more pessimistic view of their own satisfactions and to be less sure of some of the elements which are potentially valuable in recruitment.

Views on training and recruitment

When asked about their assessment of the calibre of present day recruits to their specialty, sizeable minorities were unable to answer because of lack of contact with trainees. Of the remainder, two-thirds

or more in each specialty said that recruits of outstanding calibre accounted for 25 per cent or less of the total entry. The specialties show considerable differences, however, when asked if only 25 per cent or less of the recruits were of poor calibre. Among radiotherapists only 38·8 per cent of the consultants were prepared to limit the poor calibre recruits to 25 per cent or less of the intake. At the other extreme, 60·5 per cent of anaesthetists were prepared to make the same answer. Overall the consultants assessed the bulk of their intake as good or average but there was evidence of some unease in some specialties that too few outstanding and too many poor calibre candidates were coming their way. Whether this is true or not it is more than possible that the impression that recruits are not of very high calibre will reach the ears of recruits and tend to become a self-fulfilling prophecy.

Asked about their own training, often undertaken many years before, a high proportion of the consultants were unhappy or critical. Indeed in no specialty did as many as a third refer to their own training as good or excellent—radiotherapists (32·2 per cent) coming nearest. For the pathology specialties fewer than a fifth had found their training good and only slightly more among the other two specialties were similarly impressed. When the younger consultants' answers are examined, although there is a small but noticeable trend to more being satisfied with their training, there are still very large proportions who are explicitly or implicitly dissatisfied. It seems reasonable to suggest that many of these consultants, in expressing dissatisfaction with their own training, are likely to discourage or at least not encourage present-day recruits.

Because of their importance in the recruitment system, it was decided to ask consultants what they looked for in would-be entrants to their specialties and what advice they would give to them. Many of the answers spoke in such generalities as enthusiasm for and interest in the specialty, almost a *sine qua non* to bring people to the point of considering a specialty in any case. Two in every five anaesthetists said they were looking for someone who was reliable and able to cope with crises, a quarter were looking for technical ability, and a fifth for a broad medical experience before entering the specialty. The diagnostic radiology consultants opted far more often for a broad medical experience (44 per cent) followed by a fifth who looked for intelligence. Interestingly perhaps (or perhaps the result of bitter personal experiences), just under a fifth (17·4 per cent) expressly stated they

would look for someone who put radiology as their first choice of specialty. Radiotherapists were looking for those with an interest in the patient and those with good medical training. For the histopathologists, the qualities they most looked for included intellectual abilities and academic standard, an interest in and enthusiasm for the discipline. Chemical pathologists looked for the scientific interests and ability (42·9 per cent) and for interest and enthusiasm. Haematologists were looking for an awareness of and an interest in patients' needs (37·8 per cent), enthusiasm and curiosity (31·7 per cent), with a further fifth seeking a good level of intellect. Microbiologists wanted from their recruits enthusiasm, scientific interests and ability, and an interest in patients. Leaving aside the search for enthusiasm and interest, there are some clues about the qualities the consultants seek. A broad medical experience is constantly being reiterated, perhaps unconsciously to reinforce the argument that these disciplines remain medical in the face of competition from other opportunities outside medicine. Patient interest is mentioned, but only in those specialties with a degree of patient contact, scientific and technical ability where this seems necessary and relevant, and most often good ability and a genuine interest in the specialty are sought.

When asked what they said to those seeking advice about their specialty, very few consultants said they would positively discourage recruits from joining. Among the pathologists, 7·2 per cent of the histopathologists, 8·2 per cent of the chemical pathologists, 3·7 per cent of the haematologists, 4·5 per cent of the microbiologists, and one of the fifteen immunologists said they would positively discourage recruits. The other specialties were rather more likely to seek to discourage recruits: 11·3 per cent of the anaesthetists, 8·7 per cent of the diagnostic radiologists, and 12·7 per cent of the radiotherapists. While few consultants would recommend enquirers not to join, what cannot be estimated from the data is the number of enquirers who might be in contact with these dissatisfied consultants.

In designing the questionnaire, one further issue seemed worth elucidating from the consultants: what improvements would they like to see in the recruitment system. Eleven areas of possible change were put to them and they were asked to indicate which they saw as essential or useful (and of no use) and to add other changes they would like to see. A plethora of suggestions resulted but little consensus as to the most important changes needed.

Changes in the undergraduate curriculum (which, when men-

tioned, often seemed to be viewed as the establishment of chairs in their discipline where none existed previously), are not seen as essential by many of the consultants in the disciplines which might be expected to impinge on the undergraduate curriculum already. Only the unrepresented specialties at this stage of training are overwhelmingly certain that changes are essential, in most cases implying some teaching in or introduction to their specialty. Interestingly the younger consultants in the two radiologies felt more strongly about this than their elders.

Large numbers, particularly among the younger consultants (and never less than 40 per cent) thought increased contact between specialty members and students essential; again those specialties least likely to be represented in undergraduate teaching are the most emphatic about the need for this change. Almost half of the consultants in each of the pathology specialties and in anaesthetics agreed that an essential change was that more information about the specialties be made available to students and young doctors, and the two branches of radiology, again, no doubt conscious of their position outside the main stream of early training, were even more emphatic about this.

The suggested change of restructuring the postgraduate examinations attracted few consultants, and even fewer wanted to see the examinations abolished. More training posts were seen as an essential change by some consultants, ranging from as many as 28·6 per cent of the haematologists to 10·4 per cent of the chemical pathologists. From a reading of the many comments the consultants made on their replies, it seems reasonable to assume that for most consultants in these specialties the issue is not getting more posts for trainees, but either filling existing ones and/or improving the quality of those undertaking training. Consultants were also asked if more consideration ought to be given to the role of trainees as learners, rather than pairs of hands, and the answers given suggest that for sizeable minorities, changes in this direction are essential. This type of change is seen as needed in the pathology specialties, particularly among younger consultants. It is worth recalling that when specialty image was discussed, although consultants were opposed to using trainees as pairs of hands, many stressed the importance of being able to do the manual tasks which other disciplines in their laboratories would, in time, be doing under their direction.

More distinction awards, although seen as useful by many con-

sultants, was regarded by few as an essential change, except in anaesthetics and diagnostic radiology. As discussed earlier, these two specialties are in close contact with specialties who get more distinction awards. They, therefore, appear more conscious of this difference and its impact on recruitment than do those specialties away from contact with the clinicians.

Given all the earlier comments large proportions of the consultant groups might have been expected to say that increased contact with patients was an essential change. The answers reveal a split in the specialties studied. The anaesthetists and the two branches of radiology feel that the patient contact they have, if increased would not represent an essential change although they accept its usefulness. On the other hand the pathology specialties (except for histopathology) have about half the number of consultants regarding a change of this kind as essential. For the histopathologists it is presumably difficult to envisage an increase in patient contact. Again, as they see patient contact as a major recruiting factor and an important element in job satisfaction, the consultants in these specialties are looking for ways to increase it.

At a time when the managerial and administrative costs of the NHS are the subject of criticism, it is interesting to see that for some of the consultants, more administrative support is an essential change to improve recruitment. The final suggested change, of a different selection policy for medical students found barely any support whatever. The underlying hypothesis that some portion of the medical school places should be given explicitly to those without direct patient care interest was clearly unacceptable.

Asked to add suggestions of their own, the few consultants who did make them gave a bewilderingly varied array. If there is any pattern at all, it is towards changes in undergraduate training, including more chairs, more lectures, more experience of their specialty. Two impressions remain: the immense fertility of ideas, but the almost total lack of any real measure of agreement of the directions to be followed.

Conclusions

Before attempting some final conclusions and comment two limitations of this study need reiteration. In the first place, as a postal

questionnaire it has the drawbacks of limited response rates and of limited responses in written form. In the second place, the survey is a cross-sectional one, not a longitudinal cohort study, thereby making many of the interesting questions unanswerable. Another cautionary reminder is the fact that only three shortage specialties were studied. Other shortage specialties were not included, nor were any of the more popular specialties. Conclusions, therefore, which arise from this study may not be unique to these specialties or indeed the shortage specialties as a whole.

That there are images or stereotypes of the specialties studied has however, been demonstrated in this survey, that they are common to many students and doctors seems clear, and that they might influence recruitment is at least a possible hypothesis to arise from this study. There are other studies making the same hypothesis, notably that by Mowbray and Davies (9) but without a careful and detailed cohort study, the impact of the image still needs further investigation.

Implicit in the answers to why choices were made is the fact that any decision is in part about obtaining desirable goals and in part about avoiding undesirable ones (10). It seems that the respondents did not want to miss patient contact, so avoided some of the specialties studied, but some wanted laboratory activity or limited patient contact, and opted to choose pathology. The images held by the students and junior doctors of the specialties studied present a picture however which, on balance, is probably more discouraging than helpful for further recruitment.

Such a survey as that discussed here, raises questions about the comparability of the answers with those in other surveys. In another study Lawson and Simons compare their results among graduates of one school with two other studies, and show a range of between 0·7 per cent and 1·7 per cent of respondents giving radiology as a first preference specialty—in the survey described here the figure for housemen is 0·7 per cent (8). Anaesthetics in their study ranges from 5·2 per cent to 8·2 per cent, the figure here is 5·4 per cent. These figures bear out the generally low level of interest in the shortage specialties shown here; the students and doctors questioned in this survey are not unrepresentative in their replies. Provided then that the figures given here are not used as predictive estimations of future intakes, they represent a fair picture of the low popularity of the shortage specialties.

Given this low level of interest it is perhaps appropriate to reiterate the findings on the recruitment and advisory systems. Little by way of formal systems operate, the majority of the decisions are informally or accidentally made. It does, at least, seem a valid suggestion that more formal and planned careers guidance and advice might improve recruitment to the shortage specialties.

The topics researched deserve wider and more continuous study if the patterns of recruitment to the specialties within medicine are to be understood, monitored, and possibly changed. Manpower studies and planning must depend, to an extent, on the ability to predict likely trends in recruitment. This study was not intended to enable such predictions to be made: even its basic thesis of the effect of attitudes and images on recruitment cannot be proved by the research methods chosen. For predictive purposes and for testing the importance of attitudes to particular specialties in the career decision, the research must turn instead to cohort studies. The following of cohorts of students through their careers will be of immense value to the manpower planning systems. The importance of types of training, the temptations of salary or emigration, the impact of shortages, and much else will be shown on a continuing basis—the outcome in terms of the career finally chosen will, in time, too be shown.

If it is accepted that any knowledge of the process whereby a student finally emerges as a pathologist or a surgeon will help to predict, if not control the future flow of medical students, then it would seem more than reasonable for some organization to be charged with the task of cohort monitoring of the recruitment process. The current lack of knowledge is one of the weaker areas of NHS manpower planning.

Notes and references

1. The medical schools were Glasgow, Manchester, Birmingham, St Bartholomew's, Leeds, Middlesex Hospital, and St Thomas's.

2. The regions were North West and South West Thames, Wessex, North West, and West Scotland.

3. The overall response rate for students was 57 per cent (ranging from 80 per cent to 37·5 per cent in the different schools) for housemen 45 per cent (but it is more than likely that this was in reality much higher, due to the high turnover rate of these doctors), and for consultants ranging from 70·9 per cent to 52 per cent by specialty.

4. Put another way, 47·3 per cent had no family connections whatever with the

health service; this proportion fell below 40 per cent in the London medical school intakes and reached 50 per cent or over in the provincial schools. The London schools appeared more likely to have students with family connections in the service.

5. Interestingly among pre-registration housemen, those from the two same medical schools showed a similar greater number of choices for laboratory work.

6. Marsh, D. C., and Willcocks, A. J. (1965). *Focus on Nurse Recruitment* (London: Oxford University Press for the Nuffield Provincial Hospitals Trust).

7. The answers from pre-registration housemen demonstrated similar differences with regard to the same medical schools.

8. Lawson, A., and Simons, H. A. B. (1976). 'The careers of men graduates from the Royal Free Hospital School of Medicine, London', *J. med. Educ.* 10, 348. See also: Last, J. M., and Stanley, G. R. (1968). 'Career preference of young British doctors', *Br. J. med. Educ.* 2, 137.

9. Mowbray, R. M., and Davies, Brian (1971). 'Personality factors in the choice of medical specialty', *Br. J. med. Educ.* 5, 110.

10. See Last and Stanley, op. cit.

CONFUSION OR CONTROL?

MANPOWER IN THE COMPLEMENTARY HEALTH PROFESSIONS

Barbara Stocking
BA(Cantab), MSc
Research Fellow,
Nuffield Provincial Hospitals Trust

Confusion or control? Manpower in the complementary health professions*

A fully comprehensive health service requires the skills of a whole range of trained professions. These roles may be complementary to the medical role, supplementary to it and, most importantly, may overlap with the medical role. This essay is concerned with two aspects of 'the complementary professions', the changes in roles of these professions, especially *vis-à-vis* medicine, and the supply and training of each of them. The issue of control is the central theme of this essay. Should professional development be left in the hands of the professions themselves? Should the supply and training of these professions be left to current mechanisms, where a motley collection of professional bodies, educational institutions, and governmental policies are involved, and where no central body controls any one profession nor is there a body taking an overview across all of them? Are current controls in the best interests of the patient and the public and, if not, what approaches can be made to remedying the situation? Before any attempt can be made to answer such questions a broad understanding of current mechanisms and developments is needed, and it is hoped that this chapter will provide such a perspective.

Supply and training in the complementary professions

A great deal of concern has been expressed recently by several of the professions complementary to medicine about the lack of manpower planning for their professions (1). The reasons for their concern are not hard to find. Only a year or two ago there was a shortage of

* The terms 'supplementary professions' and 'paramedical professions' have been avoided, since both terms imply supervision by doctors. This review covers a number of professions, for example, social work which do not fall into this category. The term 'complementary professions' is more encompassing and also less objectionable to the professions themselves.

For a list of the professions considered, see Appendix 1.

trained individuals in many of these professions (2). Suddenly, there is a surplus and the newly qualified are having difficulty in obtaining posts (3). In one sense the movement from shortage to surplus is artificial. The shortage is measured in terms of vacancies for posts rather than any need oriented measurement of the numbers required. Thus the cutback in government spending which has resulted in 'freezing' of posts has led to a surplus of professionals and there are qualified individuals who are finding it difficult to get jobs. This sort of situation obviously causes discontent particularly because in many professions the training is highly vocational and does not qualify the individual for any other work than in the particular profession.

There are other causes of the surplus as well as a cutback in posts. Social and economic changes have resulted in many more women remaining in full-time work for a longer period and also wishing to return to work either on a full- or part-time basis as soon as domestic commitments will allow. Since many of the complementary professions are predominantly (and some exclusively) female then these societal changes have a marked impact.

The rapid switch from shortage to surplus has led to a call for better manpower planning at least in matching the numbers trained with the possibilities for employment, even if they cannot be matched with more absolute measures of need. There is also a call for improvement in the information about the numbers in the professions, in their age, sex, and employment characteristics, so that manpower planning can be practised on a firmer basis. There is reason to believe that there will be a greater need for manpower planning in the future than there has been in the past. Because the GNP and the proportion of it which is spent on health has been growing in the last ten to twenty years the demand for trained professionals has been greater than the supply. The growth of services resulted in posts being created, the demand for professionals rose and because of the long lead time to produce a fully qualified individual there were apparent shortages in many professions. In the future it seems likely that the NHS will grow only slowly, if at all, and it will not be possible to absorb more and more professionals. It will, therefore, become more essential to match the numbers in training with the opportunities for employment. If no jobs are available for individuals who have undergone a lengthy training to acquire particular skills, apart from the personal suffering involved, the situation also raises

questions about whether resources are being wasted in their training.

If more planning is required, could this take place at a local or regional level? After all, both in education and in health, government policy is to devolve a great deal of power to these local levels. In manpower planning, the issue is not so much about devolution of power as in logistics. For a variety of reasons a large part of the planning must be carried out at the national level. Considering first the supply of trained manpower, it has to be recognized that for several of the complementary professions the numbers required are so small that it would be impossible to plan on a regional basis, for instance the remedial gymnasts only number several hundred nationally. Even for the larger professions such as nursing, central manpower planning makes sense. The qualifications in the complementary professions are accepted throughout the United Kingdom and there is considerable mobility among regions and, to a lesser extent, among the four countries making up the UK. Over production in one region or in one of the UK countries affects the rest of the nation. For example education policies in Scotland which have allowed the numbers of dietitians and speech therapists to increase has led to many of these professionals seeking jobs in England and Wales and caused concern among the qualified in these countries.

Similarly if the requirement for manpower is considered there is good reason for planning to take place at central level. The most important point is that the number required in any profession is highly dependent on central government policies, both the total funds for the NHS and the priorities for spending within the Service. For example, the recent discussion documents on priorities emphasizes long-term care and rehabilitation for the elderly, for the mentally ill and for the handicapped (4). These priorities clearly call for an increase in numbers in the remedial and caring professions, though of course, the actual posts will have to be created by the employing authorities. The demand for trained individuals is, in general, created by the sum total of decisions made by employing authorities (if the employment pools outside the NHS are not considered, for the time being) but it is necessary that there is some central body piecing together the total picture to assess what the overall requirement is and will be. It also makes sense to plan for these professions centrally in order to carrying out planning across the board. Where one profession is in short supply other professions (especially nurses) are often called on to 'take up the slack'. Joint planning would make it

much more feasible to provide solution to temporary shortages as well as to ensure proper balance across the professions in the long term. Whether the manpower planning task is carried out by central government itself or by some independent manpower commission the DHSS and the NHS will have to play a major part. The NHS serves as the training ground for the clinical aspects of training in all the professions as well as being the near monopoly employer of some of them.

From the discussion so far it should not be concluded that there are no controls over training and supply at all. The purpose of this chapter is to describe some of the complexity in the bodies and controls that exist currently. It is only by some understanding of this system of controls and influences that manpower planning becomes a feasible proposition. It is also useful to see how much manpower planning is already taking place in some of these professions. Before examining further the training and supply system some of the characteristics of the workforce and the employment pools open to them needs discussion.

The workforce and the employment pools available to them

Manpower planning would be greatly simplified if all those trained in the complementary professions remained in the NHS (or in the personal social services in the case of social workers) and continued to be employed until statutory retirement age. The situation is obviously much more complex and there are two aspects which warrant further discussion here. First, there is the problem of a predominantly female workforce, a point which was touched on earlier. Secondly, the other employment opportunities open to the professional need to be considered.

Nurses and several professions under the Council for Professions Supplementary to Medicine, e.g., occupational therapists, are obvious illustrations of the predominance of women in the workforce. Other professions such as pharmacy which are not traditionally female are, like the medical profession, taking in an increasing proportion of women for training. Unfortunately for planners (although perhaps fortunately for society as a whole!) women tend to move in and out of the workforce as domestic and family commitments change as well as in response to changing economic conditions. This flexibility makes manpower planning a very uncertain undertaking

and, as has been decribed, it has been a major factor in causing the current surpluses in many of these professions. It is possible to use this sort of flexibility to advantage, however. Inducements such as flexible hours and part-time work could be used to bring some of these married women back into active employment during periods of shortage. To use these people to meet particular needs does require much better manpower information than exists in most professions. Few professions have accurate information on how many trained individuals are in active employment and how many others are 'out there' and who may suddenly move back into employment to cause havoc in supply or even to be used to advantage in coping with shortages.

This lack of data on employment leads on naturally to consider where it is that trained professionals can be employed. How much controls over training in any profession will actually affect the supply for the NHS depends on the proportion of the profession employed there. An immediate illustration is provided by the nursing profession. Trained nurses can be employed by the NHS, they may be privately employed by GPs (although these nurses are almost entirely funded indirectly from the NHS) they may be in industry and in private practice. Thus even if numbers in training are tightly controlled these other employment pools have to be considered in manpower planning for the NHS. The nursing situation is compounded by the fact that the basic qualification is a stepping stone to further employment pools even within the NHS, including district nursing, health visiting and midwifery. To plan for numbers in basic training then, requires thinking about the numbers required for each pool.

Where training and/or registration is required to call oneself a practitioner of a particular profession, as in nursing, at least there exists some knowledge of the total number in the profession (of course only where annual notification to practise is required, for example with midwives, is it possible to compare the numbers practising with the total number qualified). With some of the complementary professions, for example social work, qualification is not required to practise even though a qualification exists and is controlled by a statutory body. The number in the profession is therefore much more in the control of the employing authorities than in the training bodies, who can only control the number of qualified staff. With other professions, for example physiotherapy and occupational therapy, registration is required only for practice in the NHS, which again

complicates the information base. Some therapists may register yet be employed outside the NHS, other qualified therapists may not be registered yet are in active employment outside the NHS, while yet other individuals may be employed outside the NHS without qualifications at all. How these various circumstances concern professional status is discussed in the second part of this essay. Here it should be noted that the various employment pools and level of statutory control required for employment in each, make manpower planning complex particularly in the absence of an adequate data base. The situation also begs the question of whether a manpower planning function should be responsible for ensuring adequate numbers of trained staff in these other sectors.

Who does control training and supply?

Even if it were possible to decide how many individuals should be trained in a particular profession, the current complexity of the training system makes it unlikely that such targets could be readily achieved. An overview is required to understand this training system. Many different bodies are involved and their interests are not always compatible.

Figure 1 illustrates the system for providing training for the health care professions, and, although not all professions are given, the diagram does illustrate the problems involved. The finance for the system originates at the Treasury, which provides funds to the University Grants Committee (UGC), the Department of Health and Social Security (DHSS), and the Department of Education and Science (DES). The UGC channels funds to the universities and, while the universities have considerable independence, the UGC has some influence because it holds the purse-strings and, in particular, it has to approve new courses. The only professions which lie entirely within this branch of the system are the medical and dental professions, and even then, clinical training takes place in the NHS. Nevertheless a high degree of control is exerted over the numbers in training particularly in the medical profession, through formal negotiations between the DHSS, UGC, and General Medical Council. For other professions there is not the same control, even for pharmacy where a degree is required for registration the degree can be obtained at a polytechnic so that the DES branch of the system also has to be considered.

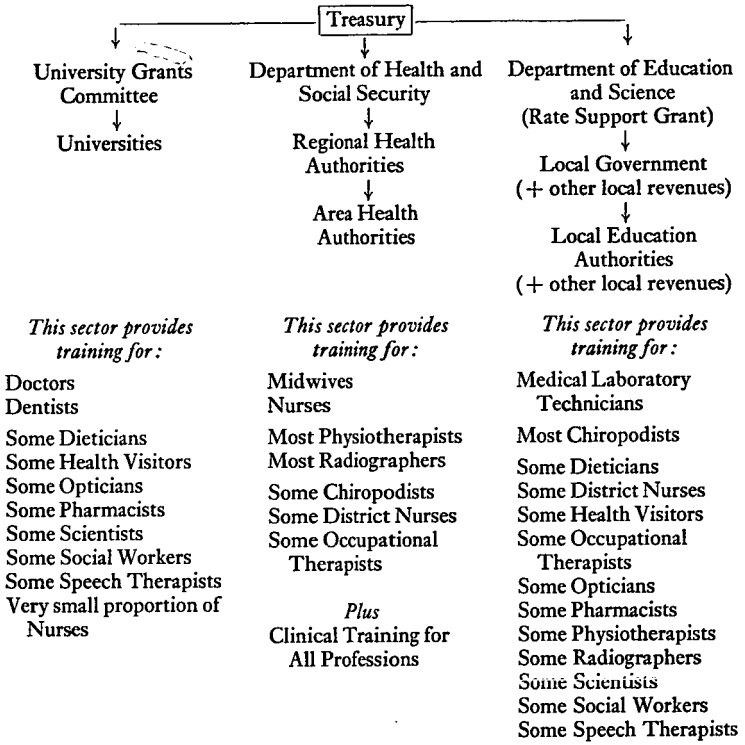

Figure 1. Financing the training of health care professionals.

The DES channels its funds through the local government to local education authorities (LEAs) and thence to polytechnics and colleges of further education. (In some professions, occupational therapy being the prime example, training has been provided by private schools, not associated with higher education institutions. These schools, which some among the profession would like to see phased out, do however receive some funds from Government sources through student fees.) For the professions described here the LEAs do not however, have control over the courses provided locally nor over the number of students in them. A proportion of LEA funds goes into a central pool whose distribution is controlled by Regional Advisory Councils, again with reference back to the DES. The reason for this pool system is easy to see. It would not be appropriate for every LEA to provide courses in chiropody for example. So that one

LEA is not bearing the brunt of providing training for a much larger area the common funding pool exists to provide funds to the LEAs which are providing the training. Similarly another LEA will be allocated funds to provide training for a different profession. Because of the central funding system it is clear that influence can be exerted by the DES through the RAC on the opening or closing of courses and on the numbers of students.

The third channel of funding is through the DHSS and is perhaps the most complex branch of the three. It is the NHS which provides the clinical component of training for all the complementary professions and in addition it provides the full educational programme for some of them. Funds are channelled through the regions to the areas but as they are not ear-marked, training has to compete with other health service needs. Training is provided in the NHS in a variety of ways. In nursing the training takes place while the 'learners' are employees in the NHS (the implications of this will be discussed later when nursing manpower is examined more thoroughly). For other professions, the NHS provides training schools (e.g. physiotherapy) and the students receive DHSS bursaries while training. In principle, then, although the areas control numbers of students through the number of places in schools the DHSS could also influence numbers by limiting bursaries. So far, this type of leverage has not been used, bursaries have been given for all approved places (that is approved for educational standards by the qualifying bodies). It is possible that the DHSS could in future use bursaries as a means of control.

The NHS funds a third training mechanism through its secondment practices. In this case the funding is indirect and the actual training takes place in the higher education setting. Health visitors are an example, here. Although the training takes place in an academic environment with control over the number of courses, etc., being influenced by the chain up to the DES, the health visitors are NHS employees during training. Thus the number in training is also influenced by how many health visitors the areas are willing to send. This mechanism has some advantages in that an area is not likely to send a person for health visitor training unless they actually wish to employ them. Supply will therefore fit the number of posts more exactly. The mechanism has disadvantages, however, since when funds are short, training is usually the first place to cut back. In the interest of service provision, which must be the authorities' first con-

cern, the numbers of individuals trained in a profession may decline generally.

While this training system is confused enough it has been simplified considerably. First it must be recognized that there are four countries in the UK. While these countries have their own education and health ministries and can therefore exert varieties of control over training, the qualifications in the professions are accepted throughout the UK. It is likely that a unilateral decision about manpower in one country will have repercussions on another and the problems in speech therapy and dietetics have already provided an illustration of this. Secondly, there are other bodies external to this system of training who may also influence manpower. These other bodies have essentially two functions, validation of training and representation of the members of the particular profession. Some bodies which validate courses for particular qualifications (e.g., the Council for National Academic Awards, and Technical Education Council) have no influence over the number of courses but are solely concerned with content. For many of the professions, however, the statutory bodies which are responsible for qualification are also the same bodies which represent the members of those particular professions. These professional bodies will therefore have a much greater desire for input into manpower planning. In fact, precisely because of their members' concern the initial step towards manpower planning in several professions has been taken by these bodies. As will be described, however, they have no control over funding and can only act by persuasion. In future, these groups may be joined by the trade unions. At present, the unions (through the Whitley Council mechanism) are only involved over pay, conditions of service, and recently over redundancy. In future it can be envisaged that they will seek a much greater 'say' over manpower planning, again, because it will be of concern to their members.

This overview has been brief, of necessity. For the remainder of this section several professions will be taken as examples to illustrate the implications and effects of this complex system. These professions will also be used to examine how much manpower planning has in fact been achieved.

Finally here, attention must be drawn to the fact that the training system is not only concerned with producing adequate numbers but also with producing the right kind of skills. This raises a whole series of questions about the educational process itself; questions which are

under intense debate in many of the complementary professions. Should it take place in an educational or a health setting? What are the costs involved in each? What should be included in the courses, and are there possibilities for combined training across the professions? While it is not possible to enter into the educational debate here it is important to note that it may have important influences over manpower (5). For example, the shift of training from the NHS to an academic setting may mean that funds are provided from the educational rather than the health sector. Thus different bodies may become influential in controlling supply. Perhaps the most important effect on supply would be if there was any change in the vocational nature of the training. If the professional qualifications or some preliminary part of them become more acceptable as general educational qualifications, opening doors to other careers, this could have a tremendous impact on the supply side of the manpower equation. More important perhaps is the effect of such a shift on the type of recruit to the profession and ultimately their career aspirations. Will academically trained recruits be willing to carry out the same functions as the professionals now or will they aim for more helpers and a supervisory role? The implications of changes in the form of education on professional roles could be far-reaching.

Some examples of training and supply in the complementary professions

Nursing

Nursing must figure predominantly in any discussion of manpower planning for the health service. In September 1975, the qualified nursing and midwifery staff of the NHS amounted to over 200,000 whole-time equivalents. If the learners and other nursing and midwifery staff (including auxiliaries) are added then the total figure doubles. The sheer size of the workforce means that training and supply is a major undertaking. It is complicated by the fact that, as pointed out earlier, not all trained nurses are employed in the NHS. There are external employment pools open to them, such as private practice, and some leave temporarily or permanently for home commitments. Even within the NHS, a proportion go on to branches of the profession such as district nursing and health visiting and it is important to get the balance among these branches right.

Some description of the training system is needed before manpower planning can be discussed. The use of the term 'nurse' legally implies being listed on the Register or Roll of one of the General Nursing Councils (there are three separate Councils: one for England and Wales, one for Scotland, and one for Northern Ireland). At present, to become a registered nurse requires a three-year training and a separate two-year training is given for enrolment. This system may soon be changed if legislation results from the Briggs Committee report (6). The Briggs Committee recommended a combined training for nursing and midwifery (at present a nursing qualification is not required to become a midwife, although, in practice, almost all midwives are trained nurses) and elimination of the separate Roll and Register.

The General Nursing Councils control the educational standards for nurse training but have little control over the numbers in training. During training learners are employees of the NHS and the numbers employed by the health authorities partly depends on the resources available. When resources are limited service needs come first and auxiliaries are employed rather than taking on more learners who have to be given time for study. Thus the requirement of keeping a hospital adequately, if not optimally manned, takes precedence over the national supply of trained manpower. As in other complementary professions there has been little need for concern about control over numbers in training. There have always been shortages of nurses and the problem has been to recruit adequate numbers to the profession. Recently, however, there have been signs, at least in England and Wales, that newly qualified nurses are having difficulties in finding employment. Again, this is likely to stimulate questions about how many nurses should be trained.

On the need side of the manpower problem the nurses have come further than perhaps any of the health care professions. For some time there has been an interest in using patient dependency as a way of estimating nursing requirements in the institutional setting (7). The Scottish studies on nursing workload extended this approach resulting in the so-called 'Aberdeen Formula' for estimating staffing needs in nursing (8). Although this and other formulae exist, the actual number of nurses employed by an area health authority tends to result from a complex mix of factors of which formulae for desirable staffing levels are only one aspect. Nursing posts are partly based on previous establishments, modified by nursing officers to

try to achieve more desirable figures and again modified by the authority's budget and the priority given to nursing within that budget.

While studies about the numbers and levels of nursing skill required have been carried out for the institutional setting there has been less work on nursing needs in the community. Guidelines, or rather targets, have been laid down by the DHSS for ratios of district nurses and health visitors to population (9) but these figures were not calculated based on actual patient need in the community, which is yet to be assessed. Since both health visitor and district nurse training are based on secondment by the employing health authority there is concern that in both these branches of nursing, numbers may fall because authorities are cutting back on training support. The Council for the Education and Training of Health Visitors suggest that a return to a pool system would be preferable (10). Prior to reorganization authorities had contributed to a central pool which provided grants to health visitor students. In such a system the numbers trained were not as subject to the fluctuations in spending on training by AHAs. The district nurses have another concern: while 80 per cent of district nurses have received training it is not statutorily required and it is possible that if AHAs cut back in secondment for training the proportion of trained district nurses may fall.

The discussion has so far implied uniformity throughout the UK in manpower planning for nursing. This is not, in fact, the case and Scotland in particular is further along in its manpower activities than the other UK countries. Because the numbers in the nursing profession are so large, planning at a country level is a practical proposition. Of course, since the qualifications are acceptable throughout the UK a surplus in one country may overspill into another so that a reasonable balance needs to be maintained. Because Scotland is further advanced in the control over training, in its manpower information base, and in its control over establishments, it is worth looking briefly at what is happening there (11).

For several reasons Scotland has better information on its nursing workforce than the other countries of the UK. In 1972 a survey of all nurses in Scotland was carried out to look at age, grade of employment, and so on. The survey had a 98 per cent response, giving a very important data base and it is planned to update the survey. Secondly, Scotland carries out a computerized analysis of all learners and as

well as being able to assess wastage they also follow up on where students go, that is where they are employed after qualification. There is also better information about how many nurses are in active employment and how many are not, since the GNC for Scotland keeps a live register. Notification and payment is required annually to remain on this register of practising nurses. Finally, as in England and Wales there is a great deal of interest in using the payroll to provide much more up-to-date information on the NHS employed workforce. This is being tried out experimentally in the Western Consortium in Scotland and it is hoped to have it in action within a year. In summary, then, the Scottish data base is complete enough to make it possible to do some forecasting work on nursing manpower.

For precisely the reason that learners also provide a large part of the service needs, control over training and over establishments are interconnected. In Scotland nursing officers in all the health boards are now using the Aberdeen Formula (a modified version which takes into account mental and emotional dependency) to calculate nursing establishments. While this does not necessarily mean they will obtain funds from the boards it has given nursing officers some firm ground on which to argue and also makes it possible to identify where nursing establishments fall below the calculated requirements. The Formula includes learners, auxiliaries and qualified nurses so, in fact, its use allows calculation of how many nurses it is possible to train. The Scottish Home and Health Department working with the GNC for Scotland can then compare these figures with the manpower forecasts of how many nurses need to be trained and take steps to remedy mismatch.

While this planning system is no doubt far from perfect it is considerably ahead of the other UK countries and especially over the other complementary professions which lack even the basic data for manpower planning. Perhaps Scotland is small enough to make communication between the boards, the SHHD, and the GNC easy and the profession large enough to make country level planning possible. It does show that it is possible to get the various bodies who have control over manpower, together to carry out a planning function.

Pharmacy, a graduate profession

Pharmacy provides an example of a graduate profession with the major part of the training quite disassociated from the NHS and its

needs for manpower. Nevertheless pharmacy is a vocational subject and most individuals with degrees in pharmacy do go on to register as pharmacists and, either by direct employment in hospitals, or indirectly on dispensing contracts, they are meeting the pharmacy needs of the health service.

Again, some of the salient features of the profession need to be described before considering controls over manpower. Since 1970 all pharmacists have had to obtain a degree in pharmacy and there are now (1977) seventeen schools of pharmacy in universities and polytechnics in the UK. Following graduation the individual must undergo one year's practical training in a hospital or retail pharmacy prior to registration at the Pharmaceutical Society of Great Britain. To practise as a pharmacist the individual must be on the Society's register and the name pharmacist (as well as various associated names, e.g. dispensing chemist) is protected in law. Pharmacists are employed as general practitioner pharmacists in retail pharmacies (approx. 65 per cent), as hospital pharmacists (approx. 15 per cent), and the remaining 20 per cent are in industry, academia, and central government or are registered but not working. The number of hospital posts in the NHS is controlled by the area health authorities and there are no guidelines from central departments on appropriate numbers. In general practice, pharmacists work on contract from local family practitioner committees and at present there are no controls over the number of pharmacies allowed.

There are a number of bodies who, potentially, could influence the numbers of pharmacists in training. At the undergraduate level the universities and polytechnics are involved. The UGC does have a measure of control over the universities particularly in setting up new courses. Although CNAA is the accrediting body for polytechnic degrees it has little influence over the numbers of students or types of courses. Courses in polytechnics are controlled to some extent by the regional advisory councils for higher education and ultimately by the education ministries in the countries of the UK.

In fact, it was not these bodies concerned in education who were the first to be concerned about the supply of pharmacists. As in several other professions it was the professional body, here the Pharmaceutical Society, which became involved. The Pharmaceutical Society approves course content but otherwise has little influence at the undergraduate level. It also approves places for the year's practical training which is required prior to registration. In theory, the Society

could limit the number of training places but this would not be a popular move amongst those graduating with degrees in pharmacy who wish to become registered. During the year's practical training the student receives a bursary from the health ministry but again attempts at control by limiting bursaries would be unpopular.

It is clear, then, that control over supply must originate at the undergraduate level. The Pharmaceutical Society became concerned that there should be some assessment of the number of pharmacists needed and if necessary a cutback in the number of training places. Their concern resulted from the large increase in numbers of students entering schools of pharmacy in the last few years. In fact the total number of students at schools of pharmacy (not including those taking postgraduate studies) has almost doubled from about 2,000 in 1962 to almost 4,000 in 1976 (12). It is not clear that this increase resulted from a need for more pharmacists. The increase seems rather to be due to the interest of students in more vocational subjects and partly due to the encouragement of expansion given the schools of pharmacy by their parent institutions, the universities and polytechnics. The universities in particular were very supportive of this expansion to make up for the falling numbers of students in such subjects as chemistry and physics.

In the interests of its members the Pharmaceutical Society decided that the situation needed some analysis to see if further expansion was justified. The Society commissioned research on the subject, and after making some assumptions about possible growth in demand for pharmacists came to the conclusion that student numbers should not be further increased. At this point, the Pharmaceutical Society had only the logic of its arguments to use in persuading the schools of pharmacy not to increase numbers but seems to have had some success in this by drawing together all the heads of these schools.

Since the Pharmaceutical Society's study the University Grants Committee has also done some evaluation through the advisory panel on pharmacy and came to similar conclusions about manpower (13). The UGC however is also in a somewhat difficult position in that it has no control over the non-university sector yet felt that if there was to be no expansion in the university sector then this should apply to polytechnics too. As a result the UGC, DES, and Scottish Education Department are to meet together to discuss the provision of pharmacy courses in both sectors. Although in the end it is only the UGC and education departments which have any authority over

the education sector, it is interesting nevertheless that it was the professional body which took the first initiative.

To complete this section on pharmacy it is worth considering something about the requirement for pharmacists. The type of control discussed here is only based on the supply, in making sure that those trained will have opportunities for employment. This is, of course, quite different from planning how many pharmacists there should be. It was noted earlier that there are no controls over the employment positions for pharmacists. While hospital pharmacy is expected to grow, the growth will depend on the combined total of the priority given to pharmacy by area health authorities. Similarly in the retail sector there is no control over the number of pharmacies. It has been suggested by the Pharmaceutical Society that without infringing on the pharmacists' commercial rights it might be possible to control the numbers and distribution of pharmacies by controlling the number of NHS dispensing contracts (14). At present these contracts are automatically given, in fact there is much concern about the closure of many small pharmacies and fears that this may be exacerbated by the increasing proportion of women in the profession who for various reasons may not be so willing or able to own their own pharmacies. This brief discussion highlights the difficulties that are involved in trying to assess how many pharmacists should be trained. Such assessments are difficult in many other professions but with the commercial sector taking up such a proportion of the profession there is one more facet to the question of what the numbers in the profession ought to be.

The professions under the Council for Professions Supplementary to Medicine (CPSM)

The eight professions under the CPSM would alone provide a varied and immensely complex picture of control over training and supply. Each of the eight cannot be discussed in detail. Instead examples from several of these professions will be used to illustrate some general points.

The CPSM was established in 1960, under it are eight Boards each statutorily responsible for registration for one supplementary profession. In 1960 there were seven professions under the CPSM: chiropodists, dietitians, medical laboratory technicians, occupational therapists, physiotherapists, radiographers, and remedial gymnasts.

The eighth, the orthoptist profession, was added in 1967. While registration with the Boards of the Council is required for practice in the NHS, registration is not required for practice outside it. For professions almost entirely within the NHS this is not a major problem but the others are more concerned. For example, a large number of individuals are employed as occupational therapists in local authorities. These people are not required to be registered, nor in fact to be trained. In physiotherapy and perhaps even more strongly in chiropody there is concern because of the large amount of private practice in these professions. The names of the professions are not protected and there is nothing to stop a completely untrained person setting themselves up as a chiropodist or physiotherapist. Chiropodists currently are in very short supply and it has been suggested that 'foot helpers' might be the solution to the shortage. Without legal closure of the profession, chiropodists argue against such a development, even within the NHS. They feel that these helpers, once they have some knowledge, may be all too keen to go outside the NHS and set themselves up as chiropodists in private practice.

In six of the eight professions the qualifications recognized by the Board are these of the corresponding professional body. For two professions, dietitians and medical laboratory technicians, the Boards use national educational awards for qualification. Dietitians have used university and CNAA degrees and diplomas; medical laboratory technicians have used Higher National Diplomas or Certificates or university degrees. In these two professions then both UGC and DES branches of education are involved and would have to be included in any attempts to control supply of dietitians or medical laboratory technicians.

Although the other six professions use vocational qualifications there are still a variety of forms of education. In some professions, e.g. radiography, the education takes place in schools entirely within the NHS, in others, e.g. physiotherapy, some schools are hospital based and others are associated with academic institutions. There has been a drive in several professions to have their courses associated with centres of higher education and even to institute a limited number of degree programmes in the subject. The occupational therapists provide a further permutation of the theme since most of them are trained in private schools not associated with the NHS nor with academic institutions, although this is now changing. For

all of these professions, wherever the location, the NHS provides the clinical setting for their training.

As with the other complementary professions the complexity of the training system has made control over training and supply difficult. There is a sense among the eight CPSM professions that there has not been enough interest in either manpower information or manpower planning for their professions. This can be seen in the Council's evidence to the Royal Commission which advocated that the Council should undertake a much expanded manpower planning function (15). Although the Boards did not go along with this expanded role they supported the need for manpower planning in general. This support is evidenced by the fact that professions' awareness about the gaps in manpower information have led them to take steps themselves. This can be illustrated by two professions; occupational therapists (OTs) and radiographers.

Concern about the absence of data on how many OTs are in active employment and about where they are employed led the professional body, the British Association of Occupational Therapists, to carry out their own survey (16). The survey highlighted the disparity among regions but the Association did not itself make any recommendations about appropriate ratios of OTs to population. Perhaps because OTs are still in short supply and the demand for the profession is expected to grow as health service priorities emphasize remedial care, there is less concern about actual control over supply. So far, more interest has focused on having a more adequate information base and also on the education policies for the profession (as evidenced by a Working Party on Schools under the OTs Board at the CPSM (17); the Working Party did however draw attention to the need for the profession, health and social services management and medicine to agree the likely future size of the profession, and that this would need to be related to employment patterns of OT staff).

Unlike the OTs the radiographers are already very concerned about control of supply in their profession. The radiographers have been the profession most strongly affected by the changing economic climate and the desire for women to remain in or return to active employment. From an estimated 25 per cent shortage in the Halsbury Report there is now evidence that there is a surplus of radiographers. The evidence is based on a survey carried out by the Society of Radiographers in February 1977 which showed that

approximately 25 per cent of newly qualified radiographers were still without jobs two months after qualification. Another group of radiographers was due to qualify in April and the Society became alarmed about the surplus that could result. The Schools are situated within the NHS but the DHSS was reluctant to take any steps to change student intake. As a result the Society felt it necessary to take action and has asked the schools to reduce their intake by a third for a one-year period only. To do so would obviously be disruptive to the schools but it is equally disturbing to have many newly qualified staff unable to find employment. Perhaps the situation illustrates several points. There is clearly a lack of information which might have made it possible to predict the events, there is also a lack of planning of manpower. Again, however, the final point to be made is that if those involved in the provision of training are not willing to control training and supply the professional bodies will feel forced to step in.

Social workers

Although only a limited number are involved directly in health care, in a more general sense the whole social work profession could be considered to be carrying out a complementary function to medicine. For this reason, they are included here even though they are the only profession employed entirely outside the NHS. Social workers can be employed by voluntary agencies but the majority are employed by local government authorities, and this includes the social workers involved in health care (the exception is in Northern Ireland where health and personal social services are combined). The central government department responsible for social services is again the DHSS even though employment is with local authorities and not under the health authorities. There are no guidelines on the number of social workers and social services departments have to compete for funding from Rate Support Grants and local revenues with other departments, including housing and education. Since they were instituted by the Local Authority Social Services Act of 1970, social services departments have had to fulfil an increasing number of statutory duties and it is sometimes complained that because these duties have to take precedence there are few social workers left to provide support to the NHS. In passing it should be noted that the corresponding legislation for Scotland is slightly

different. In particular the Social Work (Scotland) Act of 1968 imposed on a local authority the requirement to look to the welfare of all its residents, a broader mandate than exists in England and Wales.

Social workers are also different from most of the other professions discussed here in that a social work qualification is not required to practise as a social worker, although proposals for statutory qualification and registration have been put forward in some quarters (18). Since 1971 the Central Council for the Education and Training of Social Workers has been the statutory body for validating courses, and for awarding qualifications. The basic qualification for social work is the Certificate of Qualification in Social Work (CQSW). In fact, however, only about 40 per cent of field social workers are professionally qualified and in residential social work (even where other qualifications are included) the percentage is much lower.

In 1976, the Birch Report (19) recommended a major increase in the proportion of trained social workers and the Training Council and government departments were in agreement. Since then, however, government spending has been cut back and the social work profession faces problems in increasing the numbers qualified. Some of the reasons are very similar to those already discussed for health visitors and district nurses. To understand the situation some discussion of the funding mechanism is needed.

The CQSW courses now number about 140 in universities and further education colleges and are offered as undergraduate courses, at postgraduate level and for non-graduates. While the educational establishments are also hard-pressed financially, it has been in funding the students not the courses that the problems have arisen. Undergraduate students receive the usual LEA grants, non-graduates can apply to LEAs for discretionary grants, graduates study on DHSS awards, and finally a number of untrained social workers are seconded, on salaries, from their local authorities. In 1977 the number of students seconded fell considerably and this caused concern on two counts. First it may mean that not all places are taken up in courses so that less and not more social workers are being trained. The colleges and universities may then have to reduce the number of teachers and places so that even if a full intake became possible in subsequent years the places would not be available. Secondly, if social workers in post are not being seconded then it

will not be possible to increase the proportion of trained workers except by natural wastage (especially in a period where the posts themselves are being 'frozen'). The situation is not helped by the likelihood that the LEA discretionary awards to non-graduates will be cut even though a part of the shortfall was being made up by an increase in DHSS grants to graduates.

Obviously where growth in the numbers qualified has been agreed by government and the profession, it is a source of dismay that such growth is not occurring. In addition the profession are concerned about their other training programmes, including the Certificate in Social Service (designed particularly for those working in residential care), and also desire to increase the numbers taking post-qualifying courses. As the profession points out (20) employers providing funds for secondment will see these courses as competing demands.

The social work example does point out the problems in manpower planning at the training level even when all the involved groups are agreed. Other factors, here the national economic environment, may be a constraint, even when targets are set and agreed upon.

Some thoughts for the future

A number of the professions complementary to medicine have been discussed here at greater and lesser depth. Each profession illustrates some different issues in manpower planning: nursing has the problem of the learner being an employee expected to carry a proportion of the workload; in social work the qualification is not required for practice and there are difficulties in increasing the proportion trained when resources are limited; pharmacy has problems of control over numbers when the degree can be obtained in either of two separately controlled branches of the education system: finally the professions under the CPSM illustrate a variety of issues but again the problem of control when some are trained inside the NHS and others in separate schools associated with the education system, is perhaps the central issue.

Despite the differences among the professions some conclusions can be drawn. Most importantly it is clear that no single body is responsible for training and supply in any one profession, nor is there any one body taking an overview across all the professions.

This somewhat haphazard system does not automatically rule out manpower planning if adequate mechanisms exist to bring the various interests together. Unfortunately, no such mechanism exists formally and there is also little indication that the informal networks, which might be equally acceptable, are even adequate for providing an exchange of information. In the absence of a focal point for manpower planning or even adequate networks several professional bodies have felt called on to step in directly themselves. The absence of a body taking an overall view also means that manpower issues may suffer from a lack of attention as policies are made. This appears to be true, not only as it concerns numbers but also in the education policies for these professions. Because there is no central focus, attention given to educational issues by the DHSS appears limited. In relation to this a question which needs raising is whether a manpower commission should serve as a focal point for the educational aspects of training and supply in the health care professions. That is, should it be involved in making sure the right kind and balance of skills are produced as well as the right numbers?

It was argued at the outset that manpower planning may become increasingly necessary in future. Because of the interest in manpower just now, this would seem to be an opportune time for change, especially to introduce mechanisms to bring the involved groups together in manpower planning. Those involved in the provision of training, as well as the professional bodies, will obviously need to be included but as has been strongly argued elsewhere (21) in future the trade unions will demand a greater involvement. The employing authorities will also need to be included since in a devolved system they are the final arbiters of demand.

Without delving further into where a manpower planning mechanism should reside, how it should be organized or its specific functions, it is worth pointing out one aspect of its activities that is essential: the need to collect and maintain much more accurate and detailed information about manpower. Several times during this discussion it has been pointed out that there is little information about the numbers actively employed in a profession and, even for those employed in the NHS, the information is limited and usually about two years out of date. At present there seem to be two routes to acquire more detailed information. First, for NHS employees there is the possibility of using payroll data. Some work on this is being carried out by the DHSS in conjunction with the Wessex Region

and, as described in the section on nursing the SHHD is involved in a similar exercise. It is also possible that registration itself could be used to provide more data particularly on those employed outside the NHS and the numbers trained in a profession not employed at all. The pharmacists have now begun to include questions on their annual registration forms which will provide this type of information. It is also encouraging to see that the Council for Professions Supplementary to Medicine has a Working Party on statistics but much more thought will have to be given to the collection of data for all the complementary professions not just the eight under the Council's purview.

Manpower planning requires models, and forecasts which a manpower commission might undertake but a point worth making here is that 'lack of fit' between what is required and what is planned for in these models is almost inevitable. The length of training in most of the professions is long yet policy decisions, changes in pay, etc., can have much more immediate effects. Of course, more information on the individuals making up the profession (age, sex, employment characteristics, and so on) can be used to predict the effect of policy change. There is, however, need for flexibility to be able to cope with short-term changes and the inevitable gaps which will occur between supply and demand. Flexibility can be achieved by substitution in who carries out particular tasks. In practice, of course, this already takes place and nurses are the prime example of a profession which take up the tasks when another is not available. More consideration needs to be given to how more flexibility can be achieved, hampered as it is by issues of professional status.

Secondly, flexibility may be achieved through qualification currency. It was pointed out earlier that in most of the complementary professions training is highly vocational and the qualification achieved at the end is not useful 'currency' for entry into any other occupation other than the particular profession. Arguments have been put forward that the answer to shortages and surpluses might be to recognize at least part of the qualification course as equivalent to some more general national qualification (5). In this way even if a job was not available in the profession the individual would have a qualification with wider currency. A similar suggestion has been made for educational flexibility in the context of medical manpower planning (22). Here the suggestion was to provide a basic health care curriculum which would allow more flexibility in career choice.

These ideas have not been fully explored and are certainly worth further discussion given the uncertainties of manpower planning within the current rigid constraints.

There are other constraints on what change is possible and it is important to emphasize that manpower planning is not an entirely altruistic exercise. Issues of control, power, and status are involved which may not only restrict the scope of possible changes but will also be central concerns of the groups involved in manpower planning. The NHS may wish for adequate numbers of trained staff for the posts it creates and the professions may wish for employment for their members, but the matching of supply and demand is not the only facet in the debate. A larger profession may mean more influence, more status and thus greater rewards for its members. There is also the question of who will represent the individual worker: the professional body or the trade unions. The importance of this question should not be underestimated. Many professions have recognized the signs and are seeking to become unions themselves but how the issue will finally be resolved is not clear. What is certain, however, is that the bodies involved in manpower planning are unlikely to be entirely disinterested. It has been suggested (21) that in the interests of the public at least part of the process of 'defining and choosing options for manpower policies should be uncoupled from management prerogatives and union militancy'. Both management, unions, and other interested bodies will then of necessity have to become involved to negotiate what will finally take place.

Of course, it can be argued that without more knowledge about the level and mix of skills required to treat the variety of patients who make up the NHS workload, it is impossible to estimate the real need for any profession and that in such circumstances manpower planning is futile. It is not disputed that such measures of requirements for professionals would be preferable and much more research is needed in this field. In the meantime, however, it seems feasible that the supply of manpower might be tailored to match the likely availability of employment in future.

As and when more patient-oriented measurements of the need for specific professions become available the supply can be gradually adjusted to them. If, in the interim, supply is not matched to opportunities for employment by a body which takes all the interests into account, then it seems certain that the professions will take

steps to control supply themselves. Quite properly they must put their members' interests first and it is not clear that this is always the same as the interests of the patient and the general public. This same issue arises in the next section of this essay, where changes in roles in the complementary professions are considered.

Developments in professional roles

The major area of concern in this part of the study was with the grey area of overlap between medical and complementary professions, although some developments are included which do not directly impinge on the medical role. All the professions are in differing stages of development and none are static. In some professions changes are being encouraged by doctors, in others the medical profession has reservations and misgivings about appropriate roles. It is only possible here to highlight the major changes and refer to one or two specific examples. Although each profession cannot be described thoroughly, it is hoped that each will be interested in developments in others and perhaps surprised to learn how many of their concerns are shared by other professions. Again not all occupations in health care could be considered, and some groups which may develop into complementary professions in future, ambulance officers for example, have not been included.

Finally, the study is descriptive rather than prescriptive. It discusses how the professions see themselves changing, and some hypotheses about the forces behind the changes and does not discuss how professional roles might be changed in order to optimize manpower resources.

The 'professional' side of professional roles

The discussion here is not concerned with what is a profession nor whether the groups covered can be called professions. These groups regard themselves as professions, even if the sociologists might not agree. Even without defining all the characteristics of a profession, it quickly becomes obvious that the complementary professions are at different stages of 'professionalization', some require registration to practise, for example, others do not. A number of the professions are concerned to enhance their status as professionals through change in what could be called structural elements and these will be

considered here. The vexed question of professional autonomy will be considered later. Table 1 summarizes the information across all the professions considered and the reader may find it useful to refer to this table to understand the overall picture.

Licence to practise and registration. One of the attributes which marks out a profession is the existence of a body controlling training and qualification and which also handles disciplinary matters. Some of the complementary professions are further advanced in this aspect of professionalization than others but in those less advanced there is some pressure to establish self-regulation.

All of the complementary professions here have some form of qualification. Perhaps the least professionalized, in this specific sense, are the occupational health nurses, for although a course is offered by the Royal College of Nursing (RCN) no *separate* body exists to award qualifications or for registration. (It must be noted however that this group of nurses are part of the larger nursing profession.) Social workers are at a more intermediate stage where qualification is not required to practise but a statutory body controlling social work qualification exists. The group of eight professions (see p. 98) which are statutorily controlled by the Council for Professions Supplementary to Medicine (CPSM) are yet one step further on. For each of the eight professions a Board at the Council maintains a register of qualified individuals. Registration is only required for work within the NHS and in general the name of the profession is not protected. Further on still there are professions such as nursing where registers are maintained and the names used in the profession are also protected whether the individual is working inside or outside the NHS. For example, people cannot call themselves 'nurses' unless qualified and on the roll or register of the General Nursing Council. Even at this level of protection anomalies can arise. For instance, it is one thing to protect the name of the nurse but it is quite another to decide what is a nursing task and whether a person is styling him- or herself as a nurse by carrying out these tasks. Only in one or two of the complementary professions is definition so exact that not only the name but also the activity is protected. For instance, it is illegal (except in an emergency) for anyone except a doctor or a qualified midwife on the roll at the Central Midwives Board to deliver a baby. Thus not only the name 'midwife' is protected but also the function. Opticians are similar

in that only an opthalmic optician is allowed to test eyesight, prescribe appliances, and dispense glasses and lenses, a dispensing optician is only allowed to perform the last of these three tasks. Similarly in pharmacy, a person cannot call himself a pharmacist, or a dispensing chemist call his shop a chemist shop or a pharmacy unless he is qualified and on the register of the Pharmaceutical Society, nor is he allowed to dispense medicines. An interesting point to be made here is that a qualified medical practitioner is not inhibited from carrying out any of the tasks which are protected.

Almost all the complementary professions are trying to move a step forward in this aspect of professionalization. For instance the RCN would like to see their certificate made statutory for occupational health nurses. The statutory body for health visitors, although responsible for awarding the qualification, in fact maintains no register and therefore cannot take any disciplinary action to strike a person off the register. They would like to be able to do so. The professions under the CPSM would like to make registration a prerequisite for employment inside or outside the NHS. This would remove the anomaly that individuals are not required to register for work in local authorities, a concern particularly to occupational therapists, and also to stop individuals setting themselves up as a professional without the qualification, a particular concern to physiotherapists and chiropodists. Further along the spectrum there is less possibility for change. For example, because of the sheer impossibility of defining nursing tasks there seems to be no desire also to protect the functions as well as the name of the nurse. This is not to say that attempts at defining nursing tasks are not being made, as will be described later.

Recruitment, training, and the body of knowledge. To confirm its professional status each profession needs to show that a unique training is required in order to be competent to carry out the work and that there is, in fact, a discreet area of work over which it has a monopoly. In some cases it is difficult enough to prove that the profession can do the job so much better than a concerned layman, that professional training and status is appropriate. Social workers have had much difficulty in 'legitimizing' their profession in this respect (23). Even when it is clear that special training is required it is not always clear to the *medical* profession that the complementary profession has any unique knowledge that they themselves do not

possess. This becomes an issue when the status of a professional as an independent practitioner is considered.

It should not be construed that the only reason that professions are concerned with length and type of training is in order to enhance professional status; the professions are obviously also highly concerned about the quality of service they provide to their clients and patients. For a number of reasons then professions are concerned about the body of knowledge in their profession and how it is passed on.

Perhaps first entry level should be considered. Several professions are changing their entry level requirements. Radiographers, for example, will change to requiring 'A' levels for training from 1978. One of the reasons given for raising entry standards is that in order to recruit high calibre individuals the profession has to be seen to have high status. A similar argument also holds for length of training. Apart from improving the service given to the patient, a longer training enhances the status of the profession and also increases the commitment to the profession. Both facets are needed to attract high calibre recruits, particularly recently when a greater variety of opportunities have resulted from technological changes in society. Similarly, changes in societal attitudes about women have meant that the complementary professions, many of which are traditionally female, have had to compete with many new job opportunities. Some of the complementary professions are aiming to increase the length of training (e.g. radiographers and district nurses); some are trying to develop to a fully graduate profession (e.g. dietitians); some are trying to promote courses at university to produce a small percentage of graduates in the profession (e.g. physiotherapists and occupational therapists); and some are trying to institute a pre-registration year after qualification (and this suggestion has been made for social work and for speech therapy).

The push towards having at least some graduates in the profession with degrees in the professional subject not just in some related subject (i.e. a degree *in* nursing, not just a nurse with a degree) is important in terms of developing the body of knowledge for the profession. The physiotherapists, for example, feel they have not looked carefully enough at their skills and are very keen to carry out some research about their work, for which graduates are needed. The knowledge base is a general problem for many of the complementary professions, for as Eliot Freidson (24) notes: '. . . much of

the technical knowledge learned by paramedical workers during their training and used in their work tends to be discovered or enlarged upon, or at the very least approved of by physicians'. In order to argue their case for being independent practitioners it is clear to several of the professions that they are going to have to extend the knowledge base themselves.

Further education after qualification and specialization. All of the complementary professions encourage the idea of further education although persuading employers to release and possibly support individuals for a period of further training is not an easy task. For some professions (e.g. nursing) further education is well accepted, for other professions a drive for further education is only just beginning to emerge. Some of them, for example the remedial professions, see further education as one approach to developing a graduate cadre in the profession.

Support for specialization is not so clear cut. Although a specialist may provide a better service to the individual patient, specialization does not necessarily lead to the best use of skills operationally, and there is, in addition, the risk of destroying the unity and identity of the profession. The problem was faced up to by social workers several years ago. Prior to the Seebohm Report (25), child care, mental health and medical and psychiatric social work had been quite separate branches of the profession but it was felt that a better service could be provided both to the client and operationally if the profession were unified. (Only in Scotland, however, is the Probation Service integrated into the Social Services Departments.) Since Seebohm, although special training and individuals with special skills certainly exist, the Social Services Departments in local authorities are responsible for all aspects of social work and the basic qualification in the profession is designed to produce a 'generic' social worker.

In all of the professions special training and skills are encouraged but there does not seem to be a drive to specialize and divide the profession. Even in nursing, which is the largest and most firmly established of the complementary professions, it might be considered that the Briggs Report (6) recommendations are concerned with drawing the profession together at the basic level even though further training and specialization are encouraged.

Rather than form branches of the profession, a greater emphasis

seems to be to make use of the professional's skills more fully by employing aides. In some professions, aides already carry out an important fraction of the work as in nursing for example. Other professions, occupational therapy and chiropody for example, are emphasizing the need for aides (26). Sociologically, this is an interesting phenomenon. It will be intriguing to watch whether the aides themselves will seek professionalization and in fact it may be as interesting to investigate the role differentiation between professionals and their aides as between the professions and the doctors.

Self-management and advisory roles. In a sense these two issues are intertwined with the question of professional autonomy and so serve as a useful bridge between developments in the legal and structural aspects of professional roles and a discussion of professional independence. Here the discussion is concerned not with whether the profession works on referral or under the supervision of the doctor in their professional work but who is managerially responsible for a professional. Perhaps this can be made clear using nursing as an example. Although nurses have always taken orders from doctors about the care of their patients, they have had their own managerial hierarchy for many years, the structure of this hierarchy being reorganized recently as a result of the Salmon Report (27).

While some professions have had managerial control over themselves, if not control over their professional activities, others are still striving for it and in some groups reorganization of the NHS has served to focus this deficiency. Previously the professions had been employed in several systems but now that the whole of health care has been brought under one umbrella, it has become much easier to identify whether or not self-management exists. Some of the health care professions do have a managerial hierarchy at least up to the area level. The area pharmaceutical officer is responsible for all hospital pharmacy in the area; the area speech therapist is responsible for all speech therapy for example. In other professions such a hierarchy is lacking. The occupational therapists and physiotherapists are disconcerted that even though a district therapist is appointed for each of their professions, the appointment formally carries advisory and not managerial responsibility. To give a further example, the Trethowan Report (28) on clinical psychology recommends the institution of an area service with appropriate

management officers. For one profession, the environmental health officers formerly public health inspectors, reorganization has freed them from management by the medical profession. Previously, environmental health officers were managed by the Medical Officer of Health. At reorganization environmental health remained a responsibility of local government while other facets of public health were transferred to area health authorities. The EHOs now have their own departments in local authorities and a community physician provides only an advisory and not a managerial function. This change is highly satisfactory in the EHO's view but there has been concern among the medical profession.

With two other professions, radiographers and medical laboratory technicians, a slightly different concern about management arises. Both groups feel that a better service is provided if the managerial head of the department or laboratory is a radiographer or laboratory scientist, rather than a clinician. The laboratory situation is particularly confused because the technicians would like a unified medical laboratory service to include both themselves and the current scientific staff. They have put forward a case (29) for the head of a laboratory to be drawn from this unified staff and are not necessarily advocating that all laboratories should be headed by technicians. Both because of misunderstandings and also because this is one of the grey areas where responsibility is not clear, the technicians' views have been seen as a threat by the medical profession. It is unclear whether or not it is necessary or even appropriate to have a pathologist or a radiologist head of a laboratory or a department and until the issue is resolved, it will undoubtedly remain a source of tension between the medical and complementary professions involved.

Finally, how much input do the complementary professions have at higher levels in the service? Is their advice sought on matters of general importance to the service and are individuals available at policymaking levels to speak for the particular profession? Obviously the nurses are in a very strong position here as members of the management teams at area and at regional level, as well as having a major structure in the DHSS. Other professions are less satisfied. The physiotherapists and occupational therapists now both have half-time staff members at the DHSS but feel they fought a long battle to achieve this. Some others, including the medical laboratory technicians, feel they have been left out at higher advisory levels and are pressing for involvement.

Professional autonomy

Up to this point a number of variables affecting professional status have been discussed but perhaps the most controversial issue in the complementary professions concerns professional autonomy. To some extent this has been discussed earlier in terms of the profession seeking to manage itself. Here the discussion concerns the professional and his interaction with his client or patient, and the amount of freedom from supervision or prescription the profession has in dealing with the client's problem. This area certainly causes the greatest fear among doctors and it is probably the area of overriding concern to most of the complementary professions in developing their professional roles.

As would be expected some complementary professions have much more professional autonomy than others and perhaps it is best to begin with some of the indicators of autonomy. For example, does the patient have to be referred to the professional by a doctor or can the professional seek out his own cases or accept them from other professions? Whether physician-referred or not, how much freedom has the professional to assess the case himself and to decide on the form of treatment to be given within his sphere of competence? Can the professional refuse to accept a case and can he terminate treatment, if this is appropriate in his view? Finally, who has overall responsibility for the patient? Even if he accepts others as independent practitioners in their own right, is the doctor always the leader of the health team or in some cases should another professional have final responsibility?

Traditionally, the doctor has been the dominant and controlling member of the health professions but in some instances doctors have accepted a surprising amount of independent practice. For example, pharmacists in the community give out a great deal of health advice 'over the counter' and on many occasions are the first health profession seen by a patient. They possess, then, a discretionary role in advising the patient whether or not to seek medical advice.

Although questions have been raised about this situation by doctors, in general they have accepted that without the pharmacists' filter, their surgeries would be completely overloaded. Again, opticians look for pathological conditions during eye examinations and while they do not diagnose the disease but refer the patient to a medical practitioner, they are providing a screening service. For a

number of years the medical profession questioned whether opticians should be carrying out eye tests and whether they would not miss pathological conditions. With improvement in the optician's training and with the acceptance that it would not be feasible for doctors to carry out all eye examinations, the issue has not been raised in recent years. In these two professions the practitioners have already been carrying out *assessments* of patients if not *diagnosis* and this has been with the approval, even though sometimes grudging, of the medical profession.

How much independent practice is accepted is then partly a matter of historical accident, but in other instances it may depend on the type of skills which are being practised, how far they are understood, and how much worth they have in the eyes of doctors. For example, speech therapists have been independent practitioners for a number of years. They do not have to have patients medically referred to them nor does a doctor prescribe how they should treat a patient. Perhaps there are two reasons for this, the doctor knows he does not have the therapist's skill and does not thoroughly understand it, nevertheless he has seen that it produces very worthwhile results. Even though accepting the importance of physiotherapy a doctor may feel he has a much greater understanding of the procedures and therefore feels he is right to prescribe specific treatments. Again in comparing the two types of therapy a certain amount of historical accident is involved. Speech therapists have always been highly associated with education, outside the purview of physicians, and were therefore able to make a much better case that they should not be controlled by physicians even within the medical setting.

The second point about the 'worth' of the profession's skills can be illustrated by the difficulties in the interactions between social workers, health visitors, and doctors. Here, it seems to be more the case that the doctors often do not quite understand what are the skills of the other two professions. Misunderstandings can lead to conflict where the social worker or health visitor refuses to accept cases referred by a doctor. The lack of understanding also may mean that the doctor does not see any value in having a health visitor or social worker attached to his practice or when they are present does not accept their professional status. Of course, in many situations, as mutual confidence and respect develop, doctors may accept these professionals and even encourage direct referral (e.g. from a health

visitor to a social worker) without his permission. In practice, acceptance and full use of a professional will depend very much on the quality of the individual and the personal relationships within a team.

The questions about professional autonomy are, then, very uncomfortable ones for both the medical and the complementary professions. Several professions are involved in a struggle to come out from under medical supervision and control, the remedial professions, nurses, and the professions working in the psychosocial area of medicine can be used to illustrate some of the problems and controversies specifically.

The remedial professions (physiotherapists, occupational therapists, and remedial gymnasts). From the discussion above the reader probably already has some inkling that the remedial professions especially physiotherapists are concerned about their status as independent practitioners. The McMillan Report (30) served as a focal point for these concerns. The main issue is whether the doctor should prescribe in detail the treatment to be given, its frequency and duration or whether this should be left to the discretion of the therapist. In practice, therapists often do have much discretion but instances where their status as independent practitioners is questioned have resulted in a desire for formal acceptance of this independence. The McMillan Report suggested that therapists should be provided with the patient's diagnosis, the aims of treatment, and any limitations or contra-indications, but within this framework the nature and duration of treatment should be determined by the therapist. It is also suggested that therapists should have the right to terminate treatment and to refuse treatment but that such matters should preferably be handled by discussion with the doctor. These recommendations have been broadly accepted, and a statement has recently been made by the Standing Medical Advisory Committee (SMAC) on the relationship between the medical and remedial professions (31). Recently then the therapist's independence has been strengthened considerably, although the Joint Consultants Committee did emphasize in their comments to SMAC that 'in referring the patient for therapy he (the doctor) is not handing over his overall control of the patient'. There is another aspect to this question of referral. In practice, therapists especially occupational therapists accept patients on referral from social

workers, health visitors, and other health workers. The McMillan Report also suggested that this should be recognized, but this was not commented on in the SMAC statement. In fact in the statutory instruments relating to Codes of Practice, both physiotherapists and occupational therapists already have some leeway. The Codes state, for example, that 'no physiotherapist should treat a patient unless that patient has been referred to him by a registered medical or dental practitioner, except in an emergency or for some other exceptional reason, or unless he has access to the patient's doctor'. The latter clause, which also appears in the occupational therapists' code, has enabled patients to be treated legally on referral from other professionals.

The formal recognition of independence has, as would be expected, provoked substantial reaction from the medical profession and the debate continues. The therapists have pointed out that they are not asking for clinical freedom, that is the right to diagnose, but rather to be given freedom to define how best to treat a patient within their sphere of competence.

Nurses. The nursing profession and its off-shoots (e.g. health visiting) provide examples of a number of problems associated with professional autonomy. Traditionally, nurses were the handmaids of doctors and it has been difficult for them to emerge from this position because it is hard to identify a body of knowledge called 'nursing' separate and distinct from the knowledge of the medical profession. One current trend is to accept the doctor's dominance in the diagnostic and curative functions, but to emphasize the nurse's skills in the caring role. In the caring role the nurse is an independent practitioner, that is she should assess, define, and carry out the nursing tasks independently.

In practice, this differentiation is not new. In many situations nurses have held a great deal of responsibility and have certainly defined what nursing a patient requires. It is perhaps more the explicit statement of independence which is new, and which the medical profession finds threatening. The profession stress that they have to make this case if they are to attract high-quality recruits and if they are to retain and develop the profession's integrity. Apart from the doctor's fears, other difficulties arise within the profession. Most importantly, a proportion of nurses prefer the doctor to hold total responsibility and are well satisfied with their role in assisting

him. A second more philosophical aspect to the question, is whether independent practice can really exist in a situation where one nurse is only a member of a team of nurses providing care for the patient, as in hospitals (32). Nevertheless, even if one nurse is not totally responsible for nursing care, the nurses as a team can define the nursing procedures.

To illustrate some of the developments in the responsibility held by nurses differing situations can be discussed. On the whole, nurses have more independence outside the hospital so the community is an appropriate place to start. Of the nursing groups, health visitors perhaps have the most autonomy. They define their own case loads and although a large proportion of them are attached to GP practices, they do not have to have a patient referred to them by the GP. They can find their cases from files and they still carry the statutory obligation to visit all new-born babies. They have the freedom to refuse to visit a patient referred to them by a doctor, although of course the best use of the health visitor's skills results when communication with doctors is good. However, some studies have shown that doctors find the health visitor's skills and independence difficult to understand and find dealing with district nurses an easier proposition (33). Even so, district nurses have a fair degree of autonomy. Of all the nurses they have perhaps the greatest opportunity to act as an independent practitioner in the caring role, because they go into the patient's home, interact with the patient repeatedly, and although they may help to carry out the doctor's wishes in the curative aspects, they are generally called in to the case because considerable nursing care is required. The least autonomous group of nurses in the community may be the nurses employed by GPs in their practices. They work very much under the doctor's orders, yet they are the group who may be most strongly involved in task extension of the nurse's role. As discussed elsewhere (see pp. 149–64) the developing role of this particular group of nurses could have important implications for the nursing profession as a whole.

Another highly independent group are the occupational health nurses. Their independence results from the work situations in which they are employed. Often they may be the only health professional available and may have only limited contact with a doctor (34). Other occupational health nurses working in a team in larger industries may have much more medical supervision. The

high level of responsibility taken by occupational health nurses was faced by the RCN. In their description of the role of occupational health nurses they say 'responsibility *might* be through the doctor' [my italics—B.S.] (35). Even this was felt by some doctors to be a threat. The occupational health nurse's autonomy not only lies in independent practice in a nursing role, but also because she may be called upon to carry out a variety of non-nursing procedures in emergencies, as the only health professional available.

The responsibility of an occupational health nurse is somewhat similar to the casualty sister in the hospital who may have to make many independent decisions. In other situations in hospitals nurses may have a great deal of responsibility even if not acting as independent practitioners. One development that affects hospital nurses perhaps more than their community colleagues is the institution of 'nurse specialist' and 'nurse consultant' positions (36). To provide a better career structure for nurses who wish to rise in the profession yet remain at the bedside, proposals have recently been put forward by the RCN for these positions. The proposals have caused a strong reaction among doctors perhaps in part due to the titles that were chosen.

The nurse specialist position is fairly readily understood. The nurse would have special training and experience in a nursing specialty and a number of nurses are really already working at this level. The nurse consultant position raises more difficulties. It is envisaged that the nurse would give advice to other nurses about particular forms of care as well as having a teaching and research function. The nurse consultant would be very highly skilled in a particular specialty and would work with the nurses involved in a patient's care from pre-admission, through hospitalization and out into the community again. A few nurses in the UK are already functioning at this level (e.g. in renal dialysis and in stoma care) but there is not enough experience to see how the nurse would fit into the hierarchy. In the US where there is greater experience with this role, there have been problems. For example, it may be unclear whether a nurse should carry out the nurse consultant's or the ward sister's instructions if they conflict. The nurse consultant position is, however, a very high level of professional autonomy and more analogous to the doctor's position where he is only responsible to his peers and even then only responsible in a very general way for the actions he takes. Perhaps this is why problems have been raised

about this position by doctors. At these senior nursing levels where the case is made for a high level of responsibility, there may be problems in distinguishing between the doctor and the nurse's role. The nursing profession's answer is, of course, that the nurses are only carrying this high level of responsibility within the nursing sphere. In fact, they do not want to take over any other profession's role. The profession is not encouraging the drive, seen in other countries, particularly the USA, towards using nurses in other functions (e.g. nurse anaesthetists and nurse therapists). The profession is concerned to enhance the status of the nurse in her nursing skills and not to extend her function into other professions. The impetus towards more tasks being carried out by nurses and which at least part of the profession is attempting to contain is one of the subjects of a later section of this chapter (37).

Social workers, clinical psychologists, and the psychosocial aspects of medicine. Although professional autonomy has been considered in instances where the doctor refers his patient to another independent professional for a certain type of health care, the examples given have generally only included situations where the doctor still retains final responsibility for the patient. Particularly in the psychosocial sphere it is not so clear that it should always be the doctor who has the final responsibility for the patient or client. Instead of being the automatic leader of the team it may be that some other professional may carry final responsibility. In the community, doctors have to accept that their patients may also be a social worker's clients, and this makes issues of responsibility difficult to resolve. Both social workers and health visitors have expertise in dealing with the psychosocial aspects of health and they may resent the doctor's interference. (They may even resent each other's interference.) In the past, separation of the professions in the community may have led to poor communication and a poorer service to the individual. Bringing the professions together as when health visitors and social workers become attached to GP practices (an increasingly common development) may result in a better service but it does mean that each profession is confronted with the other and it takes time and a great deal of goodwill to work out the contribution of each and the responsibility of each profession towards the patients.

Recently, it has been recognized that a professional other than a

doctor may have final responsibility in one situation: the arrangements for protecting children from non-accidental injury. In the guidelines set out by the DHSS (38) it was suggested that a key-worker should be identified who would be most involved with the case and who would be the main channel of communication. At this interface between health and the social services, pragmatic arrangements for responsibility may be accepted because of the risks involved and because of the low level of involvement of doctors.

In the community it might be expected that there would be some conflict among professional groups where psychosocial problems are involved, but even within the clinical setting of the hospital the doctors' automatic dominance is being challenged. The interaction of professions in the care of the mentally ill can be given as an example here and illustrates the general issues involved.

In dealing with psychiatric patients the mix of psychological, medical, and emotional problems is such that psychiatrists have long accepted the contribution of other professions. Perhaps because they are aware of the social aspects of mental illness, psychiatrists have accepted the work of the psychiatric social worker. Consequently, psychiatric social workers have played full parts in the health team being involved in initial diagnosis and continuing assessment. There have been more difficulties in the development of the clinical psychologist's role. Psychologists entered the clinical setting to develop and carry out psychological tests. The extension of their role into treating patients using behaviour modification initially met with resistance. Although their skills in treating patients are now more fully accepted there is still discussion about final responsibility. The issue was examined by the Trethowan Committee (18) who met with the arguments that there were no circumstances where the psychologist should take clinical responsibility for patients and on the opposite side that there were circumstances in which psychologists should have full clinical responsibility, providing the psychologist worked closely with the referring doctor. In the end the Sub-Committee concluded that while psychologists should have independent professional status as members of a multi-disciplinary team the continuing medical responsibility for a patient must remain with the medical profession. Not all of the clinical psychology profession accept these conclusions. Now that the issue has been raised, it remains to be seen whether it can be brought to rest quite so easily.

It seems likely that discussions about final responsibility will become more common in the next few years (39). Changes will not take place, of course, without resistance from the medical profession and an example about the level of their current concern appears in the BMA's evidence to the Royal Commission. They comment (40): 'There is pressure—particularly in psychiatry and paediatrics—for the responsibility for taking decisions in the management of the patient's illness to be diffused among members of a health team. This is against the interests of the patient.' Is it always in the best interests of the patient that the doctor has final responsibility, and what effects does this have on professional status? Both questions are certain to be debated now and in the future.

Changes in tasks and their effects on professional roles

A number of the attributes of professional groups have been considered but so far the actual tasks the groups perform have not. If changes occur in the division of labour in the health field or if new duties devolve to one profession rather than another then these are important changes in role. Changes in duties are important in themselves but in addition they may have longer term consequences for the professional status of the groups concerned.

Several professions are changing, or have recently changed their roles through the client groups and the types of problem they meet. For example, speech therapists are now spending much more time in treating adult patients than they did in the past, e.g. stroke and laryngectomy patients. Health visitors have had a chequered history but have moved from an emphasis on infant welfare to include (at least in theory if not always in practice) the whole population in their mandate although their basic tasks of prevention and health education remain the same. The trend is not over, health visitors are being identified in more and more reports as having a role in the care of various patient groups, e.g. the disabled, those with hearing impairments, etc. Similarly, within clinical psychology there is a desire to use the skills of the profession with a greater variety of patient groups. Finally, the social work profession can be mentioned. Attachment to GP practices, even if only on a part-time basis, is becoming more common. The types of clients the social worker meets here may be quite different from those in the community. For example, in a GP practice the social worker is more likely to be

involved in dealing with all the social classes than in the community. The cases may include more of the mentally ill, the bereaved, the disabled and the chronically sick, and those with emotional problems. Throughout these professions, then, skills are being adapted to meet new situations and different clients. The general trend for all the professions to be more involved in the community requires adaptation of skills and also may lead to new interactions with different professions within and outside the health sphere. It might be noted too that changes in the division of labour in the community care field are likely to raise issues about the relationships among the complementary professions as well as between doctors and individual complementary professions. Social workers and health visitors are an obvious example of professions whose roles may overlap.

Besides taking skills to new places, some professions are involved in more fundamental change in the tasks they perform. The two groups who are giving the most attention to their tasks at this time are the nurses and pharmacists. Both groups will be discussed in some detail below.

Pharmacists. Historically, pharmacists had an important function in compounding and preparing medicines. With the advent of the large industrial drug companies, the pharmacists were deprived of an important aspect of their work. These events led to much discussion about pharmacists looking for a new role. On the one hand the drug companies took a part of the role away, but on the other hand they provided the profession with new opportunities. The 'drug explosion' of recent years has meant that no doctor can possibly keep up with all the new drugs, the indications and contra-indications for their use and their interaction with other drugs. Although at an early stage, pharmacology is providing much more knowledge about drug action in the body, the importance of blood levels of the drug in a particular patient and so on. There is certainly scope then for pharmacists to widen their horizons and take on new tasks and the profession is encouraging such developments.

Most of the change at the moment is taking place in hospital pharmacy. Already in many hospitals, pharmacists are allowed to substitute one brand of a generic drug for another if there is no real difference between them. The NHS drug bill is burgeoning and this substitution is an important means of control and one which may eventually extend into the community. Currently general

practice pharmacists have to provide the exact drug specified when making up doctors' prescriptions. Even here, if good communication exists it may be possible for pharmacists to advise the doctor that he is prescribing a drug at twice the price when another would do equally well. As community pharmacists become associated with health centres such communication may become frequent.

Although of economic importance, drug substitution is not the major development of pharmacy. Hospital pharmacists see their role as developing to give much more advice to doctors at the time of prescribing, keeping watch over the medication a patient receives to ensure that dangerous drug combinations do not result, and carrying out work on blood levels of drugs and advising on dosage and routes of administration. Already change is under way. Some hospitals have pharmacists attached to wards who are then in a much better position to implement their knowledge. The inclusion of pharmacists on ward rounds is not yet happening. It is here that pharmacists could really give information at the time of prescribing. There is some doubt, however, whether doctors would accept pharmacists on their rounds, or whether pharmacists could, in fact, make a contribution because of their relative lack of knowledge of pathology and medical terminology. Of course, even if the pharmacist's basic level training is not sufficient for these extended roles, it could be obtained by further education in clinical pharmacy. Pharmacists do provide information to doctors in drug information centres, and many regions and areas have active centres already. Doctors can call and ask advice about a drug, appropriate dosage and route of administration. In future, such centres might be able to prepare information for all doctors as new drugs come into the market. Finally, pharmacists are likely to develop their pharmaceutical work in hospitals further, that is in producing special preparations for use in the hospital along more industrial lines, and carrying out quality control on these preparations and on externally obtained drugs.

At first sight then, it seems that great opportunities are opening up for pharmacists but there is another movement to take into account: the development of the clinical pharmacology specialty within medicine. Many of the informational and advisory tasks pharmacists see themselves carrying out in future are also seen as the clinical pharmacologist's role. The pharmacists believe that this new medical specialty will always be very small. The quantity of

work is large and with pharmacists being more readily available, they believe much of the work will fall to them. Will doctors be more willing to accept advice from a pharmacist or a clinical pharmacologist? The pharmacists suggest that as a separate profession with no claim to 'their own' patients, their advice might be more readily sought than that of the clinical pharmacologists. The clinical pharmacologists argue, however, that as clinicians with a knowledge of diagnosis, they are in a much better position to give advice on prescribing. What will actually transpire remains to be seen, but the working out of role relationships will be fascinating to watch.

Nurses. Advances in medical knowledge and technology result in many procedures that were once in the doctor's domain being passed on to nurses. The profession is concerned about this for two important reasons. First, there is the question of legal responsibility. Is the nurse stepping beyond the boundaries of nursing in carrying out new tasks, and if something goes wrong, is she legally responsible? Secondly, there is the question of whether it is appropriate that the task is passed on to nurses. Should it be given to some other technician, should the doctor continue to carry out the task? The profession wants to protect the nurses' time and is afraid that extra tasks may be carried out to the detriment of the basic nursing function. Enough concern was expressed for the DHSS to set up a Working Party on the extending role of the clinical nurse and their conclusions were recently set out in a health circular (41).

The Working Party noted that extension of the nurses' role was taking place in three major ways: by development within the traditional role, in response to emergencies, and by delegation from doctors. The Working Party was most concerned with the last aspect, because of the legal aspects of delegation. The basic philosophy they set out is that nurses should only carry out procedures for which they are trained. It is the decision of the area health authorities to define the tasks that may be delegated, the qualifications and training necessary before a nurse may accept the delegated tasks, and the safeguards accompanying the delegated tasks to ensure that the patient's safety is not jeopardized. Even if a task is identified as one that can be delegated, the nurse involved must be competent and willing to carry it out. The doctor is also responsible for assuring that the nurse is competent to carry out that

duty. Thus, even if a task is accepted as a nursing function not *all* nurses will necessarily carry out that task. It is in the community particularly that concerns are being raised about extension of duties and the district nurses, health visitors, and nurses employed in GP practices are all involved. Some of the topics currently under discussion are whether nurses and health visitors should carry out immunization procedures, intravenous injection, and venepuncture, whether health visitors should be allowed to prescribe birth control pills, and whether anyone other than the doctor should be involved in first home visits. Many other tasks involving particular procedures could be added.

The issue of first home visits is one that requires comment because it involves an important grey area of overlapping responsibility and the question of what is assessment and what is diagnosis. The nursing profession considers that it is appropriate for nurses to make assessments of patients, and in particular insists that it is their prerogative to make assessments about *nursing care*, but it considers that diagnosis should be the realm of the doctor. The distinction is not clear cut, however. If a nurse makes a first home visit and recommends that the patient does not see the doctor but follow some other course, is she making an assessment or a diagnosis? It is worth pointing out that when a patient goes to a pharmacist for advice the situation is rather similar except that there the patient knows he is not consulting a doctor whereas, currently, when he calls a doctor's surgery he expects contact with the doctor himself. The issue is obviously a difficult one but at least one body, the Panel of Assessors for District Nursing, has said that they are very much against first home visits by district nurses.

When nurses are employed by area health authorities, as are district nurses, control can be exerted over their activities. There is one group of nurses who are causing the profession some concern because of the lack of control: the nurses employed directly by GPs in their practices (for further discussion of these nurses see pp. 149–64). Although GPs are reimbursed by the NHS for 70 per cent of the salary, the nurses remain responsible only to the GP employer and not to anyone in the managerial hierarchy of the NHS. These nurses are being asked to carry out extra duties, including first home visits. There is concern that, because their employer is the GP, they may be afraid to refuse his requests even if they are outside the range of nursing duties or even if they themselves do not feel

competent to carry out the task. The Royal College of Nursing emphasize that all nurses should have insurance cover, and insurance is a way in which the RCN can exert considerable influence over the range of nursing functions by specifying the activities which are insured.

Since the insurance companies seek their advice about what is an appropriate nursing duty and since nurses seek their advice about whether they will be covered if they carry out a certain duty the RCN can play a central role in controlling the sphere of nursing activities. The situation is not quite so simple, however, since some other trade unions are also insurers of nurses and they might take a differing view of nursing tasks.

Very little has been said about hospital nurses in this discussion, but their roles are also being extended. Perhaps it is here that most concern is expressed that nurses are being expected to carry out functions which a doctor should do himself or to which a technician should be assigned. Nurses, it is argued, do not have the time to take on all these other duties. The difficulty is that the situations are so variable and while it may be that a technician should take blood samples from a whole ward of chronically sick patients, it may be more suitable that a nurse with special training and skills carry out the same function in an intensive care unit. There is also the problem of defining appropriate duties in cases of emergency; no doubt casualty sisters are called upon on many occasions to step well outside what would normally be called a nursing function.

Although the DHSS Working Party made a useful start in defining responsibilities, it is obvious that this is only a beginning. Even if appropriate training is taken as the key (that is, a nurse should only carry out duties for which she has been trained) the situation is still unmanageable, since all the procedures and the necessary certification would have to be defined. Discussion will have to continue but there is no doubt that as medical technology advances, nurses will be called upon again and again to extend their duties.

Apart from the legal problems there is another central issue which has to be kept in mind when nursing duties are being discussed. There is a dichotomy between trying to define nursing tasks and the central definition of the nursing role as providing care for the patient. As the Briggs Committee (6) pointed out, it is the nursing profession which is continuously available and often because they are the *only* ones available they are expected to take on the functions

of other specialists when they are not available. Their availability and the continuity of care provided by nurses is clearly essential to the health service. It means, however, that it is virtually impossible to define nursing tasks and to cover every different situation a nurse finds herself in.

The forces of change

If not yet convinced the reader need only turn to Table 1 to see that almost all the professions are involved in some debate about their roles. What then are the forces causing these changes, and why are the professions being propelled in particular directions?

Professionalization, unionization, and management. In the workplace a number of influences are causing changes in roles of both medical and complementary professions. There can be little doubt that society as a whole is becoming more professionalized. This does not simply mean that workers in a particular occupation are banding together to exert more power, because this could be achieved by unionization alone. Rather, it means that groups are taking more control over entry into their professions, the training required, and so on in order to maintain or enhance the status of their groups in society. As pointed out earlier, many of the health professions are convinced that to attract the right sort of individuals in the face of many competing occupations, entry standards must be raised, the length of training must be extended and the level of professional autonomy must be enhanced. In particular because many of the health professions are traditionally female they are having to adapt to changes in women's role in society. With many women now having a career orientation, the health professions are having to make a strong case that they provide suitable careers as more and more avenues open up to women. Change in women's aspirations is surely one of the reasons why the traditional dominance of the male-oriented medical professions is being questioned.

Enhancing professional status is not merely a self-serving enterprise however. Increasing knowledge about disease and its treatment may require that training courses are extended if a high quality service is to be provided. The operational facts need also to be considered. Often in the health service the professional is expected

to work in solo practice immediately after qualification. This raises practical difficulties in ensuring that the training is adequate for the various operational circumstances which the individual may meet, so reinforcing the argument for a lengthy and thorough training. There is another side to this professionalism coin however. As Eliot Friedson (24) phrases the question, does the body of knowledge require a long training—and hence professionalism—or is the body of knowledge pulled together in order to make the argument for a profession? On all the issues of professionalization, there are two ways of viewing the situation. The very existence of a profession may be seen as a way of protecting the unknowing individual from 'quackery', or alternatively it may be seen as a harmful monopolistic oligarchy (42). Nevertheless, whether or not professionalism is viewed as beneficial there is no doubt that it is increasing in society.

While the NHS seemed to be immune to industrial relations disputes in the first twenty-five years of its life, it is now clear that this era is over. The complementary professions are being directly affected by this change in attitude and by the more general influence of unions in society. Many of the professional bodies are convinced that they must become trade unions if they are to continue to represent their members, particularly in negotiations over pay and conditions of service (43). This development itself presents an interesting dichotomy in that the professional bodies have maintained they provide a disinterested altruistic view of the health service and their contribution to it, in contrast to the union perspective that the interests of its members are paramount. Resolving these two attitudes will no doubt have an effect on the professions concerned.

Perhaps more indirectly the demarcation aspects of the union approach are having an effect on roles. While the professions are debating amongst themselves about who should do which tasks it seems that this discussion may be partly taken out of their hands. The most clear cut example of this occurred during the 1973 ancillary workers' dispute, with shop stewards defining what constituted an emergency, a definition which might generally be considered to be within the province of medicine (44). Demarcation particularly as it concerns ancillary staff changed the nature of the health service but at this time it is not clear how it will affect professional roles; it is however a force to be reckoned with.

A third factor in the workplace of the NHS which may impinge

on professional roles is a changing attitude about management. By this is meant the change to functional management, a trend which was well in action prior to the reorganization of the health service in 1974, but which was probably encouraged by it. Perhaps this development impinges on doctors most noticeably, although nurses are also affected. It is the administrator and the manager who decide the extent of service provision, how it should be organized and so on, not only in services such as catering and laundry, but also in areas which might earlier have been considered to be under medical control. If medicine is seen as the professional ideal towards which all the other health care professions are striving, it may be that they are seeking something which itself is being eroded by questions about who is most competent to make management decisions and how much autonomy the medical profession should have.

Changes in the provision of health care. So far some general societal attitudes affecting employment in the health service have been considered, but there are also a number of changes concerning health care technologies and theories and the extent of their provision, which affect professional roles.

The simplest of these to understand concerns the generation of new knowledge and new technology so that new tasks need to be done. The increasing range of tasks results in some techniques being devolved from the medical to the complementary professions. The nursing profession has often been the profession to whom tasks have been delegated. For example, at one time blood pressure reading was considered a medical task but now it is routinely carried out by nurses. As described earlier, intravenous injection and venepuncture, which were considered to be medical tasks, are now under discussion as being nursing tasks. The delegation of tasks, although it may be a useful way of distributing the workload, is not always looked on favourably by the profession involved. As in nursing, even though a task may increase the nurse's responsibility it may conflict with the autonomy and independent practice the profession is trying to foster.

In a general sense, the increasing range of knowledge and techniques means that doctors cannot possibly know about all fields, let alone keep up with the new developments in each of them. The situation gives each of the complementary professions a greater claim to professional autonomy since the doctor cannot know and super-

vise the precise nature of their work. In addition, because the skills are divided up among the professions, the health team concept has evolved, the doctor becoming only one, if perhaps the most important member of the team. Working in a team itself has consequences for professional roles. A greater understanding of the other professions may mean that a doctor is more willing to delegate tasks to the other members and in this way professional roles can change.

A rather separate aspect of the effects of developments in medical care concerns the changing theories about disease and its treatment. Perhaps the most obvious example here is the change in emphasis from hospital to community care. Previously a condition may have required hospitalization until the patient was almost fully recovered. Now, with the emphasis on early discharge, the patient may require a whole range of professional help in the convalescent period. For example, health visitors, district nurses, and home helps may be called in, to mention but a few, and these groups may be asked to take on new tasks and develop new skills. The situation is completely reversed for another profession: midwives. With confinements taking place increasingly in hospital rather than at home, part of their traditional role has changed. At delivery, the midwife is likely to find herself as one member of a team, including doctors. There is also a trend for hospital midwives to go out into the community to give ante- and post-natal care. Thus, developments in medical care are tending to blur the division between hospital and community. This is facilitated, of course, by the reorganized structure of the NHS which was in part designed to abolish the traditional differences between the hospital and the community.

As with changes in theories about health care which emerge from the professions themselves, the demand for care from the public may have important effects on the roles of the professions. This demand is not fixed, but itself depends on social and economic conditions. Certain facts are known however; the population in future will contain greater numbers of old people and in particular a larger number of people are surviving past the age of eighty-five. The elderly consume a great deal of health care, increasing with their age, and larger numbers of elderly people with chronic diseases and conditions will place a greater burden on the health service. At younger ages, too, many individuals are living with diseases and conditions which previously they would not have survived.

The increased burden of the elderly and chronically sick on the

health service already gives some indication of how professional roles might be affected. These types of patients certainly require the diagnostic and curative functions unique to the medical profession. They also require, and probably in greater proportions, the skills of those in the caring and remedial professions. If the balance between acute and chronic sickness in society changes then it is likely that the balance between the diagnostic and curative profession, medicine and the caring professions, will also change. The Briggs Report (6) pinpointed this when they said that 'in situations where the "curing" function (as distinct from the caring function) is subordinate or non-existent (for example, in the case of the chronically disabled or the terminally ill) the role of the nurse is central'. The nurses are not the only profession whose workload might be affected and whose status might be increased by a change in the burden of care. The remedial professions, the chiropodists', and the social workers' roles are all affected.

Of course, even if the burden of care changes the type of health care provided does not automatically change. It depends on how government and ultimately society decide where resources should be allocated. For example, prevention of disease is not new but has recently become a very fashionable topic (45). If prevention is truly given some priority (that is, in the allocation of funds) then those professions concerned with prevention, of which health visitors are the most obvious example, take on greater importance.

The DHSS priorities document (4) and the corresponding documents of the other UK countries could have an important effect on professional roles. The services which are highlighted were for the elderly, the mentally ill, the mentally handicapped, and children. The majority of the problems are therefore chronic, and as discussed earlier, this places greater demands on the caring side of the NHS.

The roles of the professions may then be affected by changes in the burden of ill-health and the priorities given to various forms of health care. They may also be affected by societal changes in how ill-health and old age are assessed. The interpretation of what is 'illness' may vary as may public expectations about how much care the health and social services should provide. For example, with the elderly it seems that families may be less willing to look after their relatives and the care of these people may fall to the NHS and the social services. However, the increased burden of the elderly also has the potential for increasing the role of the layman in health care. The

place of the non-professional in the health team will need further assessment, whether that person is a relative, neighbour, or volunteer.

Thus, although the discussion began with the changing relationships between the medical and complementary professions, once the full conceptual picture is considered it becomes clear that there are forces at work which affect the relationship of one complementary profession to another and the relationship between the professional and the layman.

Some issues in changing roles

This part of the essay on the complementary professions has described a variety of changes in professional roles, especially emphasizing some of the common developments. An attempt has also been made to identify the major influences which are affecting these changes. Important issues emerge from the discussion and perhaps the first which should be considered is whether the medical role is in fact being threatened by the developments in the complementary professions.

From the examples that have been given it seems that the doctor's traditional dominance is under attack. Whether this means that the medical role is also threatened depends on whether dominance is seen as an essential part of this role. Medical knowledge has increased to the point where doctors must increasingly leave the detailed application of this knowledge to other professions. In response these professions demand more independence from the doctors' control. It seems certain that doctors will, in future, have to accept themselves as one member, and not automatically the leader, of a team of independent health practitioners.

Of course this raises a number of questions, not least of all concerning whether a team approach is in the best interests of the patient. Clearly if a patient requires the skills of a variety of professionals, then it is right that these skills are provided and that the professionals co-ordinate their activities. It is the question of responsibility for the patient where the difficulty arises. Is there such a thing as team responsibility, or is it preferable that one individual should carry final responsibility? If someone should be accountable, should it always be the doctor?

Not only where teams are involved but in all instances where changing roles occur, the issue of accountability arises. This issue

has only been touched on briefly in this essay and it is clear that a great deal more discussion about ethical and legal responsibility is needed. At present it is usually the doctor who is legally responsible, and of equal importance is the fact that the public regard the doctor as being finally responsible. Even if the public could be educated to think otherwise, would it be in their interests as patients to do so? Again this brings us back to the central issue of what changes are in the interests of the public.

Conclusions

In this essay the supply and training and the changing roles of the complementary professions have been reviewed. The two aspects of the essay are interconnected in that the numbers required in any profession will depend on the roles they perform. More importantly each aspect is tied up with a whole range of larger issues including the national economy, the status of the professions, educational issues, and so on. Despite the complexity of the interactions or perhaps because of it, there is little oversight of the whole field.

For example, in this essay a number of changes in professional roles have been described, some of which may be to the advantage of the patient, others may not. Again the resistance of the medical profession to these changes may be in the interests of the patient, or may be simply to protect the status of the profession. Should professional development be left to these kinds of forces, or should there be some more objective control over the developments? If control would be politically unpopular, is there not at least a case to be made for a continual monitoring of developments taking place across the health care professions?

Similarly in the training and supply area there is little oversight over any one profession and certainly a lack of monitoring of all the health care professions in relation to each other. The lack of control has, as illustrated, led several professions to take steps to control their numbers themselves and again this may or may not be in the interests of the patient and public.

Should not the work of the health professions be considered too important to be left to chance developments and to the individual interests of the groups involved, with the interests of the patient and the public perhaps being only of secondary importance?

Notes and references

1. Concern about manpower planning occurs as an issue in much of the evidence to the Royal Commission on the NHS from these professions. See for example the evidence submitted by the Council for Professions Supplementary to Medicine, December 1976; the Royal College of Nursing of the United Kingdom, March 1977.

2. Halsbury Report (1975). *Report of the Committee of Enquiry into the Pay and Related Conditions of Service of the Professions Supplementary to Medicine and Speech Therapists* (London: HMSO).

3. Evidence for a surplus in their profession was collected by the Society of Radiographers in April 1977. There has also been concern about possible surpluses of nurses in England and Wales, including a question raised in Parliament: House of Commons written question, 21 November 1977.

4. *Priorities for Health and the Personal Social Services in England* (1976), (London: HMSO); *The Way Forward* (1977), (London: HMSO).

5. Discussed in a paper prepared by Mr E. Norris (DES) for the Further and Higher Education Working Party of the Council for Professions Supplementary to Medicine.

6. Briggs Report (1972). *Report of the Committee on Nursing.* Cmnd. 5115 (London: HMSO).

7. Many of these studies were carried out in the 1960s. For a review, see Barr, A., Moores, B., and Rhys Hearn, C. (1973). 'A review of the various methods of measuring the dependency of patients on nursing staff', *Internat. J. Nursing Stud.* 10, 195.

8. Scottish Health Service Studies No. 3 (1967), *Nurses Work in Hospitals in the North-East Region* (SHHD); and Scottish Health Service Studies No. 9 (1969), *Nursing Workload per Patient as a Basis for Staffing* (SHHD).

9. DHSS (1972). 'Aids to improved efficiency in the local health services: Deployment of nursing team', Circular 13/72.

10. The Council for the Education and Training of Health Visitors (personal communication).

11. Much of the information was provided by the Nursing Division, Scottish Home and Health Department.

12. Figures provided by the Pharmaceutical Society of Great Britain.

13. *Pharmaceutical Journal* (1977), 219, 60.

14. The Pharmaceutical Society of Great Britain (1977). Evidence to the Royal Commission on the NHS.

15. The Council for Professions Supplementary to Medicine (1976). Submission to the Royal Commission on the NHS.

16. British Association of Occupational Therapists (31 March 1976). *Staffing Survey.*

17. Council for Professions Supplementary to Medicine, Occupational Therapists Board (1977). *Report of the Working Party on Schools.*

18. 'The future of social work', *Social Work Today*, 9 (1977), 7.

19. Birch Report (1976). *Manpower and Training for the Social Services* (London: HMSO).

20. YOUNG, P. (1977). 'When 1984 means twice the number of trained social workers', *Health and Social Services J.* 77, 670.

21. DONALD, B. (1977). 'Towards a more positive manpower policy', *Health Services Manpower Reviews*, 3, 19.

22. KLEIN, R. (1977). 'Policy options for medical manpower', *Br. med. J.* 2, 136.

23. TOREN, N. (1969). 'Semi-professionalism and social work: a theoretical perspective', in Etzioni, A. (ed.), *The Semi-professions and their Organization* (New York: Free Press).

24. FREIDSON, ELIOT (1970). *Profession of Medicine*, p. 48 (New York: Dodd, Meech & Co.).

25. Seebohm Report (1968). *Report of the Committee on Local Authority and Allied Personal Social Services.* Cmnd. 3703 (London: HMSO).

26. It should be pointed out that not all professions would welcome aides. Radiographers, for example, are very much against the use of aides; their view is that anyone who is to use X-rays should have a full radiography training.

27. Salmon Report (1966). *Report of the Committee on Senior Nursing Staff Structure* (London: HMSO).

28. Trethowan Report (1977). *The Role of Psychologists in the Health Service: Report of the Sub-Committee* (London: HMSO).

29. INSTITUTE OF MEDICAL LABORATORY SCIENCES (1976). *Future Staffing in the Medical Laboratory Service: A policy statement.*

30. McMillan Report (1973). *The Remedial Professions* (London: HMSO).

31. DHSS. *Health Services Development: Relationship between the Medical and Remedial Professions.* Circular HC(77)33.

32. This point was made in an interesting document from the Brunel Institute of Organization and Social Studies, *Professionals in the Health and Social Services Organizations*, 1976. They noted that in hospitals, nurses are providing an agency service and not acting as independent practitioners.

33. GILMORE, M., BRUCE, N., and HUNT, M. (1974). *The Work of the Nursing Team in General Practice* (Council for the Education and Training of Health Visitors).

34. RADWANSKI, D., and PEARSON, J. C. G. (1972). 'Occupational health nursing in Scotland', *Trans. Soc. Occup. Med.* 22, 122. (It was found that over 70 per cent of the nurses had only four hours or less of medical supervision per week.)

35. ROYAL COLLEGE OF NURSING (1975). *Guide to an Occupational Health Nursing Service.*

36. For a description of these positions, see *New Horizons in Clinical Nursing* (1976). Royal College of Nursing.

37. The discussion may suggest that there is more consensus within the profession than is in fact the case. A part of the profession argues that 'task taboos'

are not in the interest of the patient or the profession. (See, for example, HOCKEY, L. (1977), 'The nurse's contribution to care in a changing setting', *J. Adv. Nurs.* 2, 147).

38. DHSS Circular (Area Review Committee), LASSL(76)2, CMO(76)2, CNO(76)3, *Non-Accidental Injury to Children.*

39. Again the Brunel Institute of Organization and Social Studies discuss this point (see 32 above). They define the concept of 'primacy' as 'the automatic allocation of prime responsibility to one particular occupational group or sub-group'.

40. *Br. med. J.* (1977), 1, 303.

41. DHSS Circular HC(77)22 and attached CMO/CNO letter of June 1977, *The Extending Role of the Clinical Nurse—Legal Implications and Training Requirements.*

42. This dichotomy was discussed *inter alia* by T. Johnson (1972) in *The Professions and Power.*

43. McCarthy Report (1976). *Making Whitley Work: A Review of the operation of the National Health Service Whitley Council System* (London: HMSO).

44. MANSON, T. (1977). 'Management, the professions and the unions: a social analysis of change in the National Health Service' in Stacey, M., *et al.*, *Health and the Division of Labour* (London: Croom Helm).

45. *Prevention and Health—Everybody's Business* (1976) (London: HMSO).

Appendix
The complementary professions

Thanks must be expressed to the statutory bodies and professional organizations who provided information and showed so much interest in this study. They are not, of course, responsible for any misinterpretations that may have been made. Information on the following professional groups was sought directly:

Clinical Psychologists
Environmental Health Officers
Medical Laboratory Technicians
(The profession prefers the name medical laboratory scientists but as this has not yet been accepted by the Council for Professions Supplementary to Medicine, the term technician continues to be used here)
Midwives
Nurses: General, District Nurses, Occupational Health Nurses, and Health Visitors
Occupational Therapists
Opticians
Pharmacists
Physiotherapists
Radiographers
Social Workers
Speech Therapists.

Although the other professions were not contacted directly, some information was also collected on remedial gymnasts, orthoptists, chiropodists, dietitians, biochemists, and physicists. As a separate branch of medicine, dentistry, and the associated complementary professions were omitted.

Some of the professions above, especially social workers and speech therapists are involved in activities not directly related to health. Where changes in roles in these professions have been considered, only changes which might affect their role *vis-à-vis* the medical or other health care professions have been included.

TABLE 1: *Some aspects of professionalization. (a) Nurses and midwives*

Basic training	*Degree of regulation*	*Further education & specialization*	*Research within the profession*	*Self-management & career structure*	*Professional autonomy*
NURSES: GENERAL					
3 yrs training for registration; 2 yrs for enrolment. (Briggs Report recommended basic 18 months training for qualification for nurses and midwives, further 18 months for registration.) Much debate about Briggs currently.	The name 'nurse' cannot be used unless on roll or register of the General Nursing Council.	Various courses offered by Joint Bd. Clinical Nursing Studies and RCN. Opportunities offered to move to other branches of nursing. Nursing profession is encouraging some degree courses. Encouraging development of nurse specialists and nurse consultants.	Comparatively well developed. Research on roles, tasks, patient dependency, manpower and training. Beginning to look at efficacy of nursing procedures.	Always highly developed. Reorganized by Salmon Report. Involved as equals in NHS Management Teams. Career structure emphasizes management, so nurse specialist and nurse consultant positions developed to produce high level clinical role.	Difficult to achieve as have always been handmaids. Emphasis on developing nurse as independent practitioner in a caring role.
DISTRICT (HOME) NURSES					
4-month course for registered nurses to become district nurses; 10-week course for enrolled nurses. Panel of Assessors at DHSS wish to extend training, provide more academic base. Debate over this within nursing profession. Concern over lack of professional body for district nurses. Panel was to be a temporary measure.	Qualification not required for employment but approx. 80% district nurses are qualified. Panel of Assessors would like to make district nurse training a statutory requirement.	Not emphasized	Some research on role and activities.	Part of general nursing structure	Great potential for independent practice in caring role

Table 1(a)—*contd.*

Basic training	*Degree of regulation*	*Further education & specialization*	*Research within the profession*	*Self-management & career structure*	*Professional autonomy*
HEALTH VISITORS					
1 year academic and practical course for registered nurses with some midwifery or obstetric training. Disconcerted about their place in Briggs Report. Concern that their academic course might be lost if Briggs recommendations implemented.	Qualification required almost by definition. Council for Education & Training of Health Visitors awards qualifications but maintains no register. Would like to maintain register and have disciplinary powers.	Not emphasized. Court Report did recommend special Child Health Visitors.	Some research on roles.	Part of general nursing structure	Quite far advanced. Health Visitor defines own case-load. Does not work exclusively by doctor referral; may refuse cases from doctors.
GENERAL PRACTICE NURSES					
No additional education required.				Employed by GPs and so outside mainstream nursing structure even though GPs reimbursed 70% by NHS.	Responsible to GPs. Some concern over them in nursing profession because they are taking on many delegated duties from doctors.
OCCUPATIONAL HEALTH NURSES					
6-month course offered by RCN for certificate (for registered nurses). No separate training body for this group.	Certificate not required for OH nurse. RCN would like this to develop.	Not emphasized.	Not emphasized. Some beginning to be done on how many there are and what they do.	Outside mainstream nursing profession. Nurse responsible to industrial managers and to doctors.	In many circumstances they exercise much independence as doctors not available. May be called upon to carry out many non-nursing tasks.

Table 1(a)—*contd.*

Basic training	*Degree of regulation*	*Further education & specialization*	*Research within the profession*	*Self-management & career structure*	*Professional autonomy*
MIDWIVES					
2 years for non-nurses. 1½ years for registered nurses. 1-year course for enrolled nurses. Concern about combination of nursing and midwifery training recommended in Briggs Report.	To practise as a midwife (i.e. to deliver babies) whether inside or outside NHS, must be on roll of Central Midwives Board.	Some further courses offered by Royal College of Midwives.	Not emphasized.	Part of general nursing hierarchy.	Very high. Midwife acts as independent practitioner.

TABLE 1. *Some aspects of professionalization (b) The eight professions under the Council for Professions Supplementary to Medicine.*

Basic training	*Degree of regulation*	*Further education & specialization*	*Research within the profession*	*Self-management & career structure*	*Professional autonomy*
CHIROPODISTS					
3-year course to Diploma.	Registration only required for NHS employment. This is a major concern in the profession because of the large private sector. Profession aiming to protect name (Bill to be introduced in Parliament).	Limited number of further courses, e.g. local anaesthetics, advanced techniques.	Some research including prostheses.	Area chiropodist structure but profession is substantially engaged in private practice.	Work as independent practitioners referral not required. Only limitation is to keep to the treatment of the feet and within their training.
DIETITIANS					
3-year course leading to Degree or Diploma. Profession would like it to become totally graduate.	Registration only required for NHS practice.	A considerable proportion of the profession specializes in specific fields, e.g. metabolic, renal disease.	Considerable, as evidenced by the *Journal of Human Nutrition*.	Structure of District Dieticians advocated, emerging slowly.	Independent. Only required not to treat without regard to the instructions of doctor.
MEDICAL LABORATORY TECHNICIANS					
2-year HNC course combining practical training, or Degree + 1 year practical training.	Registration required for NHS practice but not outside.	Further courses and examinations leading to higher skill and seniority in the profession.	Involved in research of others plus a considerable amount in their own right, as evidence by the *Journal of Medical Laboratory Sciences*.	Great concern over management hierarchy, over who should manage laboratories, and about providing advice at higher planning levels.	Should only carry out tests on referral from doctor. Should not diagnose.

Table 1(b)—*contd.*

Basic training	*Degree of regulation*	*Further education & specialization*	*Research within the profession*	*Self-management & career structure*	*Professional autonomy*
OCCUPATIONAL THERAPISTS					
3-year course leading to Diploma.	Those in NHS must be registered but a large number are on local authority social service departments where registration is not required. This is a concern to the profession.	Would like to encourage some graduates in the profession.	Want graduates be able to carry out research.	Concern that though Area OT exists this is formally an advisory and not a managerial role.	Work on a referral from doctor or with access to patient's doctor. Want much more independence in practice and right to terminate treatment (as recommended in McMillan Report).
ORTHOPTISTS					
3-year course leading to Diploma	Only registration for NHS employment		Very limited.	No call for District structure—orthoptics included in Ophthalmology Depts.	Work only on referral from doctor.
PHYSIOTHERAPISTS					
3-year course leading to Diploma.	Only those employed in NHS have to be registered. Some concern in profession that the name of the physiotherapist is not protected. Large number work in private practice outside NHS.	Strong feeling in profession that at least a small proportion should be graduates.	Want graduates to carry out research. Until now physiotherapists have rarely been involved in research except under medical supervision. Very concerned to develop a scientific base for the profession.	Concern that though District Physiotherapist exists this is formally an advisory and not a managerial role.	May only work on referral or with access to patient's doctor. Profession seeks right to determine detailed prescribing, to act as independent practitioners; and right to terminate treatment (as recommended in McMillan Report).

Table 1(b)—*contd.*

Basic training	*Degree of regulation*	*Further education & specialization*	*Research within the profession*	*Self-management & career structure*	*Professional autonomy*
RADIOGRAPHERS					
2–3-year course for Diploma either in radiodiagnosis or in radiotherapy.	Have to be registered for employment in NHS, not for employment outside.	Some post-qualification courses. Profession aiming for at least 10% graduates, therefore negotiating for Diploma/Degree courses or 'end-on' degree courses.	Very little done except in conjunction with doctors. Profession encouraging graduates for research purposes.	Concerned about self-management and about management of radiology departments. They would like a formal management hierarchy.	Work only on referral. Must not diagnose or treat patients but can (in absence of radiologist) describe findings to doctors and assist in making diagnosis.
REMEDIAL GYMNASTS					
3-year course to Diploma.	Only registration for NHS employment.				May only work on referral from a doctor. Concerned very strongly about proposals to combine them with physiotherapists.

TABLE 1. *Some aspects of professionalization (c) Other professions*

Basic training	*Degree of regulation*	*Further education & specialization*	*Research within the profession*	*Self-management & career structure*	*Professional autonomy*
CLINICAL PSYCHOLOGISTS					
2-year course or 3-year in-service training programme for Diploma in Clinical Psychology. This is at the post-graduate level.	Not essential to hold Diploma to be employed in NHS. Profession would like this to develop.	No formal route but special courses available. Many individuals do develop expertise in particular areas.	Strong because of academic nature of the profession.	Trethowan Report recommended more formalized structure up to Area level for enlarged psychology service.	Independent practitioner in activity but tend to work on referral from doctors.
ENVIRONMENTAL HEALTH OFFICERS					
3-year sandwich course or 4-year day-release course leading to Diploma. 4-year sandwich course leading to a Degree.	Anomalous. Prior to 1974 qualification approved by Public Health Board required to act as Public Health Inspector. Now local authorities only instructed to employ 'proper officers'. In practice only properly qualified EHOs are employed.	Diplomas for specialized areas, e.g. pollution. Some specialist appointments in larger departments.	Very limited.	Since 1974 EHOs work in their own departments in local authorities. Previously they had worked under MOHs. EHOs are very satisfied with this development. Some doctors have expressed serious concern over it.	Now outside medical control although seek advice from doctors.

Table 1(c)—*contd.*

Basic training	*Degree of regulation*	*Further education & specialization*	*Research within the profession*	*Self-management & career structure*	*Professional autonomy*
OPTICIANS					
2 separate branches: Dispensing Opticians: 3-year full-time course or 3-year part-time at Colleges of Further Education. Opthalmic opticians: 3-year degree course. Both groups have 1 year practical training prior to registration.	Registration at General Optical Council required to practise. Opthalmic opticians can examine eyes and dispense. Dispensing opticians can dispense only.	Some drive towards this in the profession.	Considerable research interest in optics.	No formal structure, most work on fee-for-service basis with the NHS.	Quite independent. Though may dispense doctors' prescriptions, Opthalmic opticians have right to prescribe themselves. No referral needed.
PHARMACISTS					
Since 1970 all pharmacists have had a degree in pharmacy plus 1 year's practical training prior to registration.	Names used in profession and the dispensing of drugs are both protected. Register of qualified pharmacists is maintained by Pharmaceutical Society.	Profession keen to develop postgraduate education.	Profession wants to extend its own knowledge base as well as using information from pharmacology and pharmaceutics. Profession also involved in some research on manpower.	Management hierarchy up to Area level. General practice pharmacists work on contract from the NHS.	Quite strong though work on doctor's prescriptions.

Table 1(c)—*contd.*

Basic training	*Degree of regulation*	*Further education & specialization*	*Research within the profession*	*Self-management & career structure*	*Professional autonomy*
SOCIAL WORKERS					
Basic qualification either: 1–2 years for graduates, 4 years for undergraduates, 2–3 years for non-graduates. Academic courses. (Other basic courses also offered.)	Qualification not required to practise as a social worker even in local authority employment. Some groups in the profession would like to see registration for practice.	Seebohm Report emphasized generic social workers and unified social service departments. Some specialization still exists. Major emphasis in profession on developing post-qualification courses.	Very highly developed.	Have own management structure but concern that higher career levels are managerial and no opportunities to continue to practise.	Independent practitioners but there have been problems persuading community that social work is a profession.
SPEECH THERAPISTS					
At present diplomas are awarded as well as degrees, but they are to be phased out to become a totally graduate profession.	Qualification required to practise as a speech therapist but no register maintained.	Some further courses and a limited amount of specialization within some speech therapy departments.	Very limited amount.	Own management hierarchy up to Area Speech Therapist.	Independent practitioners; they do not have to work on referral from a doctor.

SUBSTITUTION AND THE MANPOWER DILEMMA

B.L.E.C. Reedy
MB, MRCGP, DObstRCOG
Senior Lecturer,
Medical Care Research Unit,
University of Newcastle-upon-Tyne

Substitution and the manpower dilemma

Introduction

After more than twenty years of attempting to forecast the requirement for doctors in Britain, it seems that there is still a great deal of uncertainty about the future (1). The difficulties are increased by the scientific, social, and economic developments which are changing the structure not only of the medical profession but also of all the professions and occupations which are supplementary or otherwise related to medicine. The development of teamwork has played its part, both in hospital and community, by encouraging a new kind of interdisciplinary relationship between individuals within the teams which in its turn has made them aware of the range of each other's functions and capacities. There is also a new ideology, particularly in the community, in which medical care by doctors is now believed to form only one part of a spectrum which also includes the early detection and prevention of illness as well as an increased emphasis on rehabilitation and health education. This last trend in particular, when backed by the current differential in the growth of resources between hospital and community, also enhances the value in their own right of the nurses, health visitors, physiotherapists, and others who are the proper practitioners of these elements and it seems increasingly inappropriate to leave them out of manpower calculations (1).

Irrespective of the possibility (which at present seems remote) of having too few doctors in the foreseeable future, there has for some time been an assumption amongst doctors that it is correct to transfer to nurses and others what are by implication lower status or more irksome activities. As recently as 1976, a distinguished doctor (2) believed that '. . . (we) must constantly look for ways of transferring existing work to other health workers' and a similar view has often been expressed by the *British Medical Journal* (3, 4), for long a protagonist—though not an uncritical one—of this form of substitution, particularly for the general practitioner.

In fact, this process is probably best documented not in the hospitals, but between nurses and general practitioners working in the community where their relationship is relatively uncomplicated by intervening variables. The research which will be described included an analysis of the technical or 'medical' activities of two different kinds of nurses who work with GPs. First those who are employed by AHAs (the former 'district' nurses) about 80 per cent of whom are now said to be 'attached' to general practices, and secondly nurses (sometimes called 'practice' nurses) who may be employed by the GPs themselves but are independent of the AHA nursing hierarchy and its policies.

These two groups of nurses differ in many ways. The nurses employed by the AHAs have always concentrated on nursing at the bedside in patients' homes and sometimes had little contact with the GPs whose own relationship with the local (latterly 'area') health authorities was often uneasy. During the last ten years or so there has been a growing rapprochement between them as the 'attachment' of nurses and health visitors to general practices has gathered way. Meanwhile the GPs have increasingly sought to temper the demands of patients on their time and energies by a number of strategies, including that of persuading attached nurses and health visitors to carry out medical procedures (5) in addition to their traditional nursing treatments.

The health visitors have usually rejected these activities as being alien to their function in the community but the response from attached nurses is reputed to have varied from one AHA to another and some appear to have collaborated with the GPs, particularly in providing screening programmes and other health maintenance facilities for the public (6). Despite this general improvement in relations and very liberal guidance from the DHSS (7), area nursing administrators in particular still express very conservative views even about what would appear to be the comparatively straight forward issue of immunization and vaccination carried out by nurses (8).

Employed and attached nurses

Information about the nurses employed by GPs has consisted almost entirely of descriptions of the work they did in individual practices,

beginning in the late 1950s. It was clear from the descriptions that these nurses were hardly ever involved in bedside nursing in patients' homes but that working in GPs' premises they carried out a wide variety of out-patient treatments and investigations in collaboration with their employing GPs. In a few practices they also supervised patients with chronic illnesses or on long-term treatment and even made first medical visits to patients at home, both electively and in emergencies (9). A study of the decisions made by one of these nurses whilst visiting a sample of patients at home showed that even without a definitive diagnosis, the management plans she proposed were substantially the same as those her GP would have made for the same patients (10). Despite a steady increase in the attachment of AHA nurses to general practices (11) it also appeared that the number of nurses employed by GPs (expressed as whole-time equivalents) was increasing by about 20 per cent per annum (12) and this led to the inference that the two kinds of nurses might be fulfilling generically distinct purposes in those general practices in which they were both working.

However nothing was known about the number and distribution of the employed nurses in relation to the attached nurses and there was no sample-based investigation of their work. To study these and related questions, we undertook three surveys (13, 14, 15). The first two were carried out by postal questionnaire and were directed respectively to all the general practices and to all the area nursing officers in England. In the third survey a random sample of 153 nurses were interviewed, half of whom were employed by 9 (10 per cent) of the AHAs in England and attached to general practices, whilst half were employed by general practitioners in the same areas. The sampling procedure allowed for half of the nurses in each group to be working in the same practices. (For convenience these two samples of nurses will be referred to respectively as the 'attached' nurses and the 'employed' nurses.) All three surveys achieved response rates which exceeded 85 per cent.

Data from the postal survey of general practices confirmed that one-quarter (24 per cent) of the practices in England were employing 1·5 nurses each on average. The total of 3,100 'employed' nurses therefore comprised about one-fifth of all the nurses working in the community. Somewhat unexpectedly there was no relationship between the proportion of practices with employed nurses and the proportion with attached nurses in each of the 90 areas and the possi-

bility that GPs were simply substituting one kind of nurse for another was further reduced by finding that attached and employed nurses were more likely to coexist in the same practices.

When the nurses were interviewed, data was sought to test the hypothesis that the nurses who had chosen to be employed by an AHA (a bureaucratic system) and those who had chosen to be employed by a general practice (an entrepreneurial system) would show differences in their personal and professional characteristics. In the event the two groups of nurses were identical in important respects such as the number and type of their nursing qualifications (with the exception of the district nursing certificates which were held by 80 per cent of the attached nurses); the duration of hospital experience after qualifying (5·9 years on average); the hospital grade they had reached (50 per cent reached the level of ward sister or above) and the specialty or hospital department they had worked in most recently. The attached and employed nurses who had ever been married were also identical in their distribution by social class and it was interesting that only five nurses had husbands or fathers who were doctors. Exactly the same proportion of each group (46 per cent) were members of the Royal College of Nursing but more of the attached nurses belonged to another union or similar organization.

Thus the attached and employed nurses appear to share the same corpus of professional expertise and experience and are likely also to share the set of assumptions which are based on social class. However there were some important differences between them and the typical employed nurse was five years older on average and more likely to be married at any age than an attached nurse. The employed nurse tended to have been attracted to employment in general practice by the opportunity for part-time work which fitted in with her maternal and domestic commitments. Presumably for the same reason she was more likely to have been economically inactive since qualifying as a nurse and employment in a practice tended to be her first job on returning to nursing. It is interesting and possibly important that the employed nurse was much more likely to have trained at a medical teaching hospital where there is presumably more opportunity for professional and social contact with doctors and medical students. In contrast, the typical attached nurse appeared to have had a more orthodox nursing career with work in a hospital or another AHA often immediately preceding employment by her present AHA. Although both kinds of nurse had done the same amount of agency

nursing, the attached nurse had spent less time in other kinds of private nursing and seemed, in general, more purposive about the kind of employment she wanted. A number of attached nurses said of their district nursing work that they had 'always wanted to do this job'.

A speculative interpretation of these and other findings suggests that whereas attached nurses value the traditions of their profession and prefer to work in an institutional setting, the employed nurses are not so conscious of tradition and may be more strongly orientated towards doctors and their work. In this light it is revealing to analyse some of the professional activities of the two groups and to do this a list of 43 nursing and related activities was compiled from the literature on community nursing. Each nurse was asked at interview to say which of these activities she had carried out at any time since her present employment or attachment began and the activities were then separated into three categories. The first contained 10 activities traditionally carried out only by nurses, and these were basic 'caring' procedures such as bed-bathing, feeding, and toiletting patients. The second category contained activities which, in the community, have traditionally been done either by nurses or by doctors, depending on opportunity and convenience—for instance surgical dressings, clinical measurements such as that of blood pressure, and the removal of sutures. These are termed 'intermediate' activities and all but 3 of the 17 in this category are taught to all nurses during their basic training. Finally there is the group of 16 so-called 'technical' activities which are listed in Table 1. These were defined as activities traditionally carried out only by doctors, at least in the community, either because there were (formerly) statutory implications (e.g. vaccination against smallpox) or because they were part of a scientific technology (e.g. laboratory or other mechanical tests), were frankly surgical, used powerful drugs (e.g. local anaesthetics) or implied a knowledge of diagnosis possessed only by doctors.

Table 1 shows that employed nurses were more involved than attached nurses with these 'technical' activities—most of which can only, or are best carried out in the treatment room rather than the home. In the case of 'caring' activities (not shown) the attached nurses appeared to predominate, whilst in 'intermediate' activities there seemed to be little difference between them. To explore these differences, each one of the nurses was given a score which measured her involvement in each of the three kinds of activity. The average

TABLE 1. *The technical activities of community nurses during their present attachment or employment*

Activities	*Proportions of nurses doing each activity*	
	Attached nurses %	*Employed nurses* %
*Syringeing ears	53	82
*Performing venepuncture	24	47
Carrying out desensitizing procedures	24	35
* Incising boils and abscesses	16	58
Applying plaster of Paris or cervical collar	13	20
* Vaccinating against smallpox	11	35
* Taking and preparing cervical smears	11	39
*Taking electrocardiographs	9	26
* Cauterizing warts, etc.	9	40
Carrying out skin tests with allergens	9	13
*Performing pregnancy tests	4	20
Estimating haemoglobin	4	15
* Inserting sutures after injecting local anaesthetic	4	32
Setting up and reading ESR	4	16
* Using peak flow meter	2	18
Fitting an IUCD	2	2

* Denotes activities in which the difference between attached and employed nurses is significant at or beyond the 1% level of confidence.

number of each of three kinds of activity carried out by attached and employed nurses are shown in Table 2 and they confirm that the differences between the nurses lie in their relative commitment to caring and technical activities.

The factors affecting the scores for technical activities (which are the ones most relevant to the 'substitution' and related manpower issues) were pursued amongst attached and employed nurses independently but of the many variables examined, only two affected the nurses' scores for these technical activities. The availability of a treatment room in the GPs' premises (whether a health centre or privately owned) was of major importance and significantly increased the score for technical activities amongst both attached and employed nurses independently. Nevertheless this is not the only factor involved. Despite a difference between all attached and employed nurses in the availability of a treatment room (52 per cent of the former and 78 per cent of the latter) there was still a significant differ-

TABLE 2. *Average number of each of three kinds of activity carried out by attached and employed nurses*

Type of activity	*Number of activities*	*Average number of activities carried out by*		
		All nurses	*Attached nurses*	*Employed nurses*
Caring	10	6·8	8·0	2·1
Intermediate	17	10·2	10·3	9·8
Technical	16	2·6	2·0	5·0

ence between the technical scores of those who worked in the same practices with, presumably, equal access to treatment rooms. For the SRNs employed by GPs, regression analysis showed a significant trend for the highest technical score to be achieved by the nurses aged about 25, soon after qualification, with a slow decrease as age increased.

Thus in the community the ability of nurses to substitute for doctors appears to be most obviously related to the provision of a special environment (i.e. the treatment room) and to youth, with its connotations of flexibility and a more recent training which includes technical activities. However the GP-employed nurses were more likely to have a high technical score independently of both these variables and it is tempting to hypothesize that the differences in their behaviour are also related to the *a priori* assumption that they are working within a non-bureaucratic and, in the nursing sense, a non-traditional system. If teamwork is to become established in primary care, the evidence (16, 17) suggests that these characteristics will favour it if they are accepted by all the nurses and other professional workers involved in the team.

Assistance, substitution, and innovation

One cannot see what kind of impact these findings might have on the transfer of activities between doctors and nurses in other settings without examining the range of activities which are possible. This can be done from the literature and apart from the nurse's professional obligation to respect a general prescription for nursing treatment, there appear to be three other ways in which nurses have become involved in doctor's work—by 'assistance', by 'substitution', and by 'innovation'.

In the first place doctors need assistance for office activities from secretaries and their like and for the use of machines from technicians. In hospitals and health authority offices this kind of assistance is taken largely for granted but GPs still use nurses as well as secretaries for routine administrative work in their practices. These are mainly the GP-employed nurses, who spend about half of their time on average in reception and secretarial activities apart from nursing (13). This proportion becomes much smaller in health centres but state-enrolled nurses and those who have been employed by the practices for more than 15 years do a higher proportion of reception and secretarial work. In contrast, the group of nurses who are employed by the area health authorities (AHAs) and 'attached' to about 70 per cent of the general practices in England are hardly ever involved in extraneous administrative activities in these practices. The term 'assistance' is also convenient to cover all the minor clinical activities carried out by nurses such as urine testing and the recording of blood pressure, temperature, pulse, and so on which are part of the basic training of both nurses and doctors. These are simple measurements with only a small element of judgement and with suitable instruction many of them can be carried out by lay people including patients and their relatives.

The process which causes greatest interest and raises the highest hopes as a possible solution to manpower problems is that of 'substitution'—meaning that clinical work traditionally done by doctors is carried out instead by less highly or differently trained personnel. This also bears the implication that this alternative should be less costly than using a doctor. 'Substitution' gives another dimension to 'assistance' although the difference between them may lie not so much in what is actually done but in the extent to which the doctor who is delegating work must surrender power (but not, perhaps, accountability) so that his substitute can achieve a corresponding gain in autonomy and the capacity to make some independent judgements based on specifically acquired knowledge. To be fully effective from a manpower point of view, substitution should presumably be systematized rather than *ad hoc*—that is, it should become an established feature of the organization, a 'negotiated order', with its limits defined and agreed on by all concerned.

This would certainly be the view of the nurses (7) who appear to feel the most threatened amongst the health service professions by the possibility of arbitrary delegation from doctors. This may be be-

cause their range of functions extends widely across the spectrum from 'care' to 'cure' by comparison with the more circumscribed territories of the supplementary professions, at least part of whose professional expertise may not be shared, or even understood by doctors. Doctors have also been educated to take nurses for granted as their natural assistants—an attitude betrayed by their frequent use of the term 'ancillary', meaning 'handmaiden'. These, amongst others, are good reasons for nurses to be apprehensive about substituting for doctors as a panacea for manpower problems.

Perhaps the term 'substitution' by nurses and others could best be used for those activities which are not taught to them during their basic training and must be learnt subsequently, sometimes under the tutelage of doctors. In the community these would be the kind of activities listed in Table 1 but they would also include activities recorded in one hospital by 'clinical nurse specialists' who concentrated on stoma care, intravenous therapy, the control of infection, or special care in a breast cancer unit (18). In another health district, both hospital and community nurses were found to be undertaking procedures which included venepuncture, the administration of intravenous drugs, emergency endotracheal intubation, toilet, and suture of superficial wounds, defibrillation, vaccination and immunization (19) for which the AHA subsequently agreed to train and certify them. Presumably in nearly all district hospitals, nurses have incorporated some of these activities into their work as a form of job enrichment, but if so their acceptance has begged the question of the costs and benefits entailed. It may, for instance, be undesirable for nurses to take over low status activities from doctors when an extension of the technician or auxiliary grades might have the same effect and be of greater economic benefit to the NHS and the community. However this stricture cannot apply in the case of emergency procedures such as defibrillation, when the urgency of the crisis must take precedence over all other considerations.

What is more important in relation to substitution for doctors by nurses and others is what seems to be a difference in scale between the activities which have just been listed. Some of them such as venepuncture, the control of infection, vaccination, and suturing appear to consist of occasional interventions at a physical level and could be said to be essentially short-term and 'task-centred'. Any of them could be done equally well by doctors and these nurses can truly be said to be substituting for the doctor. In the case of stoma care and

intravenous therapy (and there would be other examples such as the care of the terminally ill) the nurses appear to have specialized in a disease or an aspect of illness management which could be described as being 'person-centred' and having a longer term commitment to the patient. These nurses are making judgements based on the development of specialist knowledge and experience in a medical sense into which nursing insights have been incorporated. Some of their knowledge may not be shared by doctors, which gives the nurses even more autonomy. They are also likely to be creating new knowledge and techniques by research in their own sphere and these activities could therefore be classified as being characterized by 'innovation' rather than merely 'substitution'. For the doctor the payoff from a deeper involvement by nurses is likely to be fewer consultations with the patients and possibly a reduction in the number of crises in their illnesses—i.e. a long-term rather than a short-term gain. However these are only hypotheses and the questions they raise about the effect of such activities on the ecology and economy of medical and nursing care in the hospitals and the community can only be answered by a competent evaluation of alternative patterns.

Finally there are the opportunities which the community offers for independent action unsupervised by doctors and some of the most striking and best documented examples of autonomous 'innovation' by nurses have spanned the boundary between hospitals and community. There have, for example, been specialized schemes run by nurses in community psychiatry (20), the management of haemophilia (21) and in paediatric care (22), amongst others, and it is clear that these nurses have brought together medical knowledge, special nursing techniques, and management flair. They could be described as gifted entrepreneurs and can hardly be said to be merely substituting for doctors although the precise nature of their impact on the doctor's work would, once again, be a matter for evaluation.

Assistants and substitutes abroad

The question of substitutes for physicians is particularly important both in developing countries with few doctors and in western nations in which they are unevenly distributed. In each case the pro-

blems may be those of providing comprehensive 'health' care rather than just 'medical' care and in the USA, the separate and competitive development of physician's assistants (PAs) and nurse practitioners (NPs) (23) illustrates some of the issues surrounding the possibility of substitution in Britain.

PAs, who are still predominantly male, are in some fundamental respects identified closely with their physicians—that is by their training, by employment, and in law. Their role resembles that of Fendall's 'second level' assistant (24) who is part clinical assistant and part technician to the doctor but can substitute for the doctor within linits which in the USA are prescribed by state law. Their employment by doctors and some of the work they do leads them to resemble the nurses employed by GPs in Britain where the 'doctor's assistant' has never developed as it has in Holland, Switzerland, and Germany as well as amongst non-medical professionals such as architects and accountants.

By contrast the NP movement developed from within the nursing profession and remains a part of it. NPs are employed by institutions rather than by physicians, with whom they tend to have the relationship of equal colleagues. Although trained in medical history-taking, physical examination, and diagnosis, many NPs concentrate on health maintenance and illness prevention rather than acute medical care but are capable, like the PAs, of substituting for physicians in this aspect as well—up to a point.

From accounts of their work and attitudes and from personal observation and discussion with PAs and NPs, they appear to be differently orientated to their roles in a way which may be reflected in Britain (23). The motives of PAs seem to be summed up by a phrase such as: 'the physician needs help'—i.e. in order to help the patient. NPs seem to exclude the physician as an intermediary in their work and their motivation could be summed up by the phrase 'people need care'—which is no less than an expression of the ethic of nursing. In Britain there are statements by GP-employed nurses which closely resemble the orientation of the PAs, for instance: 'Primarily (the GP-employed nurse's) function . . . is to help the doctor to help the patients' (25). For the purposes of this comparison, the profound dissimilarities between the two systems of care are probably immaterial and the 'attached' nurses in Britain often express the complementary orientation to 'people need care'—which they fulfil primarily at the bedside. They also feel that this

care can be achieved without reference to a doctor and the word 'attached' is itself an apt summary of their orientation.

Conclusion

Although hospital consultants may have a variety of assistants or technicians, British GPs have never had a doctor's assistant of the kind that exists in parts of Europe and the rest of the world. Paradoxically the leaders of the medical profession here continue to reject the physician's assistant out of hand (26) and use the term 'feldscher' abusively. Such a figure would undoubtedly be rejected by our nursing institutions as well and experience in America suggests that the NP is equally useful and may have a wider range. This does, however, depend on the addition by special training of the skills of history-taking, physical examination, and diagnosis to complement nursing insights and experience. These skills are at present rejected by nurses although they would be essential if substitution in the medical sense became a policy.

The evidence suggests that a pluralistic system of substitution for doctors already exists in embryo in Britain, although not in the extreme form in which it has developed in the USA. There appear to be several ways in which this system could develop here but these would depend entirely on collaboration between the nursing and medical professions. On the whole it seems that the nurses are more likely to accept those forms of substitution in which they are most independent of doctors and this applies particularly to the very autonomous 'boundary-crossing' schemes. The diffusion of these schemes might not help the 'problem' of medical manpower and may not prove to be economical but they bridge the gap between hospital and community and could change the pattern of our system towards 'health' care and away from 'medical' care—a long-term gain in itself.

Perhaps the most important inference to be drawn from the research and other evidence is that which was perceived intuitively by Arie (27) when he suggested that the possibility of substituting nurses for doctors would depend primarily on the aspirations and attitudes of the nurses themselves and particularly on their motivation towards working co-operatively with physicians. Whilst other factors such as age and a purpose-designed building are also impor-

tant, they would certainly need medical knowledge and skills for their new role. Experience in America and elsewhere shows that it is not difficult to teach these in a short time but even receptive and highly motivated nurses have found such a change of role a disturbing experience (28) and it is one which cannot be undertaken lightly.

Acknowledgements

I am most grateful to the Nuffield Provincial Hospitals Trust for their support for the research on which this paper is based. I am also grateful for the assistance of my colleagues Professor D. J. Newell, Mr A. V. Metcalfe, Miss M. de Roumanie, and Dr P. R. Philips and we are indebted to the DHSS for its support for the unit as a whole.

References

1. KLEIN, R. (1977). 'Policy options for medical manpower', *Br. med. J.* 2, 136.

2. OWEN, D. (1976). 'Medical manpower', in *In Sickness and in Health* (London: Quartet Books).

3. LEADER (1976). *Br. med. J.* 1, 1.

4. LEADER (1977). *Br. med. J.* 1, 1306.

5. REEDY, B. L. E. C. (1972). 'The general practice nurse', *Update*, 5, 187–93.

6. HART, C. R. (ed.) (1975). *Screening in General Practice* (London: Churchill-Livingstone).

7. DEPARTMENT OF HEALTH AND SOCIAL SECURITY (1977). *The Extending Role of the Clinical Nurse—Legal Implications and Training Requirements.* HC(77)22 (London: HMSO).

8. TURNER, M. (1977). 'Point for doctors', *Nursing Times*, 73 (30), 1144–5.

9. MARSH, G., and KAIM-CAUDLE, P. (1976). *Team Care in General Practice* (London: Croom Helm).

10. MOORE, M. F., *et al.* (1973). 'First-contact decisions in general practice—a comparison between a nurse and three GPs', *Lancet*, 1, 817–19.

11. DEPARTMENT OF HEALTH AND SOCIAL SECURITY (1976). *On the State of the Public Health for the year 1974* (London: HMSO).

12. DEPARTMENT OF HEALTH AND SOCIAL SECURITY, STATISTICS AND RESEARCH DIVISION (1975). Personal communication.

13. REEDY, B. L. E. C., PHILIPS, P. R., and NEWELL, D. J. (1976). 'Nurses and nursing in primary medical care in England', *Br. med. J.* 2, 1304–6.

14. REEDY, B. L. E. C., DE ROUMANIE, M., NEWELL, D. J., and METCALFE, A. V. (1977). *The Nurses Working in Primary Medical Care in England* (Medical Care Research Unit, University of Newcastle-upon-Tyne).

15. REEDY, B. L. E. C., PHILIPS, P. R., and NEWELL, D. J. (1974). Unpublished data.

16. WISE, H. (1972). 'The primary care health team', *Arch. Int. Med.* 130, 438–44.

17. HICKS, D. (1976). *Primary Health Care, A Review* (London: HMSO).

18. TIFFANY, R. (1977). 'Nurse consultants', *Br. med. J.* 1, 232.

19. LEADER (1977). 'In practice', *Nursing Times*, 74 (37), 1424–5.

20. DEPARTMENT OF HEALTH AND SOCIAL SECURITY (1977). *Nursing 1974–1976* (London: HMSO).

21. COLVIN, B. T., *et al.* (1977). 'Regional co-ordinator for haemophilia in domiciliary practice', *Br. med. J.* 2, 814–15.

22. REEDY, B. L. E. C., *et al.* (1977). *A Study of Paediatric Community Nursing in a Northern Town* (Medical Care Research Unit, University of Newcastle-upon-Tyne).

23. REEDY, B. L. E. C. (1978). *The New Health Practitioners in America—A Comparative Study* (London: King Edward's Hospital Fund for London).

24. FENDALL, N. R. E. (1972). *Auxiliaries in Health Care* (London: The Johns Hopkins Press).

25. SALTMAN, B. M. (1977). 'Group practice nurse', *Nursing Times*, 73 (12), 16–20.

26. GREY-TURNER, E. (1977). 'Doctor manpower', letter to *The Times*, 23 March.

27. ARIE, T. (1976). In 'Medical manpower: I—how much can ancillaries take over?', *Br. med. J.* 1, 25–30.

28. STORMS, D. M. (1973). *Training of the Nurse Practitioner: A Clinical and Statistical Analysis* (North Haven, Connecticut Health Services Research Series).

EXTERNAL ECONOMIC INFLUENCES ON NHS MANPOWER

S.R.Engleman
PhD
Senior Lecturer in Health Economics,
Department of Community Medicine,
University of Edinburgh

External economic influences on NHS manpower

Introduction

When the NHS was created, the intention was not merely to substitute public provision of health care for private provision, but to weaken the links between market forces and health care. By replacing private financing of health services with public money and removing the price barrier, need, rather than ability to pay was to be used as the criterion for allocating health resources. Economic influences could not be removed so easily on the supply side, however, since the amount of public funds allocated to the NHS would necessarily be affected by national economic circumstances. However, the creation of a comprehensive system of easily accessible health care coupled with the opportunity to apply rational planning principles to the provision of health services was expected to lead eventually to an improvement in the health of the population. This in turn would ultimately limit if not reduce the demands made by the population on the health care system, and thereby reduce the resource demands made by the NHS on public funds.

The hopes of insulating the health care sector from economic forces have only partially been realized. It is true that ability to pay no longer determines how health services are *allocated.* The introduction of the NHS did not, however, lead to any reduction in the demands made for health care, but instead resulted in further pressures to expand health services. Thus it has been the national ability to pay (or the willingness of governments to put a greater proportion of the GNP into health) that has finally determined the *scale* of health service expenditure and the determinants of expenditure on health services have included factors far removed from health considerations. More specifically, the budgetary process for the health and personal social services programme has been described as follows:

> The total sum spent on the HPSS is determined by the government following the annual survey of public expenditure which

> examines estimates for the following four years of the cost of all programmes in the light of the resources likely to be available. Such factors as the implications of public expenditure for the balance of payments, industrial investment and personal consumption are taken into consideration in determining how much of the nation's resources should be devoted to public expenditure. Once a decision is taken on this, Ministers reach a view on what modifications if any are necessary to particular programs, and what their allocation shall be in the light of needs and priorities as they see them (1).

Health service expenditure has increased in real terms almost continuously since 1949. These increases have been made possible both because of the growth of the economy over this period and because NHS expenditure has been permitted to take an increasing share of GNP as the economy has grown wealthier. Thus while in the mid-1950's, the health service's share of GNP was 3·5 per cent, by the mid-1970's it had risen to over 5·5 per cent. Towards the end of this period however the rising share of GNP has been in a context of very slow and even negative growth in GNP. Nevertheless, over the period 1966–76, for example, revenue expenditure in the NHS grew by nearly 39 per cent in real terms (2). In the short-run, however, the dependence of the NHS on the state of the economy can be seen from the effects of the decision to constrain public spending in the mid-1970s in response to the economic crisis during that period. While compared with most other public sector programmes, the NHS was treated relatively favourably, even a generous interpretation of the implications of the budgetary constraints on the NHS, such as that given by the then Minister of State for Health, Dr David Owen, conceded that most of the available funds would be 'merely needed to maintain proper standards' and that 'money must continue to be tight for the health service' (3).

By influencing the level of NHS expenditure, the state of the national economy influences the volume of inputs (i.e., labour and capital) into the provision of health services that can be purchased by the NHS and thereby affects the scale of NHS activities. The NHS is, however, susceptible to outside economic forces in other important ways as well. Before considering the wider influence of these forces, however, some background is necessary.

Health manpower, productivity, and costs

For the first 25 years of its existence, growth in the NHS has primarily meant growth in health manpower. During this period, NHS manpower more than doubled, while in the hospital sector the rate of growth was even greater. Labour costs have long been the dominant element of total NHS costs (4). This reflects the very nature of many of the services provided by the NHS, i.e., personal services. Indeed the fact that so much of health care is necessarily personal care is the key to understanding both the structure of NHS costs and the ways that external economic factors intrude into the health care sector.

As a direct consequence of the labour intensive nature of the NHS, the potential for productivity gains is less than in sectors of the economy that can employ relatively more capital. Cost increases in the NHS cannot be as easily offset by increased labour productivity as they can in those sectors of the economy which have relatively more scope for the employment of capital. This means for example that if labour costs in the NHS rise at the same rate as those in the rest of the economy, *ceteris paribus*, unit costs in the NHS will rise more quickly than unit costs in the rest of the economy. Therefore even if NHS expenditure was increased every year by an amount sufficient to just compensate for the national rate of price inflation, the NHS would be unable to purchase the same volume of inputs required to provide the same services every year since its unit costs will have increased more rapidly than those in the economy as a whole. Given the fact that rather than remain constant the volume of inputs purchased by the health service has *increased* substantially over the years, it is not surprising that the NHS has evolved into a very costly program.

Given that resources for health care are limited and that health care is relatively costly, the NHS has always been subjected to pressures to restrain its costs. It has not, however, been free to determine its own approach to the problem of how health services could be provided in the most efficient manner. Rather, outside economic forces have also played a major role in determining the response of the NHS to pressures for cost restraint. First the influence of outside economic constraints in determining the mix of inputs, i.e., capital and labour, used by the NHS will be briefly considered. The consequences of external influences on the pay of the NHS workforce and the result-

ing implications for health care provision will then be discussed at some length.

Capital and labour

As noted above, the personal nature of many health services limits the potential for productivity growth (and therefore cost containment) in the NHS, at least as compared with many other sectors of the economy. Nevertheless scope does exist for productivity improvement through the introduction of more capital. In this context, however, it is important to distinguish between those NHS activities which are not directly related to patient care and those which are. Within the former group of activities a number of areas have been identified where it has proved possible to invest in new, more capital intensive facilities and reduce unit costs. Well known examples where this has been achieved include laundries, particular laboratory services, and methods of transporting supplies. Yet while the opportunities for reducing labour costs and total costs clearly exist, relatively slow progress has been made in moving to a more efficient combination of capital and labour. The reason for this is in considerable part related to the fact that the *capital* allocation made available to the NHS reflects external economic constraints to a far greater degree than does the *revenue* allocation. This was most obvious during the early years of the NHS when virtually no new hospitals were built. As Forsyth has observed, 'No new hospital was built simply because, as a consequence of national economic policy, scarce building resources were used to construct houses and schools in that order of priority' (5).

Since then a number of factors have combined to make the capital component of the NHS budget quite volatile. To begin with, when economic circumstances dictate cutbacks, it is far easier administratively to cut back on planned capital investments than on on-going programs. Likewise when planned expenditure needs to be reduced, it is undoubtedly politically more prudent to sacrifice future benefits that would arise from capital investments, than current benefits. During periods of economic stringency, therefore, the prevailing sentiment is that which was expressed in the 1976 DHSS Priorities document, namely that 'The first essential is to maintain the standard of services: to put people before buildings' (6). The importance of external economic influences on the NHS capital budget can be

seen by contrasting the capital budget in the early years of the 1970s with the projected capital expenditure for the latter part of the 1970s, which reflects the impact of the severe economic difficulties of the mid-1970s on the government's expenditure plans. In the period 1971–2 to 1973–4, when total expenditure on the NHS increased by almost 9 per cent, expenditure on capital accounted for some 10 per cent of the total expenditure. In the period 1978–9 to 1980–1, when expenditure on health services is planned to rise by less than 2 per cent, capital expenditures will comprise only about 6 per cent of the total (7).

When economic conditions permit an increase in the capital budget once again, investment in labour-saving plant and equipment can be expected to increase. Nevertheless, given the backlog of proposals for hospitals, health centres, etc., it will probably require a prolonged period of general economic growth before sufficient capital resources are made available to the NHS to significantly alter the capital-labour mix in those activities where the employment of more capital could reduce unit costs. Since in its overall operations, the NHS is unavoidably labour intensive, and it is this characteristic which imparts an upward bias to its cost structure, the external economic constraints which inhibit the NHS from realizing a more efficient combination of its inputs have the effect of exacerbating the upward pressures on costs already facing the NHS. The resulting shortage of capital also means that health service growth must depend even further on manpower growth.

The above discussion has focused solely on non-patient care activities. While patient care related activities afford relatively less scope for limiting cost increases through capital investment designed to improve productivity, such opportunities do exist. In particular, the design of many older hospitals requires a higher level of manning than would be necessary if more modern facilities could be built. At the same time, however, it is also true that the revenue consequences of new hospitals are generally greater than the facilities that they replace (8). While labour productivity may be higher in the new facilities, overall costs tend to be higher because new hospitals do not simply replicate the services of old ones, but tend to expand and improve them. Consequently, while they may be more efficient, the costs of the new 'mix' of services will tend to outweigh the cost savings arising out of the replacement of an inefficient capital stock. However desirable it may be to replace old hospitals, increase hospi-

tal efficiency, and improve and expand services, the additional cost consequences of such schemes, both capital and revenue, mean that in periods of economic stringency they are given a relatively low priority (9).

While on the one hand, external pressures have restrained capital growth, on the other hand, they have also stimulated manpower growth by exerting a downward pressure on NHS wages and salaries. To fully appreciate the implications of these external influences on the NHS it will be necessary to take a detailed look at the NHS pay determination process and the various influences on the outcome of that process.

External influences on NHS pay

External influences on NHS pay make themselves felt in several ways. Formally, most NHS wages and salaries are determined by a process of free collective bargaining involving the staff and management sides of the various Whitley Councils. The main principle (though not the sole one) governing the course of negotiations is that of comparability with external settlements. Clearly to the extent that this principle is applied, NHS pay will reflect movements in pay in comparable employment in other sectors of the economy. The situation is complicated, however, by the presence of government representatives on the management side of the Whitley Council. The government's presence reflects first, its interest in the final cost of any settlement reached, since it will be paid out of public funds. In addition, the government will be concerned with the possibility that a given settlement may have significant 'spillover' effects on other wage negotiations. While the government representatives are only a minority on the management side, they effectively operate a veto power over the final settlement. In theory, the government should not normally need to intervene directly in Whitley Council negotiations as its interests will be reasonably well protected by the application of the comparability principle which both sets a reasonably predictable ceiling for NHS pay and precludes the NHS from being a 'wage-leader'. In practice, economic pressures on the government have led to downward pressures being exerted on NHS pay by the government. The earliest study of NHS pay determination, the 1957 analysis by H. A. Clegg and T. E. Chester found that 'outside pressures' were a

major determinant of NHS pay policies, and their effects had been to restrain wages in many NHS occupational groups (10). Since then various writers have likewise concluded that outside forces have kept down NHS pay levels (11). We now examine the various mechanisms by which this has been achieved, the effects it has had on the NHS workforce, and the implications for the NHS.

First, it has been possible for the government to exert pressure on wages without abandoning the principle of comparability. As Clegg and Chester observed,

> Within a general policy of 'comparable occupations'—that is, of letting others decide what the health service must do—the management have on most occasions taken the least liberal interpretation open to them. In accordance with government wishes to give an example on wage restraint they have tried sometimes to hold on at all costs and sometimes to let through as little as possible (12).

When the comparability principle, however narrowly interpreted, did not provide adequate relief from external pressures which made pay restraint desirable from the government's point of view, further measures were adopted. One that afforded at least temporary respite was the refusal to reach agreement within the Whitley Councils. Following what would normally be a lengthy negotiating process, an Independent Review Body would be appointed to make a recommendation on what an appropriate pay award would be. Such recommendations were almost always accepted by the government even though the recommended settlements were frequently far higher than the highest settlement which the management side was willing to offer in the Whitley Councils. Such a process could serve the interests of the government in two ways. First, it would delay any inflationary consequences of the eventual award. Second, by not participating in the forum where the settlement was eventually agreed, the government was not seen as playing an active role in the pay determination process thus limiting the likely 'spill-over' effects into other pay settlements, particularly those in the public sector. Such tactics, however, could be expected to have an adverse effect on the morale of the affected workers.

An additional short run governmental measure to control NHS (and other) pay rises in response to immediate economic needs has been that of incomes policies. The influence of incomes policies on

NHS pay cannot be over-estimated. While incomes policies have affected all workers to varying degrees the NHS workforce has had fewer opportunities than most to escape its harshest aspects. Lord McCarthy, in reviewing NHS pay principles and policies during the period from the mid-1960s to the mid-1970s noted that,

> . . . in the last 10 years or so one settlement after another in the NHS has been affected by the requirements of incomes policies to a greater or lesser extent. It has modified the application and acceptability of all the pay principles discussed above—not least the principle of external comparison. It has hardly ever been possible for the management side to consider a claim without some regard for the government's interpretation of its own income policy (13).

As the government's own interpretation of incomes policies have not been generous, both voluntary and statutory policies have to some extent eroded the importance of the comparability principle as the basis for the determination of NHS pay levels.

NHS pay and problems of labour supply

Even if the comparability principle had been applied with the best of intentions, it could not have proved to be an adequate pay principle by itself to fully meet the manpower needs of the NHS. First, there are considerable practical difficulties in applying the principle to all NHS occupational groups and it has not always been possible to find truly appropriate external reference groups for certain categories of staff (14).

In addition, as we explain in detail below, pay levels set to be equivalent to comparable employment outside the NHS do not guarantee that an adequate supply of labour will always be available to the NHS. Therefore a certain degree of flexibility has been permitted to enter into the determination of NHS wages and salaries. However, the degree to which this flexibility has been permitted to operate to fulfil better the manpower needs of the NHS has been largely determined by outside economic forces.

Again the comments of Clegg and Chester are relevant. They found the management side willing to increase pay in response to labour shortage arguments, but only under certain circumstances. First, where shortages became a major concern both to the Government

and the public, as was the case with nurses when the NHS was just coming into existence in 1949. Second, where there were serious shortages of very small groups of workers and where a pay increase would neither significantly add to the total pay bill nor be likely to have important 'spillover' effects. Clegg and Chester concluded that,

> It would be cynical to suggest that the rule was to reject circumstances of labour supply unless the consequences of accepting them were insignificant, or unless they constituted a live political issue, and to reject them on whatever ground seemed most convenient. It would be cynical but it would not be inconsistent with the facts (15).

Let us take nurses as an illustration of one occupational group where a strict adherence to a particular outside reference group for pay purposes might be expected to result in levels of pay that do not always permit the NHS to recruit and retain the desired numbers of nursing staff. Outside reference groups such as teachers, or all salaries workers, to whom nurses have sometimes been compared, are probably too remote from nurses for comparability with such groups to always reflect an appropriate pay level for nurses. It would be reasonable to assume therefore that when high levels of quits are apparent, and shortages become severe, that a more flexible approach to determining nurses pay might be introduced. Indeed as the 1974 award to nurses demonstrated, such flexibility is possible. Nevertheless, the ability and willingness of the NHS to respond to labour market pressures that have an adverse effect on the performance of the NHS is clearly constrained by external circumstances.

Concern over nursing shortages had been expressed long before the publication of the Halsbury Report in 1974. Nursing has been referred to, with some justification, as 'the classic example of chronic shortage' (16). Yet despite reports of rising quit rates and serious shortages during the 1960s, nurses pay levels did not respond sufficiently, partly as a result of the constraints of income policies (17). In 1968 the first full-scale review of nursing and pay was published by the Prices and Incomes Board (18). They found a serious shortage of trained staff in acute hospitals, hospitals for the mentally ill and mentally handicapped, and chronic and geriatric hospitals. Incomes policies, however, seriously restricted the extent to which they could recommend wage increases to meet the shortage problem. Following a vocal public campaign by nurses, a substantial rise was awarded to

them in 1970. Nevertheless, when the Halsbury Committee assessed the earnings position of nurses following the 1970 award they concluded that their position even then did not 'adequately reflect their work and responsibility in relation to others' (19).

When the Halsbury Committee reported, they found that since 1970, the relative position of nurses earnings had deteriorated even further, and that overall manpower shortages were in the order of 20 per cent (20). Moreover, there was considerable public concern over the problem (stimulated in part by the militant action taken in support of the claim by some nurses). Very substantial increases were recommended, largely on the grounds that they were necessary to combat manpower shortages (21).

NHS pay responses to nursing shortages seem to fall into the pattern found by Clegg and Chester. External constraints in the form of incomes policies certainly contributed to shortage difficulties. At the same time, as the largest occupational group in the NHS, pay increases for nurses have very substantial cost implications for the government. Shortages have not surprisingly therefore tended to persist until the problem both reached serious proportions and became an issue of general public concern.

We turn our attention now to another major group of NHS workers, the ancillaries, who have also presented labour supply problems for the NHS. Unlike the nurses, ancillary workers have had quite appropriate and well-defined external reference groups with whom their pay has been linked. Nevertheless, the labour force behaviour of this group has exhibited cyclical patterns in response to changes in the economic climate, bringing about periodic labour shortages in the NHS. The key factor explaining the particular susceptibility of ancillary workers to external influences is their very low level of pay. During boom periods, when there is excess demand for labour generally, more desirable employment opportunities, hitherto unavailable to them, have arisen in higher-paying industries. Even though wage parity may have been maintained with their reference group, the availability of higher-paying jobs in other industries has meant that the NHS (and other employers paying low wages) have experienced difficulty in retaining and recruiting workers. It should also be noted that when such alternative opportunities are not available, there is evidence to suggest that morale problems resulting from low pay are reflected in high rates of absenteeism (22).

This problem was explicitly recognized by the Prices and Incomes

Board in their report on ancillary workers in 1967 (23). They concluded that the low pay of ancillary workers was a very serious problem and that the NHS could not expect 'the highest standards of recruitment and work from their manual workers at their present level of pay' (24). The PIB was unable simply to recommend pay rises, however, because of the cost burden it would impose and because it would violate the then existing pay policies. They concluded nevertheless, that there was very substantial scope for improving pay by raising the existing low levels of labour productivity through the introduction of schemes relating pay to productivity. The subsequent introduction of such schemes did have some modest effects on pay and productivity, but by far their most important impact has been on health service industrial relations. Before describing these wider consequences of the productivity schemes, it will be helpful to first consider the implications that the various external pressures on NHS pay have had on employee attitudes.

The response to pay restraints

It would be difficult to refute the suggestion that over the years various groups of NHS workers have had some legitimate grounds for complaint as regards pay. Yet until 1973, dissatisfaction with pay (and other aspects of employment) has been manifested primarily on an *individual* basis. That is to say, dissatisfaction has been evident in the labour market behaviour of individuals as expressed in high turnover rates and absenteeism. *Collective* responses to perceived pay injustices, at least in the form of militant industrial action had, until 1973, been virtually unknown.

The 25 years of industrial peace enjoyed by the NHS was neither due to the astuteness of the NHS management nor to a profound contentment on the part of the workforce. Rather it was a reflection of the extreme weakness of the workforce relative to management. Trade unions in the NHS had generally encountered considerable difficulty in recruiting members, while the professional associations, with the traditionally strong vocational orientation of their members to their employment, did not consider industrial action an appropriate tactic. While an explanation of the underlying reasons that led to the development of attitudes which precluded effective collective action by the workforce is beyond the scope of this paper, from the increasingly vocal, albeit peaceful protests made by groups

such as nurses in recent years, it is clear that these attitudes were not entirely unaffected by the continuing difficulties over pay experienced by many NHS workers. It is highly doubtful, however, whether attitudes towards militancy would have changed sufficiently to generate the industrial conflict of the 1970s, without the stimulus provided by two important external influences. One was the 1973 incomes policy which severed the long-standing link between ancillary workers' pay and that of local authority manual workers, and thereby touched off the ancillary workers' strike. The other was PIB report no. 29, which created the necessary conditions for the strike to take place. We therefore turn our attention again to that report.

The PIB report, in addition to recommending that pay be related to productivity, also identified three prerequisites for the successful implementation of such schemes. These included improved standards of labour management, better supervision, and the greatly increased use of work study techniques. Having accepted the need for such schemes, the NHS then had to bring about widespread managerial changes and changes in shop floor relations between labour and management. As the schemes required the co-operation of organized groups of workers, they also implied a far greater role for the trade unions on the shop floor than ever before. Taken together, the various changes brought about in the wake of the productivity schemes had some unexpected effects. These have been described in a recent paper by Tom Manson who wrote as follows:

> . . . many groups of workers gained for the first time a sense of group consciousness, and further they gained an awareness of the job: both these factors were an important stimulus to trade union consciousness, and may have contributed to a growth in union membership as well. The agreement between the unions and the management over introduction of bonus schemes contain very clear procedures that must be followed before a bonus scheme is introduced . . . When the group of workers met together it was often the first time those workers had come together as an identifiable group in the hospital (25).

In the years leading up to the 1973 dispute there was a rise in trade union membership amongst ancillaries and perhaps more importantly, a rise in the number of shop stewards. The conditions necessary for a collective response to wage restraint, i.e. increased trade union strength and consciousness, were therefore present for

the first time when incomes policies held back the wage increases expected by the ancillary workers. The resulting strike marked the end of an era in health service industrial relations. With the precedent finally having been set by the ancillary workers, it was not long before various other long quiescent groups also engaged in industrial action over claims for improved terms and conditions of employment.

The new militancy on the part of the workforce is unlikely to disappear in the immediate future. Its effects will undoubtedly be to raise the costs of employing labour. At the very least the new willingness to take industrial action should offset to some degree the traditional external pressures to keep NHS pay down. Clegg and Chester observed that,

> Amongst the many reasons for differences in pay between the Health Service and the engineering or mining industries is that the employers in these industries fear the unions more than the management sides fear Health Service staff organizations (26).

While the miners may yet instill more fear than NHS workers, the latter have now given good cause to their employers to consider carefully the possible consequences of their pay offers.

In addition to whatever direct effects on basic pay levels result from the new attitudes displayed by the workforce, there will be additional cost consequences for the NHS arising out of various types of pay supplements once spurned by professionally oriented groups, but now being claimed. Nurses, for example, took the first step towards 'industrial type' employment conditions in 1968 (27), and by 1974, had won from the Halsbury Committee enhancements for night and weekend work not unlike those received by most other workers (28). Given the extent of hospital work done outside normal working hours, the acceptance of industrial conditions by nurses will add substantially to their employment costs.

Doctors have also recently shown both a changed attitude toward their employment terms, and a willingness to engage in militant tactics to further their aims in this regard. The successful campaign of the junior doctors to relate their earnings to their hours of work added an estimated £16m to NHS costs in the first year of the operation of the new contract (29). Current proposals to alter the form of the consultants' contract may also have important cost implications.

To summarize this section, then, the influence of external factors

on NHS pay has come full circle. To the extent that these pressures successfully kept down NHS pay, they also helped to create the conditions that eventually brought about a remarkable change in the attitudes of much of the workforce as to the nature of their employment relationship with the NHS. The result has been that the NHS is now subject to a new set of pressures, this time from within, and in contrast to the external pressures, with the effect of driving health care costs upward. In the concluding section we analyse the consequences of these conflicting pressures on the NHS and their implications for the way health care is provided.

Future prospects

We began by noting that the amount of resources devoted to health care in the short and long term has been dependent upon the level and rate of growth of the national economy. External economic constraints have, in addition, influenced the manner in which the NHS has developed. Externally imposed restrictions on capital formation have biased the input mix in favour of greater reliance on labour. More importantly, by keeping down NHS pay, external influences have further encouraged a greater reliance on labour by diminishing the cost consequences of such a policy.

The scale of health care provision depends not only on the financial resources made available to the NHS, but on the cost of purchasing the inputs into health care as well as the level of productivity. The cost consequences of the industrial relations revolution which occurred in the NHS in the 1970s will be to alter substantially the conditions which have shaped the growth of the NHS in the past. The NHS now finds itself not only with a very large labour force but one that has grown considerably more expensive in a relatively short period of time. Moreover the labour force can be expected to generate far stronger upward pressures on costs in the future than it did in the period prior to 1973. Given the dominance of labour costs in the cost structure of the NHS, the effect of relatively higher employment costs will mean that for any given expenditure increase on health services in the future, a greater proportion will be required merely to fund *existing* services. Thus any given increase in expenditure on the NHS will leave relatively less available for improvement and expansion in services. Assuming that the NHS is not able to

secure a greater rate of expenditure growth than it has in the past, the NHS will find itself under continuing pressure to expand and improve health services, but with relatively less scope to do so than in the past.

The degree of the severity of labour cost pressures facing the NHS in coming years will likewise be significantly influenced by external factors. Thus while the sharp increase in labour costs experienced towards the end of the first half of the 1970s had a profound effect on the structure and level of NHS costs, the relatively successful national policies of wage restraint in the mid-1970s undoubtedly kept NHS pay levels below what they might have been in the absence of such policies. If future years see a return to free collective bargaining, with relatively rapid pay rises in the private sector, traditional methods used to restrain NHS wages and salaries are unlikely to prove sufficient to keep labour costs down without provoking considerable labour unrest. More modern methods of controlling costs, such as the introduction of the cash limits system are unlikely to prove effective if their operation results in a disparity between the pay of those employed in sectors subject to cash limits and those who are not. Again the likely outcome of such an eventuality, given the new mood of the NHS workforce, would be serious industrial conflict. In any event, with wages and salaries already accounting for 75 per cent of current expenditure in the hospital and community services, even modest pay increases will consume a significant proportion of any likely future expenditure increases on the NHS.

Labour costs could conceivably be kept under control by reducing employment levels. However, even if this could be achieved without adverse effects on services, such an alternative is at least for the present, effectively excluded by external pressures to maintain employment in the face of existing very high levels of national unemployment. A more promising approach to the conflicting pressures on the NHS would be for cost containment to take the form of a slower growth in the size of a relatively well-paid work force, coupled with renewed efforts to increase labour productivity (30). Scope does exist for reducing labour costs through the substitution of capital, and the emphasis on cost-saving investments called for in the Priorities document (31) may suggest that greater emphasis will in fact be given to this objective in the future. The various possibilities for the substitution of non-medical for medical labour, as discussed elsewhere in this volume, could likewise result in improved labour pro-

ductivity. Finally, increased efficiency in NHS management in general and in the utilization of labour in particular, has long been called for. The difficulties facing the NHS in maintaining and improving health services in the future may finally stimulate improvements in this area.

Notes and references

1. Evidence by DHSS in *Eleventh Report from the Expenditure Committee,* Session 1976–77, The Civil Service, volume 2, p. 347 (HMSO).

2. CENTRAL STATISTICAL OFFICE (1977). *National Income and Expenditure 1966–76*, Table 9.3, p. 62 (London: HMSO).

3. OWEN, DAVID (1976). *In Sickness and in Health, The Politics of Medicine*, p. 29 (London: Quartet).

4. In 1976, wages and salaries in the NHS accounted for 52 per cent of total NHS costs, 57 per cent of current costs, and approximately 75 per cent of current costs in the hospital and community sector. (Figures derived from *National Income and Expenditure 1966–76*, op. cit., and personal communication, DHSS.)

5. FORSYTH, G. (1973). *Doctors and State Medicine* (second edition), p. 117 (London: Pitman).

6. DHSS (1976). *Priorities for Health and Personal Social Services in England,* p. 2 (London: HMSO).

7. *The Government's Expenditure Plans* (1977), pp. 76–77. Cmnd. 6721 (London: HMSO).

8. Owen, op cit., p. 34.

9. Ibid., p. 35.

10. CLEGG, H. A., and CHESTER, T. E. (1957). *Wage Policy and the Health Servics*, chapters 3, 4 (Oxford: Blackwell).

11. See for example, R. Loveridge, *Collective Bargaining by National Employees in the United Kingdom*, Institute of Labor and Industrial Relations, Ann Arbor (1971). See also *Review Body on Doctors' and Dentists' Remuneration*, Seventh Report, (1977), pp. 1–6 (HMSO).

12. CLEGG and CHESTER, op. cit., p, 126.

13. MCCARTHY, Lord (1976). *Making Whitley Work*, pp. 53–54 (London: DHSS).

14. Ibid., pp. 52–53.

15. CLEGG and CHESTER, op. cit., p. 86.

16. DONALD, B. (August 1977). 'Towards a more positive manpower policy', *Health Services Manpower Review*, 3, no. 3, p. 20.

17. LOVERIDGE, op. cit., pp. 164–6.

18. NATIONAL BOARD FOR PRICES AND INCOMES, REPORT NO. 60 (1968). *Pay of Nurses and Midwives in the National Health Service* (London: HMSO).

19. The Halsbury Report (1974). *Report of the Committee of Inquiry into the Pay and Related Conditions of Services of Nurses and Midwives*, p. 26 (London: HMSO).

20. Ibid., p. 25.

21. Ibid.

22. WILLIAMS, A. P. O., LIVY, B. L., SILVERSTONE, R., and ADAMS, P. (1977). *The Recruitment and Retention of Hospital Ancillary Staff*, Final Report to the DHSS (London: The Graduate Business Centre, The City University). *The Recruitment and Retention of Hospital Ancillary Staff*, pp. 120–2. Final Report to the DHSS (London: The Graduate Business Centre, The City University).

23. NATIONAL BOARD FOR PRICES AND INCOMES, REPORT NO. 29 (1967). *The Pay and Conditions of Manual Workers in Local Authorities, the National Health Service, Gas and Water Supply* (London: HMSO).

24. Ibid.

25. MANSON, T. (1977). 'Management, the professions and the unions: a social analysis of change in the National Health Service', in M. Stacey *et al.* (eds), *Health and the Division of Labour* (London: Croom Helm).

26. CLEGG and CHESTER, op. cit., p. 119.

27. See NATIONAL BOARD FOR PRICES AND INCOMES, REPORT NO. 60, op. cit.

28. The Halsbury Committee, op. cit., pp. 32–33.

29. *Review Body on Doctors' and Dentists' Remuneration*, op. cit., p. 15.

30. This possibility is examined in some detail by KLEIN, R., BUXTON, MARTIN, and OUTRAM, QUENTIN, (1975). 'Past indicatives and present tensions', in R. Klein (ed.), *Inflation and Priorities* (London: Centre for Studies in Social Policy).

31. *Priorities for Health and Personal Social Services in England*, op. cit.

MANPOWER RESEARCH AND THE NHS

R. F. A. Shegog
OBE
Deputy Secretary,
Nuffield Provincial Hospitals Trust

Manpower research and the NHS

Introduction

This essay is primarily concerned with manpower research in the health services: not with manpower policy issues on which the weight of present attention is being put in the media and in the submissions to the Royal Commission. It has been argued that in this field operation and research are all one process (1): a concept which may accurately describe the state of affairs in institutions such as the NHS where research is widely substituted for a central personnel information system. However, if research is defined as discovery and its analysis, and if its objectivity is to be credible then research can provide only the groundwork but not the substance of policy, nor can researchers as such act as executives in the political process of decision making.

For instance, research studies of manpower flow in the medical and complementary professions do not pretend to deliver any automatic solutions to questions of how many doctors or nurses will be needed in the future or of how to attract recruits into unpopular vocations. Whilst the direction of research effort therefore may be influenced by a knowledge of the requirements of policy, it should be encouraged and assessed as a process independent of immediate policy problems. To many observers the health services manpower scene presents a picture of muddle in which expectations about the supply of staff swing wildly and irrationally from deficit to surplus, or vice versa (2). Because such a panorama appalls those who are conscious of the size and sensitivity of the health services workforce and of their importance to our national health and economic strength, they react strongly against the lack of perfection in present manpower management and call for more decisive policies. But freedom of manoeuvre in the policy field is limited by social and political restraints on the degree of direction possible over manpower flow, and by implications of over-bureaucratic direction inherent in any move to impose more control. What courses of action are available?

Research and the communication of increased knowledge, according to the premise now presented, constitutes one essential in maintaining a proper balance between the often opposing thrusts of professional liberty and of political plans to increase health services effectiveness. Accordingly, the question of whether there is a sufficient depth and strategy in NHS manpower research is inescapable.

The method here adopted in reviewing the present state of research on health services manpower is impressionistic since no other course across this untilled field is open to anyone who would look at manpower research problems in the round. Much experience however has already been recorded and analysed in other fields of research from which one can derive guidelines for the creation of a conceptual framework within which to examine the plurality of past administrative decisions and research studies. Historically, research based upon the natural world, where lay the more obvious targets for investigation, has preceded social science research; and in the field of natural science there can now be little question about the need to establish a basic foundation of knowledge from which to develop both applied truth and the lines of future discovery (3). It is difficult to believe that the intellectual experience of the natural sciences will not apply to the social sciences as they grow in strength and tradition. In the latter case we must therefore also expect to find a requirement for generalized or 'basic' research: and must look for the historic compromise by which such research is sponsored and influenced from outside government and free of day to day expediency, whilst government and the NHS use the outcome in applied research and development. Unless responsibility is so divided, the odds historically are against the development of any positive policy for the progress of scientific knowledge, and its direction will remain no more than the sum of tactical manoeuvres.

As near-monopoly employers of some categories of its staff, such as doctors, there is a special responsibility on the government and the NHS to initiate research, since there can be no reliance on any independent mechanism to ensure automatic investigation and adjustment of anomalies. It is no surprise therefore to find a priority in the allocation of public funds for goal-oriented or applied research relating to the use of specific categories of NHS staff. It would be unwise to assume from this that there is not the same requirement for basic research as has been demonstrated by the experience of other fields of enquiry. One can suggest indeed that one might come

to two hard and practical conclusions from past experience. The first is that without an acknowledgement of the importance of basic research, there will be a failure to build up a corpus of scientific and relevant knowledge from which to derive answers to questions which are pressingly urgent in short-term crises. The second is that without research interacting with long-term manpower policy, management will be uneducated on general principles and because of concentration on specific short-term issues the syndrome of 'tunnel vision' will be one of its characteristics (4).

An aggregate of tactical advances

It is not easy to create a credible history of the reaction between events, advice, and research which have affected NHS manpower. So often the consensus of opinion as to whether there existed a surplus or deficit of manpower has seemed to spring from 'a sudden mass conversion' (5) rather than from any visible line of reasoning. In Figures 1, 2, and 3 a historical outline is presented of policies, Commissions and Working Parties, and research projects which have been selected to illustrate the course of manpower strategy in the NHS up to the appointment of the Royal Commission. From the historians' viewpoint such a presentation is a risky task for fear of overlooking some important part of the story, since some of the major and minor decisions, both central and peripheral, which determined the course of events, may never have been revealed, and the trends of opinion which influenced them are elusive to the chronicler. It is however more dangerous still to attempt judgement about the future without a good picture of past experience. Examination of these historical outlines does suggest that there is little in common between the streams here selected for analysis except in the tradition of commissioning independent groups to study and advise the permanent administration. What general conclusions can be drawn from a separate examination of each stream?

The dominating issue in regard to *medical manpower* (Figure 1) has been the problem of determining supply, to which much of the advisory work commissioned by the Government has been related. Researchers have reacted, usually spontaneously, according to each individual's opinion of the importance of particular aspects of the supply problem. In practice trends have come and gone. In the 1960s, study was first focused upon migration and deployment, and

Figure 1. Doctors.

RESEARCH	ADVICE	EVENTS/DECISIONS
1940		
	Goodenough Reports on Medical Schools	
	Spens Committee on Medical Pay/Careers	NHS ESTABLISHED Spens Grades established Junior doctors' role modified
1950		
Government Actuary BMA	Cohen Report on General Practice	'Oversupply of GPs'
	Willink Report on Future Medical Manpower	'Fear of unemployment'
	Royal Commission (Pilkington) on Medical Pay (the Jewkes dissent)	'Too many senior registrars in medicine, surgery, and obstetrics'
1960		
The Migration Studies (Davison, Whitfield, Searle, Abel-Smith)	Platt Report on Staffing Structure (Medical Assistants) Appendix on Overseas Doctors	
Deployment Studies (Last & Brown)	JWPs on Organization of Medical Work	GPs' charter
ISER (York) Peacock, Wiseman *et al.* Series of Economic Studies Women Doctor Studies (Newhouse, Flynn, Knowelden) Glasgow University Seminars	Royal Commission (Todd) on Medical Education	DHSS/UGC decision on medical school targets
1970		
Studies of Junior Doctor Workload (Government)	Merrison Report on Regulation of the Medical Profession	Central Manpower Committee established
Studies of Specialty Career Choice (Vickers, Parkhouse, Willcocks, Sussex)	Royal Commission (Merrison on the NHS)	NHS REORGANIZED
Glasgow Unit Set Up	Evidence from BMA and RMOS	Junior doctors' strike on conditions of service
Overseas Doctors (PEP)		Consultant contract renegotiation
Medical Models (Parkhouse, Knox, Ashford) *Manpower Planning* (1976) ed. Bartholemew (Penguin)		

later upon women doctors. In the 1970s, so far the emphases have shifted to work upon model building and specialty choice. Separate from this interest, there has been a slowly emerging trend towards economic studies associated initially with Nuffield Provincial Hospitals Trust support. Of all these projects few were stimulated by

Figure 2. Nurses and midwives.

RESEARCH	ADVICE	EVENTS/DECISIONS
1940		
	Lancet Commission on Nursing	Concern over nursing shortages (1920–30's)
	Athlone Report on Nursing	
	Nurse Reconstruction (Horder) Committee on RCN (Four Reports published in 1940s)	Nurse Recruitment Centre
		Nurses Act 1943, institution of Roll for assistant nurses in addition to Registrar
	Salaries Committee (Rushcliffe)	
Hospital job analysis	Report of Working Party on Nurse Recruitment (Wood Committee) and Minority Report	NHS ESTABLISHED
1950		
		Central Midwives Board given statutory authority
	Jameson Report: Enquiry into Health Visiting	
1960		
Nurse Recruitment (Willcocks)		
Nurse dependency studies (Barr, Rhys Hearn, Moores)		Council for Education and Training and Health Visitors
SHHD Studies—Job Analysis	Salmon Report on Senior Nursing Staff Structures	
RCN Study of Nursing Care Project	Prices and Incomes Board Report on Pay and Work of Nursing Staff	Panel of Assessors DHSS took over District Nurse Training
GNC Unit on Experimental Nurse Training	Mayston Report on Management Structure in LA Nursing Services	Joint Board of Clinical Nursing Studies established
1970		
Studies of Nurses in the Community and primary health care teams: deployment, job descriptions, and relationship to other professions (Gilmore, Clark, Hockey, Reedy)	Halsbury Report on Pay and related conditions for nurses and midwives Briggs Report on Nursing Working Party on Extended Role of the Nurse	NHS REORGANIZED Nursing Research Liaison Officers appointed Conference on Nurse Consultants and Nurse Specialists
Maudsley study of nurses as behaviour therapists	Royal Commission on NHS	

official interest. Recently however enquiry has begun into two somewhat separate aspects of medical manpower, the workload of junior doctors and the careers of overseas doctors who work in the UK; and there has been official inspiration behind these initiatives.

In the field of *nursing manpower* (Figure 2) the story looks rather different. During the first half of the period surveyed and stretching back before the NHS was established, a chronic fear of nurse shortage inspired the small amount of research which was done, most of it again due to the spontaneous initiative of individuals. Later the commencement of systematic hospital design (6) inspired enquiry into the purpose and work of hospital staff. Perhaps one should select for particular note the early investigation of the work of nurses in hospital wards which together with the later group of 'dependency' studies 'provided the basis from which modern nursing studies have developed' (7). In the second half of the time period, the main emphasis has switched to professional studies of nursing care and training which have had official support; and to a recent group of studies of nursing in community and team situations.

When we look at the case of manpower in the *professions supplementary or complementary to medicine* as our third and final example (Figure 3), once against there is a different picture. It is noteworthy that interest has only been seriously aroused in the late 1960s and the present decade with a series of commissioned enquiries into role and conditions of service. From the aspect of research there has been a late and modest start with the impetus coming from independent and professional initiative.

The *overall* impression from a study of these three case histories is of a series of trends in research interest which for the most part has stemmed from sporadic individual or professional initiative encouraged often by the support of independent institutions. It is true that at least two socio-economic research bases are now established at York and Glasgow Universities and capable of more strategic inspiration, but these originated with independent financial support and the present official backing is of uncertain duration. Only in the field of job analysis has there been any evident and continuing official effort until quite recent times. Lately there can be found evidence of more deliberate official effort to build up some permanent research bases, but the acquiring of uninterrupted experience of NHS affairs by officially sponsored research units seems to have only just begun and to be by no means securely found.

Figure 3. Other professions (not including social workers).

RESEARCH	ADVICE	EVENTS/DECISIONS
1940		
		Registration required to practise as pharmacist or optician
		Board of Registration of Medical Auxiliaries set up by BMA
1950		NHS ESTABLISHED
	Cope Report on Medical Auxiliaries	Regulations introduced requiring registration for NHS employment
		Council for Professions Supplementary to Medicine established
1960		
		Psychologists began behaviour therapy treatment in addition to assessments (registration not required)
Martin and Willcocks study on entry training and deployment in supplementary professions	Zuckerman Report on Hospital Scientific and Technical Services	
Brunel Institute of Organization and Social Studies of organization and management of professionals in health services	Quirk Report on Speech Therapy	
1970		
Surveys on numbers and deployment of pharmacists	Tunbridge Report on Remedial professions	
Warren Study of Paramedical Staff in Community and in Health Care	MacMillan Report on Remedial professions	NHS REORGANIZED
Johnson-Paterson surveys of roles in remedial professions	Halsbury Report on Pay and Related Conditions for Professions Supplementary to Medicine	Fears of surplus in severa Supplementary Professions
Survey by OT Board and British Assoc. of OTs of Numbers.	Trethowan Report on the of Clinical Psychologists	
Survey by Society of Radiographers	Royal Commission on NHS	

It might be argued from the fact of an annual expenditure of approaching £400,000 upon research and development under the head of 'Manpower and Training' (8) (the most recent Handbook for 1977 is less specific) that a more considerable and lasting official programme is under way than suggested by our comment and the figures here presented. But the detail of what is actually being done as provided

in the DHSS 'Handbooks of Research and Development' does not support any such argument. The conclusion must be that so far, with only slight exception, NHS manpower research has consisted of an aggregation of tactical advances—at best, of a series of unplanned trends—without strategy and without balance.

Prospectus

The Royal Commission on the National Health Service have listed the problems which they consider fall under the head of manpower.

> We see this as one of the most important areas of our work. It is clearly in the interests of both patients and those who serve them that the staff of the NHS should feel that they are playing their proper part, and that their contribution is properly recognized. There are many problems which could be examined. We can tackle only the most important of them, but between them they affect all groups of workers in the NHS.

The ensuing list embraces morale, resource availability, staff flexibility, the relation of education to supply, pay negotiations, career structures, professional ethics, and accountability.

Only the last two items on the list are doubtfully related to a manpower research programme on the grounds that though closely relevant to an effective use of manpower, they could more conveniently be considered under another head in designing a global research strategy. Scrutiny of the remainder of the list must make one uneasily aware of the inadequacy of current research to assist in decisions upon most of the area covered.

The Social Science Research Council in their published report *Health and Health Policy—Priorities for Research* (9) stimulated discussion on a conceptual framework for social science research to do with health services. It is noteworthy that in the view of the Panel responsible 'the divisions of labour in the health service' is a crucial subject of enquiry together with the correspondence of labour organization with service.

The Regional Medical Officers group, in their presentation of evidence to the Royal Commission (10), concluded that to achieve a reconciliation of supply and demand it is necessary to create a Medical Manpower Commission and to support it with 'timely and relevant information, including resource expectations'. Recent state-

ments which flow from the work of the Royal Commission (32, 33) fully confirm the inadequacy of data and research in this field.

These statements and all that has been so far presented in this essay leads to the conclusion that there is a proven lack of a positive policy for the development of scientific knowledge in the field and that to open the approach to discussion of the main objectives of a policy it would be useful to propose a definition of the component subjects—and to discuss their importance.

Manpower planning and therefore research concerns the supply of and demand for skilled labour and the integration of these two elements by making effective use of people. It may be useful before looking at them in more detail to sketch the meaning attached to these broad categories of subject by listing some of the studies considered to lie within each of them.

Supply

Education. Concepts of the supply of manpower reasonably begin with the creation of a 'pool' of educated persons from whom new staff can be attracted. A second factor is the special relationship of vocational education to employment in the health services, keeping always in mind that the 'pool' is only partly indigenous. Education as a major factor in 'supply' must evidently be kept always under review. But the responsibility for such appraisal seems to be divided.

Morale. The recruitment of staff and their continuity in employment are two sides of one coin; and influenced by similar factors. These will include wages, career structure, and conditions of service for each category of post; and also the professional status and public respect for the occupation or specialty.

Mobility. Staff can be 'mobile' in several senses; between countries, between regions, between employers, between employment and domestic duties. Relevant factors include some of these already mentioned.

Professionalism. Professional attitudes can affect most of the other factors we mention, and a basic knowledge of its characteristics is therefore essential.

Voluntarism. Voluntary effort can be a form of manpower supply.

The division of labour. The most effective division of tasks between the workforce, and the viability of substituting one form of labour (either human or technological) for another are factors in shaping supply to demand.

Demand

Demand in respect of disease and prevention. Demand is dependent on population, biology, and patient 'dependence'. The latter itself varies according to a mix of human skill and technological achievement.

Economic factors. The state of the national economy and therefore of the public and private purse act as an accelerator or brake on demand.

Demography. Population growth and distribution affect demand forecasts.

Priorities. So do changing values and expectations in society.

Operation

Information systems. The existence and use of information systems are a part of the means to integrate supply and demand, and to introduce some control in the manpower system.

Mathematical models. Models have become an essential tool to forecasting and comprehension.

Management. Efficient 'management' of patients by doctors, and of NHS staff by those responsible for personnel management; and also effective 'manpower planning': all are relevant to the best use of supply in relation to demand. Productivity, though dependent on staff as well as management can be conveniently included here.

Some concepts for a research strategy

Education

It will never be easy to draw a dividing line, whether in management or research, between education and manpower. A failure in education must adversely affect the supply of manpower: but the philosophy and method of education is obviously a field on its own, though one about which all interested in manpower have to keep themselves informed. The more directly vocational the system of education the closer this link should be, as is apparent in considering medical education.

It is fortunate that the vocational aspects of the education of doctors and the complementary caring professions are today receiving close attention.

The idea that there should be a connection between the various professions during training as well as during service is less well advanced; it is in fact often resisted. For the professional education of managers, the whole position, as documented by a recent report (11), is far less well advanced and much investigation as well as action is required. In general for all the professions concerned with health, whether or not in the NHS, a weakness in the skills of numeracy has been noted. Education centres are divorced from research units in a bizarre manner. Perhaps in consequence the concept of what is needed to face the increasing complexities of the health system at the turn of the century has been hardly considered as yet.

Although therefore one may be impressed with the determination and effort displayed in making today's *professional* education up-to-date, there is anxiety as to whether thinking is turned sufficiently far ahead to enable those who will be qualified ten years from now to meet the social and economic challenges of the 1980s and 1990s. Research strategy should prepare the way by ensuring a balance between resources used on short-term enquiries and those designed for a longer-term prospect.

Recruitment and morale

In 1975 Lord McCarthy (12) was appointed by Barbara Castle to review the NHS Whitley Council machinery. The appointment and

the subsequent report demonstrates the previous lack of independent enquiry about conditions of service in the NHS (other than for doctors, dentists, and nurses). The Report records amongst its recommendations the need for good pay data for negotiators.

Pay is only one of several factors in the attraction of any job for staff (13). The interest and status of the work, career prospects, and working environment are broad heads of matters which attract and hold staff, and which can be elaborated in much detail.

Astonishingly little study has been done of the variety and effect of wage systems (14). As a result it would seem impossible for management in the DHSS or NHS to weigh the consequences of introducing overtime payments, study leave, fees for service (as now advocated by a political party), merit awards, and so on.

Recently there has been a lively international interest in analysing the causes of 'unpopularity' in certain specialties (15): but nobody could claim that the research techniques are far enough advanced to produce clear findings. Career prospects influence every category and grade of post. Another example of particularly threatening ignorance concerns the career prospect of nurses interested in an exclusively 'clinical' responsibility.

Industrial relations is a topic which is increasingly viewed as an entity in itself, requiring the joint skills of the economist and sociologist. None will dispute its relevance to the effective use of staff and yet it has received little research attention.

The working environment is a final factor on which staff morale depends. It covers a wide area—including the status of the NHS itself as employer, the quality of its political and professional leadership, and its provision for leisure and exercise. Although it has become a cliché to refer to low morale in the NHS, opinion on this tends to be subjective and founded on anecdote rather than upon scientific study.

Mobility

The problems of emigration and immigration, particularly of doctors but also of nurses and other staff, have haunted those responsible for running the NHS for most of its life to date, and lack of precise and up-to-date information has always embarrassed government circles. The development of information systems will be mentioned later as one target for Research and Development. What is relevant to the

heading 'mobility' is the motivation of those emigrating and immigrating. Until recently such effort as was available was focused on numbers and not on reasons. It might be expected that awareness of staff motivation and mobility would be a responsibility of management, but the NHS is so far from having a central staff organization that both central and local management have to rely on research projects for pooled and analysed experience. Till recently these have been lacking in this area: and there is as yet no significant base of knowledge. A possible explanation of this situation is the bureaucratic and political anxiety about factors affecting mobility which might be discovered by research. If so, it would be an argument for a powerful and independent organization able to commission research.

Moving in and out of the UK is only one of several aspects of mobility. For some categories of staff—managers, technicians, and researchers themselves—there is mobility between the NHS and other public employers (such as local government) and private enterprise (such as industry).

For all NHS staff, there is mobility between different regions of the country in which the attraction of work near home or in a salubrious part of Britain require to be analysed in relation to shortage of staff in particular regions or, more locally, particular hospitals. In the coal industry, absenteeism was shown by one research project to be related to distance of place of work from the home. Little of this kind of study has been undertaken in the NHS.

A final example of mobility is that between working for the NHS (perhaps part time) and not working at all but meeting the claims of house and family. Married women and also those at or near retiring age are 'sensitive' staff in the sense that they may be flexible in choosing work or domestic duty according to the economic climate and special arrangements made by the NHS as employer to suit them. This section of staff is probably significant but remains unresearched.

There are some concepts and techniques which are common to all these aspects of mobility in that the description and analysis of comparative motivation is required. The NHS because of its great size and delegated management lacks the ability to accumulate empirical experience of staff motives such as a small employer might unconsciously acquire. Research by independent units or by some standing manpower Commission is required to fill the existing gap in knowledge.

Professionalism

Whilst in the cases of education, of conditions of service, and of staff mobility their relevance to supply has been evident, and explanation can be concentrated upon the need for research to provide knowledge in depth about their comparative importance, the link between the development of professions and supply may be less obvious. Historical and social study of individual professions which has not previously been undertaken for most of the NHS professions, is likely to show a connection between professionalism and both over and under supply of staff. Professions as they develop become pressure groups for an increase in supply in order to justify their corps of staff, their training institutions, and their career development, existing or projected. The arguments they deploy will be based upon hypotheses about demand, but may be special pleading. Without a research-based understanding of the sociology of professions, it will be difficult for management to assess the worth of each argument. On the other hand, the professions can be a lively focus for developing and maintaining educational qualifications and such professional interest is important to the supply of appropriately qualified staff. If there is an absence of professional interest, sometimes due to confused thinking about roles, there will be an unmet need for some types of staff. Professionalism can therefore be related to both excess and deficit of supply, according to the way standards are controlled in order to advance the profession. As important as research is the need for 'intelligence', that is, the communication of analysed information to create for management an understanding of professional attitudes, and of how to apply such understanding. Since other professions—lawyers, architects, clergymen—should show significant analogies, comparative studies are also necessary.

Voluntarism

It has only recently become politically fashionable to encourage volunteers to meet certain responsibilities in the NHS (16). In fact the NHS has always been heavily dependent on voluntary support in management through participation in management 'boards' and 'authorities'. There has also been a long tradition of voluntary help in the hospitals. More recently (17) there is a growing strength in disciplined voluntary assistance with severely handicapped patients in

the home. All this amounts to a real contribution to supply. But volunteer effort is more than that. It expresses a moral imperative which is in society's interest. For the NHS to attract the best value from this source, understanding is required of the conditions in which voluntary effort flourishes and of the obstacles, such as jealousy from professional interests, which may oppose it.

Most of the studies so far carried through on this subject have been of a descriptive and empirical nature (18). More recently Titmuss (*The Gift Relationship*, 1971) and the IEA (*The Economics of Charity*, 1975) have opened up conceptual thinking on the issue and linked it with economic and ethical theory. Such studies are still rare; and although some work is in progress with independent encouragement, there is an insufficient base from which to mount substantial enquiries likely to do justice to the importance of the subject to the health system.

The division of labour

This title, which includes concepts such as manpower substitution, is chosen because it does not carry any implicit meaning in respect of the controversial issue of authority. Under the title of professionalism we have covered already some matters such as professional identity and ambition which condition the relationship between professions in the division of the health system work-load. In addition to concepts of identity, there are technological and economic concepts which underlie the division of labour. Thus (19),

> This growing complexity in the labour complement of the NHS and other Health Services reflects the basic interdependence of different types of labour, as well as other inputs (e.g. Capital, Technology) into the production of health care. This interdependence can be seen in the production of any goods or service and can be analysed within the concept of the production function which lays stress upon there being alternative ways of producing the same output of services. The production function maps out all the (technically-efficient) combinations of inputs necessary for the production of given levels of output. This implies that, usually, to some extent, inputs can be substituted for one another. Where there are a number of technically efficient combinations of inputs for a particular output, one of these is the economically-efficient combination.

In addition to the economic concepts involved in the division of labour, psychological, legal, and other implications need study. From a Paper attached to evidence to the Royal Commission submitted by the Regional Medical Officers (20), these words are selected in order to explain this statement:

> The development of skills in non-medical staff, and conversely the delegation of medical functions by doctors may provoke opposition or support from the medical profession, the other staff involved and those seeking health care.
>
> It is understood that most of the existing non-medical health professions are, in their forward thinking, taking a positive approach towards the extension of their responsibilities through training and that both the nursing and scientific profession have current working parties on the subject. It is to be expected that these professions are in a state of readiness to accept new roles. The therapeutic professions have always been in a position to undertake both independent and delegated responsibilities and it may be that their main problem is lack of encouragement within the NHS. Social workers have, through the implementation of the Seebohm Report, had their professionalism, as it were, confirmed and practical collaboration is the main issue. The efforts of any of these professions and of the general approach towards enhancing their responsibilities could be confounded by legal requirements for cover for their practice, established in former times. A fresh approach to the subject, legally and professionally, may be necessary.

Both the papers from which we have quoted conclude with a call for a start on research and development in this field.

Demand

Disease : prevention : dependence

Demand upon the NHS is conditioned by factors of great disparity, for they include the biological, the economic, and the ethical. It seems natural because we are discussing the business of a Health Service, to mention first the demands of sickness, to the measurement of which the whole science of epidemiology is oriented and around which a huge and expensive information system has been constructed. In-

vestigations into matters which are clinically rather than system-oriented can be of value whether carried through in or outside the UK: for the incidence of disease is sufficiently homogeneous amongst western nations for the experience of each to be of likely relevance to every other.

But one may have the temerity to queston whether these skills which are already so highly developed, have yet been sufficiently directed to the creation of knowledge relevant to management and in particular manpower management. For the purpose of studying demand, two factors in the field of clinical care are crucial, the incidence of each specific disease and the dependence it causes in the patient.

It is evident that the more common a disease, the greater the demand upon the health system. The second factor is also crucial, the amount of time and attention a single patient requires because of the nature of a specific disease and its treatment. Long-term and painstaking studies have been carried out for many years by techniques of operational research concerning the dependence of patients on nursing care. These studies have never been seriously extended to dependence on medical or other forms of care and they have been only sparsely used for strategic planning, being usually restricted to hospital ward management. From them one significant lesson has emerged—that dependence is in three dimensions, skill, intensity, and duration. In other words, the tasks performed for a patient can be broadly divided into those which demand time rather than skill and those in which skill, whether for a short or long period, is the paramount necessity.

The key importance of these matters for an understanding of the demands of medical care on manpower can most quickly be suggested in diagrammatic form, as a kind of cone figure. The top of the cone is occupied by the rare disease or the one demanding a high degree of skill. The base on the other hand represents very common diseases, and those where attention is a matter of time rather than skill. The middle tier is more complex because it consists of a mix of cases which fall within this section by reason of being either rare enough to permit of full medical attention, or difficult enough to demand it, or of a nature which embodies something of both characteristics. Contemplating the three tiers as one ensemble, it becomes obvious that because, amongst all who provide care, doctors are both comparatively few and highly skilled, they will be deployed towards the

top, and those who are numerous and unskilled at the bottom. This will happen as a kind of natural law, even without the attraction of the prestige of the difficult and the rare case. The truth of the observation seems to be illustrated by the experience of major accidents and emergencies when for a brief time until a normal deployment of manpower can be achieved, demand saturates available staff and the generalist and even the unskilled volunteer find themselves compelled to cope with cases which would normally be the province of the specialist.

This combination of factors in the assessment of demand upon manpower, which is essential to its proper understanding, has been neglected except in nursing care and requires a combination of epidemiology and operational research for its research and development. Although the work involved can be termed 'job analysis', its complexity is not to be underestimated. For instance, there is no known interdependency of time values and skill values for different types of patients.

Before passing to the non-clinical elements in demand, it is essential to record that preventive care has to be included within the single concept of medical care. Preventive care, in so far as it is a health service responsibility, is only different from clinical management, rehabilitation or the management of handicap in respect of the timing of intervention, which is itself to be ultimately decided by the criteria of effectiveness and cost. But provided such decisions are properly taken, the demands of preventive care upon manpower will be no different from those of other forms of care.

Economic factors

To an economist the health system is an arena for the study of labour markets and of demand (21). In others' eyes economists are regarded as responsible for assessing the comparative cost-effectiveness of alternative health programmes—an unfair question unless outcome can be judged by economic criteria, which is rarely so (22). These contrasting motivations may account for the undeveloped state of the sector. There is undoubtedly need for economic insight into the relationship of the state of the national economy to demand on the health system, as well as to the labour market. However much the politician and clinician may join each other—for quite opposing reasons—in pronouncing the inviolability of nationalized health

services to financial constraint, there is always a limit set to demand for medical care by economic factors. Just as, without health service or health insurance, a private individual could only afford so much health care, so a nation can only afford the standard of service its income will permit. Demand in times of financial stringency is choked off in the circumstances of a national health service by a reduction in the facility offered. Demand moreover for medical care is fashionably viewed as very elastic—the greater the supply the more demand—but this is not universally applicable. In some spheres, particularly in preventive medicine, demand can fluctuate, not necessarily for economic reasons. Engleman has posed questions about policy options between capital and revenue expenditure, suggesting that health services are by nature so 'labour-intensive' that, failing a deliberate policy to the contrary, capital expenditure will be usually suppressed even when health services are allotted an increasing share of GNP. Little work has yet been done by economists on the relationship of the national economy to the health system although it is called for particularly since the absence of a market mechanism involves the absence of automatic checks and balances.

Demography

Essential to the strategic planning of resource use including that of manpower is the best possible understanding of demographic factors. The marriage and birth rate, the mortality of male and female, and the genetic make up of the population, are some demographic factors which will determine demand. Population forecasts on a national basis have been notoriously difficult (23). Usually on a local basis they are lacking in the NHS unless local government has co-operated in producing mutually useful projections. The studies of epidemiology and operational research already mentioned in discussing the biological factors bearing on demand are dependent upon progress in demographic research.

Social priority

The final subject selected for mention in this discussion of the factors bearing on demand is 'social priority' by which is meant the state of public expectation about health services which 'ought' to be pro-

vided by the NHS. In one sense it is true that the manager's role is to deal with real demand and not himself to be propagandist; and therefore, only to face new kinds of demand when presented either by political decision or by patients in the clinic. But for intelligent planning, an understanding is needed of the process of changing expectation. Recent examples would include the abortion legislation, decisions on contraceptive services, the consensus about better services for the elderly and the mentally ill, and about preventive medicine. In practice many developments in this line—and they could include the changing expectations of staff about their own conditions of service—have appeared to take management by surprise. This would seem to be an argument for enlisting the help of the political scientist, the social administrator, the sociologist, and the psychologist in reviewing social history in relation to demand upon the NHS and in attempting to forecast developments.

Operation

How are the two systems—supply and demand—to be integrated in policy and decision-making? Once a feasible line of action has been conceived, the means of influencing the factors involved will be the clearer the better their nature is understood. That is the justification for a long-term strategy of research and development. But in order to establish both the need for action and its constraints, an effective information system and techniques for comprehending the implications through the use of models are required. It might be supposed that the development of these would be achieved for management by in-house operations. Although these could contribute significantly, much of the information sources lie within health authorities or professional bodies which are jealous of their independence. Therefore non-government participation is needed. As to the techniques of mathematical modelling, these are by nature suitable for development in the accountable tradition and before the critical audience provided by a university environment.

Information systems

Recent studies of manpower information systems have been made by Professor Parkhouse, Miss Barbara Stocking, and Mr Parkinson.

These are essentially empirical investigations requiring no specialist experience, except where computer technology is concerned. It seems desirable that one permanent and accountable source of expertise should be created. Indeed it seems odd to some observers that manpower information should not be the responsibility of the employer, i.e. for the most part, the NHS. It is unsatisfactory that much of the important work in the past has been carried through by successive Royal Commissions and other commissioned groups which have always had to pick up the methodological threads anew and finally have laid down findings for which those responsible would not bear accountability in the future. The most recent DHSS statement (33), whilst uncovering more data than previously, looks to the NHS Planning System as the future source of information and refrains from any promise of regular updates of manpower data. This is a powerful argument for the creation of a permanent, independent and responsible manpower commission charged amongst other tasks with the task of creating an effective and accessible information system.

Models

Models, since the establishment of the present Royal Commission, are looked upon as an essential technique for the comprehension of the interaction of manpower flow and for monitoring and updating forecasts. The need for this is as important to the NHS as economic and other models used by the Treasury, and accessible to Parliament and public, are necessary to the conduct of other national business. Work on manpower models has, except for in-house activity, so far been without much official support. As a result and because information sources are incomplete or unsatisfactory, these models are at an early stage of development and are static or concentrated on particular aspects. One main aim of constructing a model (24) is to examine the effect of specified change in selected circumstances. In the context of medical manpower supply, it should be within the scope of a hand calculator to calculate the effect of variations in supply such as emigration rates, admission rates of women to medical schools, or retirement ages. More complex models can be set up to comprehend fluctuations from average rates and to explore the results of a range of plausible assumptions so as to identify the areas of supply which are least stable and most sensitive to change of circumstance. Use of

such models could be part of a system of decision-making capable of responding within the necessary time-scale to errors in assumptions which become evident. We should not continue to rely on tapping a pool of overseas manpower to repair the inadequacy of decisions concerning manpower supply.

Models of demand have to be integrated with models of supply before there is a satisfactory base for policy decisions. Since, in the context of the NHS, resource allocation through the processes of the market place is ineffectual, the assessment of demand is even more intractable than in respect of supply, since the resources available are now rapidly and directly affected by the state of the economy and political choices. Stone (25) has shown how a beginning can be made with the more easily measurable sections of demand. Ashford points out that the provision of dental care gives a unique opportunity to forecast demand and to match manpower supply to it, since it is practicable to forecast the size and status of the 'stock of teeth' and so the amount and nature of the care required in future years. The efficacy of models has to be tested by their aptness in relating supply and demand whenever the effect of specific change in either is examined. Existing models, as far as is known, fall far short of satisfying such a criterion.

Management

As with the head of 'education', there is no clear dividing line between the subjects of management and manpower. The application of policy on manpower is dependent upon the quality of management in more than one dimension.

At one level, the administrative manager's organization of the facilities for health care (hospitals, health centres, laboratories, and so on) is directly related through the deployment of manpower to the matching of supply to demand and for this purpose he depends on a knowledge of all subjects already discussed and upon technical skill in the use of information and models.

Quite distinct from general management is the skill of 'managing personnel' in recruitment, training, career development and promotion. To a large extent this is dependent on knowledge, based on some matters which have already been mentioned; but also upon technical skills such as interviewing and staff appraisal as well as upon more innate gifts such as leadership and the 'common touch'. To a

degree these topics are open to research and the creation of theoretical knowledge.

The commonplace that doctors are managers both in their direction of the patient and use of resources during each episode of care should remind us that the conduct of each clinical treatment also determines the use of manpower in relation to demand, involving the time and skills of other staff as well as those of the doctor. The general process of organizing episodes of care effectively in each specialty and location will be one of the decisive factors in matching supply to demand. Hence the criticism of any doctor who is wasteful of resources; hence the call for the education of doctors to be cost conscious and to choose the most cost effective course of treatment. Operational research has attempted many analyses of clinical management in this sense, without much effect upon medical custom. It will be apparent that 'productivity', which is dependent on the joint efforts of staff and 'management', is a concept relevant to this sector. It seems not unlikely that NHS 'productivity' has risen sharply over the years; but there is a lack of knowledge about this. The York Bibliography (21) records hardly any UK utilization studies in this field.

'Preliminary to action' (27)

This brief survey has sought to suggest the breadth and variety of the subjects open for investigation. Although certain narrow subject fields are being studied scientifically or are proposed for investigation, no indication has been discovered of comprehensive and professional analysis as preliminary to the creation of strategies for either research or action. And yet it has been observed that manpower problems at the present time cannot be objectively approached for lack of established criteria and valid data (4, 32).

It would be complacent to suppose that this need can be met by an 'aggregate' of tactical advances, that is, by chasing each hare that chance puts up in a series of *ad hoc* reactions. Yet this is still the official approach. A recent DHSS publication lists at least seven disparate research targets and anticipates more (33). In the social sciences, no less than in the natural sciences, basic research is essential though its nature may be different. For it is equally necessary to create centres of excellence in the various skills so that, as a distinct

strategic aim, experience and knowledge can be created in expectation of what in the long term may be useful to policymaking. Bases for the continuous study of the subjects defined in this essay hardly exist except in the economic sector where the original initiative did not come from any central research strategy. In no instance is the continuance of any research base made credible by a connection with strategic objectives.

To create a research strategy the requirement is for an intelligence mechanism which is not restricted to single professions or disciplines, nor is restricted only to developments in the health system. 'The duty of investigation and thought as preliminary to action' (27) should be a double spur both to the creation of a strategy for research and to the analysis of research in making short- and long-term decisions. The severity of this intellectual challenge can be illustrated by consideration of certain features of the twin tasks of launching research programmes and utilizing their outcomes.

Research strategy

The initiatives of the Social Science Research Council and of the Regional Medical Officers in discussing a conceptual framework are exceptional. As already mentioned, there so far exists no base of knowledge from which to tackle the manpower questions raised by the Royal Commission. For instance, the King's Fund Working Party which recently examined health service management manpower and training found itself treading new ground in comparing the systems of education for the different professions involved in management. Such strategic thinking across the whole range of professions at every layer of management is rare, although certain publications of the Nuffield Provincial Hospitals Trust have for a long time brought together essays on different aspects of manpower policy (26). The general rule is that those who are sponsoring research into *medical* manpower have no connection with those similarly interested in the *nursing* or *other professions*; and few research sponsors at the present time in this field will have any deep knowledge of the subjects and academic disciplines involved in the total scene other than those for which they are individually responsible. Indeed, many of the topics mentioned in the survey of manpower research seem in no way uniquely related to health service staff. Any methods which are learnt as a result of investigation are likely to apply equally well to

staff in other social services and perhaps in all fields of employment. The 'Think Tank's' Report on demographic projections (23) is one illustration of the common ground of interest which exists for all the social services and indeed for many other aspects of national well-being. If this is accepted, one conclusion could be that it is wasteful for each particular social service to accept the duty of investigation as peculiar to itself. Sooner rather than later wheels would be re-invented. How is that to be avoided? It is beyond the scope of this essay to do more than stress that this is a basic problem, awaiting consideration.

Utilization of research

If we imagine that a system has been discovered for the encouragement and support of comprehensive research concerning manpower, there would remain a duty of analysis and communication so as to utilize the outcome for the specific benefit of the NHS. Manpower planning is done and staff are managed at all levels of the NHS and this has always posed the need to inform and educate all levels about the results of analysis. The publication of the *Portfolio* volumes (28) seemed at the time to herald a remarkable initiative in response to a realization of the need for communication. It is true that Royal Commissions and official Working Parties have for long been accepted as a British traditional response to the need for thinking aloud about government policy. But such bodies possess only discontinuous, sometimes amateur, powers of analysis and their method precludes long-term investigation. They cannot therefore be looked upon as meeting the need for commitment to professional standards and continuity in the analysis of established fact and communication of recent discovery. In the field of health services consequently one essential link between research and its utilization has been missing since 1973. The nature of the NHS is such that decisions affecting staff are taken at different levels and in many different geographical areas, and also both inside and, because of the responsibilities of the professional and the educational system, *outside* the service. Communication between areas in one region, or even districts in one area is not always good; communication between professions is at a very low level. It comes as a surprise even to those who have made a theoretical study of the factors involved to be faced from time to time with the fact of how little the many professions involved in the

NHS know of each other's ambitions and character. The NHS therefore needs a system of candid communication of anything worthwhile going on in the field of research and development so that it can reach directly those making decisions and also can be incorporated in the teaching material of universities and other educational institutions. Their own need has been realized by some of the younger generation of NHS administrators (29) but ultimately what is required in this field, perhaps for social science as a whole, in relation to the health system, is a medium of wide communication attracting professional and scientific acceptance equal to that of the best-known journals which inform the medical world.

Conclusion

Mention has been made of only some of the challenges awaiting a response. The final conclusion must be that the basic gap in existing methods lies in the organization of health care research and that this in itself is due to a lack of political conviction about the importance of the subject.

This is a disquieting conclusion when we consider both the cost of the NHS, which in a recent publication (30) was put at some £7,000 million a year for the health and personal social services alone, and the size of its staff, 'about a twentieth of the nation's total work force' (31).

References

1. SMITH, A. R. (1976). In Bartholomew, D. J. (ed.), *Manpower Planning*, p. 37 (London: Penguin).

2. MAYNARD, ALAN, and WALKER, ARTHUR (1977). 'Too many doctors?', *Lloyds Bank Review*, no. 125 (July) p. 24 ff.

3. HIMSWORTH, SIR HAROLD (1970). *The Development and Organization of Scientific Knowledge*, p. 113 (London: Heinemann).

4. DONALD, BRIAN (1977). 'Towards a more positive manpower policy', *Health Services Manpower Review*, vol. 3, no. 3 (August), pp. 19–25.

5. KLEIN, RUDOLF (1977). *Br. med. J.* (9 July), p. 136.

6. *Studies in the Function and Design of Hospitals* (1955) (Oxford University Press for the Nuffield Provincial Hospitals Trust).

7. SIMPSON, MARJORIE H. (1971). *Portfolio for Health* (Oxford University Press for the Nuffield Provincial Hospitals Trust).

8. DEPARTMENTAL RESEARCH AND DEVELOPMENT (1976, 1977). *Annual Report* (London: HMSO).

9. *Health and Health Policy* (June 1977). (SSRC).
10. Evidence to Royal Commission on the National Health Service for Regional Medical Officers, England.

11. KING'S FUND (1977). *The Education and Training of Senior Managers in the NHS: A Contribution to Debate* (London).

12. MCCARTHY, LORD (1976). *Making Whitley Work* (London: DHSS).

13. OCKENDEN, J. M., and BODENHAM, K. G. (1970). *Focus on Medical Computer Development*, chapter 11.4, 'Staffing' (Oxford University Press for the Nuffield Provincial Hospitals Trust).

14. CLEGG, H. A., and CHESTER, T. E. (1957). *Wage Policy and the Health Service* (Oxford: Basil Blackwell).

15. MATIESON, MICHAEL, and SMITH, SAMUEL, V. (1977). *Social Science and Medicine*, vol. 11, no. 6/7, p. 421. Cf. also WILLCOCKS, A. J. (this book, pp. 49–82), and DHSS, *Research and Development Report and Handbook* (1977), para. 17.

16. WOLFENDEN COMMITTEE (1978). *The Future of Voluntary Organizations*, chapter 4, 'Central government and the voluntary sector' (London: Croom Helm).

17. EATON GRIFFITH, VALERIE (1975). *Br. med. J.*, p. 633 and editorial p. 606 (13 September).

18. Cf. NUFFIELD PROVINCIAL HOSPITALS TRUST, *Eighth* and *Ninth Reports*.

19. ENGLEMAN, S. R. (1976). *Private Report to the Regional Medical Officers, England, and Nuffield Provincial Hospitals Trust.*

20. *Supplementary Paper* (1977) to Part I of *Evidence to the Royal Commission for Regional Medical Officers, England.*

21. CULYER, A. J., WISEMAN, J., and WALKER, A. (1977). *An Annotated Bibliography of Health Economics* (Martin Robertson).

22. FEIN, RASHI (1971). *Medical History and Medical Care*, chapter 7 (Oxford University Press for the Nuffield Provincial Hospitals Trust).

23. THE CENTRAL POLICY REVIEW STAFF (1977). *Report on Population and the Social Services* (London: HMSO).

24. ASHFORD, J. R., private correspondence. His experience and advice have benefited me greatly in preparing these paragraphs.

25. STONE, David H. (1977). *Framework and Design for Planning–Priorities for Prevention* (Oxford University Press for the Nuffield Provincial Hospitals Trust).

26. MCLACHLAN, G. (ed.) (1964, 1968, 1971, 1972). *Problems and Progress in Medical Care*, First, Third, Fifth, and Seventh Series (Oxford University Press for the Nuffield Provincial Hospitals Trust).

27. MINISTRY OF RECONSTRUCTION (1918). *Report of the Machinery of Government Committee*, Cmnd. 9230 (Haldane Report) (London: HMSO).

28. MCLACHLAN, G. (ed.) (1971). *Portfolio for Health: The Role and Programme of the DHSS in Health Services Research* and (1973) *Portfolio for Health 2: The*

Developing Programme of the DHSS in Health Services Research (Oxford University Press for the Nuffield Provincial Hospitals Trust).

29. *Health Services Manpower Review* (January 1975, et seq.).

30. *Social Trends* (1977), no. 8 (HMSO).

31. *The Times* (21 February 1978).