
POSITIONS MOVEMENTS AND DIRECTIONS IN HEALTH SERVICES RESEARCH

*THE PAPERS AND PROCEEDINGS
OF A MEETING HELD AT
HERTFORD COLLEGE, OXFORD
1974*

EDITED BY GORDON McLACHLAN

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EDITOR'S NOTE

This book is a collection of the papers presented together with a note (part VI) of the proceedings of a meeting convened by the DHSS and held at Hertford College, Oxford, in the spring of 1974 to explore current issues concerned with health services R & D and in particular the identification of policies, the pursuit of objectives, and the application of findings in practice. It thus complements and brings up to date the policies and issues discussed in the earlier publications, *Portfolio for Health* (OUP, 1971) and *Portfolio for Health 2* (OUP, 1973).

I

OVERTURE



Prologue

SIR DOUGLAS BLACK

Taking advantage of the presence in this country of members of the Council of the International Epidemiological Association, a symposium was arranged in Oxford on 20 and 21 March 1974. Members of the symposium were accommodated in Hertford College, and the meetings held in the Institute of Geography. The symposium, within the theme of health services research, had sessions on the identification of priorities; on the methods by which research into health services could be pursued; and on the application of the results of research. The scientific programme was arranged by Drs T. W. Meade, J. S. Metters, and J. M. G. Wilson. In each of the sessions there were two opening papers, contributed by representatives of different disciplines. In the first session, papers were given by a senior medical administrator and a research-worker in social psychiatry; in the second, by workers in operational research and in epidemiology; and in the third by speakers concerned with the development and evaluation of services for the mentally handicapped and of community hospitals. Different disciplines were also represented in the audience; aside from the overseas visitors, the main groups were heads of university departments of social medicine; other research-workers on health services; members of the research management division of the DHSS; and senior administrators responsible for the development of services.

The soundness of a health service, as of other social services, depends on a good understanding between those who are politically or administratively responsible for the development of the service, and those whose professional skills are required to operate it. Both groups must have an emotional commitment to and an intellectual understanding of the needs of those for whom the service is designed: the 'client groups' in the current phraseology.

Emotional commitment to particular groups could lead to an unbalanced service, unless moderated by intellectual objectivity; on the other hand, a purely objective approach could lead to a barren lack of drive. Apart from its obvious place in defining needs, and in evaluating the provisions to meet them, good research, which likewise calls for a combination of emotional involvement and intellectual detachment, can contribute to the definition of priorities, even if it cannot be their ultimate determinant, given the constraints of limited resources and manpower.

When multidisciplinary papers are given to a multidisciplinary audience, the meeting either fragments into a set of axe-grinding parties; or it gels into a genuine forum of communication. With the detachment of a neophyte in health services research, but also a veteran of many symposia, I can say with the utmost emphasis that the second of these courses was followed. The participants were made aware of one another's problems, and, more importantly, of their potentialities in a common cause. Conditioned as we are by diversity of experience, talents, and acquired skills; sundered as we may be by *amour propre* or vested interests: it remains true that we are all pursuing the same end of alleviating medical and social ills. In achieving greater understanding among different groups, the symposium contributed in a distinctive way to this common purpose.

II

ATTITUDES

Identification of
research priorities

The DHSS

F. D. BEDDARD

A first but too hasty response to this subject might be an entirely negative one. How can priorities possibly be identified, one might say, in a field where even the outcome of the activity is by definition unknown? How can this problem be given a points score over that problem, or this project be given a value rating over that? Even if technically possible, who is to decide? Certainly it is possible to identify questions which *might* be susceptible to research; for which it *might* be possible to assemble skills; which would *probably* not break the bank; and which *might* be encompassed on a reasonable time-scale; but how to put them in order? One might be tempted to say 'let the wind blow where it listeth' and concentrate on being beneath the right tree when the apples fall; hoping that it turns out to be the tree of knowledge. The late Dr Jack Masur claimed that, in the early 1960s, Congress voted the NIH more money for research than had been bid for. When asked if they had the people to use it, his reply was: 'We take on anyone or anything and every now and again we get a spontaneous mutation.' However, life is not like that now (even in America). A negative response to the identification of priorities (attractive as it might be both to readers of this paper and its author, for the paper could end here) is untenable. There must be some attempt to pick out those questions which are likely to respond to the scientific method; which it is feasible to answer in a given time-span; which can fairly command adequate resources, particularly of skill and cash; which when answered have at least a sporting chance of being used to guide policy decisions; and which are most relevant to the objectives of the NHS. But the choice of direction for research is as much for the researcher as it is

for the policymaker. The objectives of the NHS will change from time to time and the research endeavour is itself a component in this process of change. Thus while the policymakers should cultivate a feel for the possibilities and limitations of research, the research worker must be sufficiently involved in the process of decision-making (including an understanding of its constraints) so that he can challenge and indeed modify the assumptions on which the questions put to him are based. As Professor Donnison pointed out in his paper *Research for Policy* (1), 'Major innovations in policy reformulate the problems themselves' and went on to observe that research workers whose work might influence policy formation, while remaining rooted in the academic world, should enjoy thinking in an independent way about the problems of government: '... which means they take seriously the versions of a problem perceived by the Government of the moment but do not confine their own perception of the issues to that version alone'.

I intend to sketch briefly the background against which the present identification of priorities has been made as far as direct DHSS research expenditure is concerned; and then show how these early considerations have matured into the new procedures, pointing out their relation to the planning cycle of the reorganized NHS. Finally I shall draw attention to some of the problems which attend the identification of research priorities.

THE DEVELOPING STORY

As Sir George Godber reminded us in the preface to the first *Portfolio for Health* (2), Simon, under the Privy Council and the Local Government Board, was engaged over one hundred years ago in research activity. The priorities were then clear, the control of communicable disease and questions of sanitation, for these were the new territories which seemed capable of invasion given a knowledge of the appropriate tactics. As time progressed these kinds of activity were taken over by other bodies which, though centrally financed, were largely independent of the Ministry and later the Department. During the last decade, once the NHS had become well rooted, it became clear that much wider questions were sprouting which required direct support for their solution. In particular relatively unexplored territories appeared which came to be called 'health care' studies. To use Dr Cohen's words,

these were a hybrid of the medical and social sciences and operational research.

At this stage of Department-supported research, priorities were determined in a more or less empirical manner with the basic belief that it was necessary to study the delivery of health care in addition to the more traditional clinical aspects of the disease process. To quote from Dr Cohen's paper in the first *Portfolio for Health* (2):

it was decided therefore that most projects should have a precise and practical relevance to the operations of the NHS, that is to take better care of patients or better use of resources within a timescale of the next five to ten years; but that a limited number which could be expected to be particularly fruitful in the development of research methods, though more theoretical and taking rather longer to yield practical results, should also be supported.

Later it became possible to be more selective and to concentrate on areas of priority. To quote again from the same article:

These have been seen increasingly as problems of service innovation, integration, and rationalization, of discovering the effects of altering the balance between care in hospitals and in the community at large, and of finding ways of measuring the outcome of care so that new patterns for provision and organization can be compared and contrasted with the traditional.

Special attention was to be given to improving the care of the elderly, the chronic sick, the handicapped, and other dependent groups. Initially studies were mainly medically orientated, but latterly a substantial social science component has emerged.

It is, of course, one thing to take a decision about which particular territory it is worth exploring, and indeed in the early days there was much unbroken ground from which to choose, but another to muster an expedition of sufficient strength and purpose to penetrate the jungle. It was thought important, therefore, to engage research units which would do work of good scientific repute, help identify needs and opportunities, make implementation more likely by having local ties, help to enlist the interest of other academic disciplines through connection with university departments and finally be a base for the recruitment and training of epidemiologists needed for future health service research. It was realized that the DHSS could not stand alone, and that it was

important to have firm collaboration with the MRC, not only to take advantage of their unique advisory machinery and vetting techniques, the Department's own were rudimentary, but also to enlist the help of their unrivalled and highly specialized units. In addition it was necessary to win the confidence of the Department's administrative machine so that systematic arrangements for attempting to identify priorities could develop, and trust be established in research findings. The interpretation of the word 'research' was wide. Finance was made available under this head for the so-called special medical developments, for example the rational and economic introduction of a new service like dialysis, the development of special service centres for such conditions as leukaemia, or the setting up of the poisons laboratory.

During the last decade there has been a steady expansion in departmental-sponsored research. Some excellent units have been established and work of high quality conducted, but it will be admitted that the input from policymakers and the identification of areas relevant to current planning was sometimes rudimentary and certainly unsystematized.

During this early period (and to a varying extent outside the main stream of research) the DHSS set up piecemeal specialized organizations concerned, for instance, with building, equipment, and the use of computers. An analysis of expenditure in 1971-2 shows that a high proportion of the available funds have been absorbed by the computer program largely because of its large capital element compared with other projects. It is worth noting however how difficult it is to find, except in very broad terms, a measure for assessing the relative attention various areas of the health and social services receive, quite apart from the value of that attention. In any case research will seldom, if ever, give cut and dried answers to cut and dried problems in a cut and dried area. It may do no more than supply the information for an informed guess, or set another series of questions demanding study in an entirely different area. It became clear too that there was a need for a three-pronged organization which brought together the departmental machine and its developing planning process, practitioners and research workers in the field, and a strong expert scientific advisory team led by a Chief Scientist in order to procure a balanced and continuous interaction. It was to be hoped that such an interaction would influence not only the content and

priorities of the research programme but also departmental policy as a whole. These evolutionary movements were of course advanced and accelerated by the Rothschild and Dainton Reports (3) and the consequent White Paper.

THE NEW APPROACH

To overcome some of the deficiencies outlined in previous paragraphs a new organization has been recently set up with the Chief Scientist as the skipper of a trawler whose gear is designed to collect and sort problems identified both by workers in the field and by those involved in various stages of the planning process. He has thus a responsibility for the content of the programme as well as its scientific quality. The basis of this mechanism is the research liaison group (RLG) where a policymaking division of the Department (that is the group of administrators and their professional counterparts concerned with a particular category of patient or service) comes together with members of the Chief Scientist's panel of scientific advisers, research workers in the field, and those engaged in research management to formulate research objectives in the area for which they are responsible. In addition they should promote research to meet these objectives and develop an over-all programme to serve the interests of the group's responsibility, monitoring research in progress and reviewing and acting on results. It will be vitally important that the work of the RLGs is geared into the Department's annual planning cycle so that the forward research programme relates to the needs thrown up by the cycle itself. The results of this work after processing within the Chief Scientist's organization will be fed to the Department's Planning Committee. This Committee consists of its senior officials, both lay and professional, with the Chief Scientist as a full member. It has the over-all responsibility for the formulation of all Department policy and will approve the total size of the research and development programme, its broad objectives and the priorities within it in the light of the work of the RLGs, the advice of the Chief Scientist's organization and after taking into account work being done by other research organizations including the research councils. Here again the research programme is brought into intimate contact with the over-all planning process.

A word about the Chief Scientist. He is responsible directly to the Secretary of State for seeing that scientific advice is brought

to bear on all relevant parts of the Department's work, including the content of the research programme itself, and particularly for seeing that the programme is subjected to scientific scrutiny. He is to be supported by a number of scientists from outside the Department covering many disciplines, who in addition to sharing membership of the RLGs also work under his chairmanship in groups to be known as the Chief Scientist's Research Committee, the Health Services Research Board, the Panel on Medical Research, and the Personal Social Services Research Group. The first of these may be said to be responsible for giving strategic advice on research and development to the Planning Committee in the fields of health care, personal social services, and social security. This arrangement emphasizes the increasing recognition of the interdependence of the health and social aspects of care, a cardinal principle of the reorganized NHS. The 'strategic advice' will cover the aims of the R & D programme, its size, its balance, and the adequacy of the machinery for the management, evaluation, and implementation of results. The other bodies are more in the nature of supporters and deal with amount, quality, and balance of research in specific sectors. They will consist of members of the Chief Scientist's Research Committee with added outside advisers. The Health Services Research Board will be concerned with research supported by the health departments (including Scotland) directed towards improved operation of health services; the Panel on Medical Research with clinical and biological research and in particular with the arrangements for commissioning work with the MRC; and the Personal Social Services Research Group with the improved operation of personal social services. In addition to these the existing Advisory Committee on Medical Computing will be brought into the organization, its Chairman being an *ex-officio* member of the Chief Scientist's Research Committee. The equipment R & D Committee, a Building Working Party, and the Social Security Research Policy Committee will act as RLGs.

In summary then the RLGs are primarily concerned with the need for research in particular fields and its application to planning, policy, and practice. The supporting bodies are more concerned with feasibility and scientific quality of the research and development programme (proposed and in-hand) and with the scientific standards of the resources available to the health departments. It

falls to the Research Management Division of the Department to ensure that in reaching a decision about a given proposal proper account is taken of the interests both of the RLGs and the supporting bodies. Also built into the organization is the ability to foster the much closer relationship with the research councils which becomes necessary under the new financial arrangements. It is also intended that there should be a much simpler procedure designed for considering the scientific merit and feasibility of single projects probably of less than three years' duration, proposed by research workers in the field and supportable by relatively small grants amounting to less than £20,000.

It will be seen then that as problems arise in the field and are seen to be identified through the planning process, machinery has been devised which should be able to identify research possibilities, consider how best these might be promoted and foster their implementation: the whole subjected to periodic scientific scrutiny throughout the process. Given the inherent difficulties in establishing the territories which most merit exploration by research, it might be hoped that this machinery given some flexibility is as good as can be devised, at any rate for the initial run. On the other hand it might be criticized on the grounds that there is danger of opportunities being lost while the machinery, which admittedly at first sight looks rather cumbersome, trundles ponderously round the course. However, in the end the tortoise won.

SOME PROBLEMS

There are, of course, certain formidable difficulties in identifying research priorities, and the procedures described will not confer complete immunity. First is the problem of assembling a total view of relevant research conducted by other bodies abroad as well as at home, so that research and development supported by the Department can be in perspective. It will be an important task of the Chief Scientist's organization and research management to collect such data and make appreciations of its significance possibly including commissioning systematic reviews. Second is the problem of identifying at an early stage the areas which, while having great potential for the scientific approach, are of such magnitude in terms of time and complexity that events may overtake the matter before any useful resolution could occur. Third there is the danger that waiting for research findings may be used as an excuse

for inaction in those areas where inspired guesswork might have achieved early and reasonable results. Fourth is the problem of identifying those projects which will achieve research results (whether positive or negative) sufficiently relevant to give the decision-makers a clear lead. This means, of course, asking the right questions in the first place and here the gearing to the planning process is a key feature, as is the continuous dialogue between researchers and policymakers referred to earlier in this paper. Fifth, the problem of recognizing when a project, which may have started with strong indications for support, is running into the ground or deviating so far from intended goals as to need major redirection or, by the same token, recognizing those projects whose deviations may be even more profitable than the original course. Sixth is the problem of avoiding a machinery which might inhibit the off-beat researcher with flair and determination. Seventh, the problem of promoting research in those clinical areas with a high priority need but low research capability. In a sense this is the old problem of how and where to break and enter the vicious circle of the 'unattractive' specialty leading to poor recruitment of staff, leading to lower standards of practice and lower academic and service support, leading to further unattractiveness of the specialty. This must be a case for close co-operation between DHSS, the universities, and MRC to identify situations where an above average clinical centre could be supported by an academic department committed to research in the subject and backed by the MRC as a breeding ground for further generations of research-orientated clinicians.

In conclusion, it would be foolish to pretend that any perfect system can be devised which ensures that all research points in the right direction and never in the wrong, or to believe that the day has dawned when no decisions need to be taken on an empirical basis, but only after full scientific analysis. However, if not too much is expected the rewards of the more systematized approach may turn out to be not insignificant. Even if the NHS were to lack sufficient confidence in the research effort to react crisply to its findings, at least both it and the Department should be better informed.

NOTE

Although I do not ask them to share any responsibility for the content of this paper I acknowledge gratefully valuable help and constructive criticism from Dr R. H. L. Cohen, Sir Douglas Black, and Dr J. M. G. Wilson.

REFERENCES

1. DONNISON, D. (1972). 'Research for policy', *Minerva*, 10, 519.
2. McLACHLAN, G. (ed.) (1971). *Portfolio for Health, Problems and Progress in Medical Care*, Sixth Series (Oxford University Press for the Nuffield Provincial Hospitals Trust).
3. CENTRAL POLICY REVIEW STAFF (1971). *A Framework for Government Research and Development* (Rothschild Report), Cmnd. 4814 (London: HMSO).
4. McLACHLAN, G. (ed.) (1973). *Portfolio for Health 2, Problems and Progress in Medical Care*, Eighth Series (Oxford University Press for the Nuffield Provincial Hospitals Trust).

Comment

GORDON McLACHLAN

It is not easy to comment on Dr Beddard's paper because he has written engagingly of the mistakes of the past and has promised a rosy future in which the managing lions will lie down with the research lambs (or is it the other way round?). In considering the present and future of health services research however, it is not possible to ignore the past and its lessons.

One thing certain is that Dr Beddard has not left many openings for criticism of the procedures to be adopted for the future, because it is difficult to fault the theory behind the outline research organization now being set up; and he has been completely disarming about the question of a priorities programme. Nevertheless there are dangers in accepting uncritically a series of neat organizational boxes which when put together seem to solve the Chinese puzzle of research, and his soothing incantations cannot sway me from attempting to practise my own variation of voodooism, by looking at the entrails of the beast, in a kind of post-mortem. I am convinced that a close look at the total picture is necessary because there is a strong case for believing there is not much room for major mistakes in organization and direction at this moment of time in the UK. The rate of expansion of the last few years has slowed down if it has not actually gone into reverse. The one thing that is certain is that the Health Departments are now virtually in a monopoly position with regard to health services R & D in the UK and the whole style of approach in this field in the future is likely to be conditioned by the Department's attitudes and their actions in the next phase.

There is one major reservation I have about his notes on the past; I doubt very much that hitherto there has until recently been much of a rational strategy evident at all, about research in relation to service particularly and I would like to plead that the effect of this on the build-up of resource capability and attitudes to research should be studied as a guide to future tactics. It seems to me from my recollection of the events leading to the publication of *Portfolio for Health 1* and *2* that in the past the DHSS reacted more to events and pressures than to anything remotely formulated as a

plan. It may be that the vast expansion in financial resources available in the last ten to eleven years overran the development of policies; but if one postulates that a credible strategy should be related not only to public policies but also to the logistics of building up research capabilities, and how and where they should be sited appropriate to the various levels of administration in the NHS, there could not have been much of a strategy: and consequently the tactics adopted in funding research were bound to be haphazard and limited therefore as to effect. I say this while admiring much of what has happened in the last ten years and with the strong feeling that not too many people actually involved in research, or as observers of the power game of government, have appreciated how liberal the DHSS has been in laying out the body of its research, warts, blemishes, cancers, and all, for public inspection. For this the DHSS should be applauded. Perhaps the Scots will follow their example some day since I note they are participating in this seminar which I see as an extension of the policy of revelation begun in the *Portfolio* books.

What about the research strategy to ensure the determination of policies as outlined by Dr Beddard? Does the evidence indicate it is right? Although I am tempted to raise specific issues which are looming, such as quality assurance or bio-engineering, it would not be practical in the time to attempt to make detailed observations. But I would like to reflect on one or two principles indicated by the past experience, not only of the departmentally funded research, but also of the Nuffield Provincial Hospitals Trust.

No one will dispute the fact that hitherto the proportion of finance available lavished on computer development has been excessive; and it is certainly interesting to me, remembering the Nuffield Provincial Hospitals Trust's doubts which culminated in *Focus on Medical Computer Development* to know that an important lesson seems to have been learnt. Clearly this is something which in terms of money has had great priority, but in the future should be placed in appropriate perspective. It would be tempting to point to it mainly as a warning against rushing into fashionable developments in technology; but in effect the computer story is perhaps more than that, for it illustrates that the several parts of a research programme have to be related closely; and if research concerned with the production and use of information of all kinds is a priority as it must be, the computer R & D programme surely could never be divorced from any research on information related to decision-making, whether it is concerned with epidemiological issues or building macro- or micro-castles on the wilder shores of operational research.

I would give three hearty cheers for Dr Beddard's conclusion that research will seldom if ever give 'cut and dried answers to cut and dried problems, in a cut and dried area of the health field.

It may do no more than supply the information for an informed guess, etc. . . . This is absolutely true, but surely it strikes at the heart of the customer-contractor relationship according to the Rothschild doctrine, if that thesis is applied too rigidly and taken to its logical conclusion. Is this widely appreciated? Indeed in the light of what we know, is a strict Rothschild interpretation really tenable for health? The answers to these questions are important to a wide range of individuals and institutions involved in research and to attitudes generally.

I happen to believe the current phase of health services research anywhere is unlikely to be one of much specific application of results, but more important to the further education of the health care professions (including the academics), of management, of the politicians, and of the public. It is therefore one in which some priority must be given to conceptualizations about health and its constituent, interrelated parts.

What this does make a case for, is an 'intelligence' capacity in the military sense, of great power, preferably, I believe, at the Chief Scientist's level, and it would be interesting to get the chairman's reaction to whether in fact he believes this capacity is being developed. By this too, I should add, I do not mean servo-mechanisms such as interlocking committees meeting occasionally, or liaison groups, but a highly powered intelligence unit geared to make the best use of these mechanisms, away from the administrators and planners beset by operational anxieties, but capable in reaction to the planners' needs, of meshing realistic research capabilities into operational situations. This means high-quality staffing, not necessarily large, but extremely knowledgeable and sensitive to the potentiality of epidemiological and operational research techniques as well as current problems as they arise.

There is a problem here familiar to most participants at the seminar which should not be underestimated. Too frequently, the 'clients' concerned with planning are impatient with the insufficient responses of the academics; and the academics fail to understand the way in which the policymakers work or how they fit into the political process or indeed appreciate the nature of government. It is easy to formulate the idea of a systematic scientific scrutiny, or make arrangements for something called a 'dialogue'; but in fact the two-way conversion of thought and concept to action, or the ability to pick up what is required to be done and to seek out how it can be done, is not a part-time occupation. It needs the capacity for the assimilation of ideas of different character and to project a credible resultant. Not unimportantly it calls for the ability to scrutinize the growing mass of publications which have a bearing on health services, and distil their essence.

Nor do appreciations of situations only apply at departmental

level, but if possible even more important, because that is where the action is, at the operational level of the region or area. I am not too sure from my reading of this situation, whether the regional liaison groups or the Chief Scientist's organization provide for 'inputs' from the regions and areas. It surely cannot be ignored that those individuals rather loosely grouped under the title 'community physicians' ought to, and will increasingly have, key roles in applying the results of research and formulating future requirements for research. In fact in any research strategy the needs of those concerned with management at the operating level must not be lost sight of. Thus if there is to be a total research budget for the NHS some provision will have to be made for fitting in requirements for research, certainly at the regional if not the area level, with a role for the various universities; and I would hope this will be considered at the outset in any strategic conceptualization.

This is very important in view of the monopoly issue I have mentioned before. The system as at present conceived in theory implies that strategic objectives will be worked out for research, and the projects commissioned or attracted to meet these. Such a system, while it may be right for a part of the field, seems to avoid the old cliché much beloved by foundations, but with some truth in it, that the man of quality (and by the same token with a strong nucleus of talent attracted round him), should be supported and within limits given his head. At the same time, however, such a policy will not be effective if it disregards the need for incentives for the peripheral management in the NHS to have specific roles and opportunities to develop local initiative and interest. Surely the best effect will come from a judicious mixture of the two thrusts. If so, one should remember that 'intelligence' machinery of high quality is also a prerequisite of the policy of supporting the nuclei of quality. Such a mechanism is needed to exploit the research results as well as feeding information to the researchers to enable them while still retaining their independence to be in harmony with central thinking. At a more mundane but practical level an intelligence mechanism is essential in order to distinguish and evaluate research capabilities in universities which my own observation tells me to get the best results need constant tending and encouragement, with the application of grafting expertise occasionally as well as the somewhat easier pruning. Above all the need for developing a corps of researchers of various disciplines grouped in nuclei at the main research centres is paramount; and I would have thought that an important priority is the development of imaginative systems to achieve this based on some career structure related as well to the operating requirements of the NHS and to the all-important teaching requirements in higher education.

The research worker

J. K. WING

INTRODUCTION

My brief is to comment, from the point of view of someone who is actively engaged in research, on the identification of priorities in health services research. Left to my own choice, I should have preferred to give a personal view about the scientific problems that interest me and then to discuss whether the solution of any of these might conceivably be useful in the solution of the practical problems which are presented to those who administer and plan health services. This is probably a common reaction on the part of research workers and that fact in itself has to be taken into account in any consideration of government R & D.

However, since I am a member of the Research Committee set up by the Chief Scientist to the DHSS, and have acquired the glimmerings of an understanding of how social and medical policy has been formulated, it is fair that I should also be asked to consider priorities in rather a different way; that is, to look at the pressing policy issues now before us and to assess priorities in terms of the research which might be expected to help resolve them. Obviously my judgement in these matters will be faulty since I am very inexperienced, and I hope that the details of what I say will not be taken too seriously, but at least I can formulate some of the problems in a general way. I shall have to take my examples mainly from the field of psychiatry but I should be greatly surprised if they were not recognized to have more general relevance.

I will come back, finally, to a comparison of the two lists of priorities in order to see whether there is not, after all, a middle area of scientific work which fulfils both the criterion of *interest*, so far as the research worker is concerned, and the criterion of *relevance* which must be required by the planner and research administrator in a government department.

First, however, I should like to clear the ground a bit by considering the relationship between evaluation and planning and the definition of some common terms. (Those who are impatient to get to the meat of the matter could move on at once to p. 26.)

EVALUATION AND PLANNING

Planning consists of anticipating the problems that are likely to arise when trying to achieve a given aim, and of working out in advance some means of solving them. The more systematic and intelligent the anticipation the more successful the decisions are likely to be when plans are put into effect. In planning health services the over-all aim is to decrease morbidity (illness and disability) and mortality as far as possible. There may be problems in deciding priorities between different methods of carrying this out, for example between the relative proportion of available resources which should be devoted to heart transplants or to hostels for the mentally retarded, but whatever decision is made will need to be evaluated in terms of the extent to which morbidity actually is decreased. Thus the aims of planners and evaluators are fundamentally the same but each group has a separate role. Planners make decisions concerning the priority to be accorded different developments but they must then be prepared for independent evaluation of the results; it is an unusual planner who can objectively evaluate the results of his own decisions. Evaluators are concerned with the extent to which services carry out their function of reducing or containing morbidity and the experience thus gained will enable them to make recommendations for changes; but they cannot make the decisions themselves. Philosophies of planning are fundamentally political while philosophies of evaluation are fundamentally scientific.

Most national and local planning committees have only limited information available to them; their own experience, the advice of clinicians and administrators, some *ad hoc* statistics, and a set of institutions and agencies with in-built traditions and prejudices. Most begin with a few generally accepted principles. The chief aim of the health services is to decrease or contain morbidity, firstly in patients, secondly in the patient's immediate or prospective family, thirdly in the community at large. Each service agency has a combination of diagnostic, therapeutic, rehabilitative, and preventive functions, but prevention is better than cure.

Primary, secondary, and tertiary preventive methods should be used to stop disease occurring in the first place, to detect and treat illness at an early stage, to limit development of chronic disabilities following an acute illness, and to prevent the accumulation of secondary handicaps if clinical disabilities are unavoidable. All this can be summarized as the 'containment' of morbidity and mortality.

In order to achieve these ends different models of service have been proposed. One which has been quite widely accepted in principle assumes that health service authorities should accept responsibility for the population of a given geographical area so that everyone needing treatment should be able to obtain it locally. The range and variety of agencies should be adequate, the staff should be skilled and not overworked, and there should be proper communication between all parts of the service so that no blocks or delays occur when a patient moves from one agency to another. These principles are conveniently summarized as the provision of a responsible, efficient, comprehensive, and integrated community service.

Evaluative work could therefore begin with the question, 'Is the community service responsible, comprehensive, and integrated?' Behind this question, however, is the more fundamental one, 'Does the service, or any given section of it, contain morbidity or not?' Only when this question is satisfactorily settled is it permissible to go on to consider the most economical and efficient ways of containing morbidity. Thus evaluative work needs to be carried out at many different levels and will usually involve several branches of scientific work. It must be concerned with the organization of community services, the management of particular institutions (including perhaps the committee structure), the morale and training and skill of staff, the extent and quality of various specific forms of service, the attitudes of local residents, and the carrying out of specified clinical functions such as diagnosis, treatment, rehabilitation, or prevention.

Clearly much evaluative research will be *ad hoc* and piecemeal but a basic strategy can be outlined in the form of six questions.

1. How many people are in contact with the various services that already exist, what patterns of contact do they make, and what are the temporal trends in contact rate?

2. What are the needs of these individuals and of their relatives?
3. Are the services at present provided meeting these needs effectively and economically?
4. How many other people, not in touch with services, also have needs, and are these needs different from those of people already in contact?
5. What new services, or modifications to existing services, are likely to cater for unmet needs?
6. When innovations in service are introduced, do they in fact help to reduce need?

In each case, the criterion is firstly whether the service reduces or contains morbidity or mortality and secondly whether it does so efficiently and economically.

The first question can be answered by the use of descriptive statistics, particularly those provided by case-registers. The second requires the definition of morbidity and of treatment; the relation of one to the other gives an estimate of need. The third is the question of value; do the existing services meet the needs of those in touch with them? The fourth is an extension of the second but requires surveys of the population not in touch with existing services. The fifth involves planning innovations on the basis of the answers to the earlier questions. The sixth returns to evaluation, this time of the innovations. Thus a cycle of evaluation-planning-re-evaluation-replanning is set up. This strategy proceeds from the known to the unknown; from the routine collection of statistical data concerning services which already exist, to morbidity in the general population and the planning and evaluation of new services.

It requires the definition of terms such as 'morbidity', 'treatment', and 'need', and the use of epidemiological, experimental, and laboratory methods, quite apart from the quantification of impairments, handicaps, social performance, attitudes and satisfactions.

MORBIDITY, TREATMENT, AND NEED

It has been suggested that the main aims of planners and evaluators are complementary. Planners wish to ensure the reduction or containment of morbidity and mortality through the provision of appropriate services; evaluators wish to know whether the services

actually carry out this function and, if not, how to improve them. Morbidity, however, is often measured in terms of contact with services. This is attractively simple but becomes a circular process if it is assumed that anyone who makes contact is ill or disabled and anyone who does not make contact is well. In fact, there are at least three components in morbidity, each of which has its own implications for evaluating services. The first component consists of the biological or psychological abnormalities of the illness itself, or the intrinsic residual impairments caused by the illness (slowness or thought disorder in schizophrenia for example). The second component consists of the adverse attitudinal and behavioural reactions which accumulate secondarily whenever primary impairments are present (for example, lack of confidence in ability to obtain a job, maladaptive attitudes, or personal habits). Institutionalism is largely a matter of secondary reactions. The third consists of extrinsic handicaps which exist independently of any illness, such as a lack of occupational or social skills due to poverty or a poor education or a lack of 'coping ability'. The combined effect of these three types of handicap on the social performance of an individual creates a condition called 'disablement' which is defined in purely social terms according to the degree to which an individual falls short of the level of social performance expected of him within a given subgroup of society.

The measurement and classification of morbidity is of the essence of good evaluation, since this is the criterion against which services must be judged. The extent of the patient's co-operativeness must, of course, also be considered under this heading, since it is useless having an effective therapy for a condition of known morbidity if the patient cannot be persuaded that he ought to have it.

Medical treatment may be generally defined as any procedure which directly results in a decrease in the severity of symptoms or clinical disabilities or in the prevention of an increase. It thus includes many rehabilitative or preventive procedures. Biological and psychological treatments need no special commentary but the term 'social treatment' does give rise to confusion in evaluative work. There can now be little doubt that the social environment has a direct and marked effect on the course of many illnesses, including some such as schizophrenia, which formerly were thought to have an inviolable natural history. The significance of

this fact for evaluative work is that a distinction has to be made between the ward or unit providing the treatment and the processes which make up the treatment itself. Concepts such as 'the therapeutic community' involve many such processes and confusion is inevitable unless some attempt is made to distinguish one from another. Sometimes the processes seem to be very specific as in the reduction of certain severe and chronic primary handicaps of schizophrenia by an increase in social stimulation. Even the process of attitude-change in order to reduce secondary disabilities can be very specific although some rather general social processes are involved (1). Naturally the two kinds of handicap interact with each other and also with the third or extrinsic kind. Schizophrenic patients are particularly vulnerable to institutionalism in the social conditions found in many mental hospitals. Institutionalism, in schizophrenia, may be largely due to the fact that patients with a tendency towards apathy, because of the illness, do not use all their faculties spontaneously and, in crowded and understaffed wards, it is difficult to give the attention which would keep residual mental and physical functions at an optimum level. The necessary characteristics that a community should have in order to make it 'therapeutic' for such patients can be fairly precisely specified. Evaluation then consists in making the appropriate measurements of morbidity in order to see whether the aims are achieved. It would be useless, however, trying to test out these ideas in a 'therapeutic community' set up for a completely different group of patients.

Having discussed morbidity and treatment it is possible to approach the difficult concept of 'need'. Matthew (2) gives clear and economical definitions of the terms 'need', and 'utilization' as they are used in a medical context.

A need for medical care exists when an individual has an illness or disability for which there is effective and acceptable treatment or care. It can be defined either in terms of the type of illness or disability causing the need or of the treatment or facilities for treatment required to meet it. A demand for care exists when an individual considers that he has a need and wishes to receive care. Utilization occurs when an individual actually receives care. Need is not necessarily expressed as demand and demand is not necessarily followed by utilization, while, on the other hand, there can be demand and utilization without real underlying need for the particular service used.

It might perhaps be added that a demonstrated need for care still has to be assigned a priority as compared with other needs; it cannot be automatically translated into provision of the appropriate service. The allocation of priorities is a very complex and insufficiently considered process (3).

This definition of 'medical' need is only as useful as the definitions of morbidity and its treatment that it depends upon. It can be applied within the psychiatric field fairly reliably to conditions such as schizophrenia or dementia or anxiety state but much less so to 'social inadequacy', 'heavy drinking', or 'personality disorder'. Criteria can be set up in all these cases, as in the case of delinquency or unemployment or destitution, but the lack of reliability in definition leads to a very wide range of value judgments concerning the need for extra provisions, whether made by politicians or by the officials or professional people who are in day-to-day charge of services. Some of the dimensions involved have been dissected out by Bradshaw (4). The principles of evaluation, however, remain the same.

ALTERNATIVE PRIORITIES FOR RESEARCH

The interest of a particular line of research work, the degree to which an individual feels impelled to undertake it, constitutes its priority for the scientist. His motivations are necessarily complex, and they are rarely as disinterested as he himself supposes, but they are, in a way, independent of those of the state. That has its disadvantages but it has its advantages as well.

My own programme of research would undoubtedly be based, for preference, on studies of the definition, recognition, and measurement of morbidity, since everything else in 'health services research' must depend on that. Based on such studies, and on what we already know, I would next go for the causes of morbidity, since on them must depend our knowledge of rational treatment and prevention. These somewhat simplistic and general aims can be specified in various ways. Again, expressing a personal preference, I would emphasize the element of handicap compared with that of acute illness, and the secondary and extrinsic components of disablement as much as the intrinsic. From the point of view of scientific research, the causes of 'institutionalism' seem to me as important as the causes of cancer; the social structure of a harmful or a beneficial environment as important as the chemical

structure of an abnormal haemoglobin; methods of recognition and management of impairments such as deafness, aphasia, schizophrenic slowness, spasticity, dyslexia, chronic anxiety or depression, as important as the diagnosis and early treatment of acute illness; the disadvantages of 'labelling' with the wrong diagnosis as important as the advantages of the correct recognition of disease; the interaction of social with clinical events (for example, in a family containing one or more handicapped members) as important as the interaction between the physical and the biological aspects of the environment; the reaction of the consumers of health services and their relatives as important as the morale of the people who supply the service.

It is perfectly clear that these priorities are not shared by those who apply for research funds or by those who disburse them. The reason given is the just one, that such topics are relatively less 'researchable': we spend our money on projects that seem feasible rather than on those that seem romantically appealing. Nevertheless, in each of the areas that I have mentioned there are already pointers to useful solutions, although they usually direct the medical scientist into unusual paths and towards the exploration of unfamiliar disciplines. It would be a poor scientist, however, who let himself be put off by the strangeness of the territory into which he found himself straying. The rules of scientific method have so far held good irrespective of geography.

The reason why I began my own list of priorities with studies of this kind is not that I think that research into services is unnecessary, but that services, on the whole, have usually grown in a meandering, not to say irrational, way and that it is better to try to establish the principles on which to base future modifications of services rather than to look at those that exist and try to work out whether they are useful or not. The same principle is true even of studies of the numbers and type of professional staff needed to carry out the tasks of recognizing, treating, managing, and preventing illness and handicap.

The kind of studies I have mentioned as seeming important to me do not include a number with more remote but nevertheless quite definite implications for the planning of services. One is the opportunity presented by the anticipated rapid industrialization of areas of rural Scotland to test various theories concerning the relationship between aspects of modern society and the incidence

of various illnesses. Another is the more general relationship between environmental 'stress' and the precipitation of various disorders, particularly those with a genetic (perhaps a multigene) basis. Yet another topic of considerable interest is the prevention of morbidity by the institution of measures not immediately related to health issues at all; the equivalent of paying attention during childhood and adolescence to exercise and diet and the non-acquisition of habits like smoking. The provision of day-nurseries, sheltered housing, social clubs, and corner shops on new estates; the reduction in height of blocks of apartments; the provision of extra housing and work opportunities in 'development' areas, are obvious suggestions. Such ideas are not all equally researchable, but I put them forward as interesting from the point of view of a research worker and as suggestive for purposes of discussion.

None of this work can be called research into 'health services' and if we turn our attention to the problems of the health administrator an entirely different set of priorities seems to appear, which the following list illustrates (it is not intended to be comprehensive). How many beds for this or that condition ought there to be in the district general hospital? What is the function of the 'community' hospital? How does it relate to the function of residential or day accommodation other than that provided by health authorities? Should there be special schools for autistic children or can they be dealt with by the services provided for the rest of the mentally retarded population? What should be done about the admittedly high psychiatric morbidity among the population of reception centres? Should there be regional 'medium-security' units or can people who present 'security' problems be absorbed throughout the general health services? Do we need a special employment service for the handicapped, on the lines of Remploy, or can this be run by the local authorities? What should be the position of the GP in the treatment of people with chronic handicap; can he deal with most of the problems or should the specialist services usually be invoked?

These problems merge into even more precise and operational ones. What is the optimal length of time for which an out-patient can be expected to wait (i) after referral by the GP before he receives an appointment, (ii) after arrival at the clinic, before he sees the consultant? I need not specify any more such questions.

Confronted by this second type of list, what is the research worker to say about priorities? Clearly it is not possible to translate the first type of list into the second type, or vice versa. But perhaps it is feasible to bring the attitudes of mind and the interests which promote research of the first kind to bear upon problems of the second kind (and vice versa). In fact, it is only by resolving any inherent conflicts between the two that one can really hope to see science usefully influencing government, or government constructively influencing the national scientific effort.

THE INTERACTION BETWEEN RESEARCH AND POLICY

If one believes the systematizers (whether Dainton or Rothschild) research can be divided up as follows:

BASIC RESEARCH (What is it all about?)	} STRATEGIC RESEARCH
EVALUATIVE RESEARCH (What should be done?)	
OPERATIONAL RESEARCH (What can be done?)	
	} TACTICAL RESEARCH

This is an oversimplification. At each level, the questions that can be asked are more complicated. For example, operational research poses the question: What was, is, will be or can be the case? The answers can be found by measuring the events or activities under consideration. How long, for example, do patients stay in hospital and what reduction, if any, follows when a day-centre is set up?

Evaluative research poses the question: What *should* be done? It is necessary to set up criteria of value as well as measuring the activity itself. For example, does the introduction of a day-centre lead to any change, not only in length of stay but in morbidity, consumer satisfaction, or some other index of value? The two types of research are only equivalent to each other to the extent that it is self-evident that, if something *can* be done, then it *ought* to be done. Usually this is neither self-evident nor demonstrable.

The relationship between basic and evaluative research is also a two-way affair. It is impossible to say where one type of research ends and the others begin; where the MRC should cease to be responsible and where the DHSS should take over.

There are, however, many examples where one type of interest influences the others. For example, within my own field, the value

of setting up workshops in hospitals for the mentally ill and retarded was first demonstrated by a unit of the MRC. The scientific aspects of this work, which identified some of the disabilities of the patients and showed how they could first be reduced and then maintained at the lower level, were also applicable in a practical way and will now one hopes, be applied outside the hospital field as well. The Government did not take any deliberate part in this application; it spread because it was obviously useful and clinicians were impressed. Similarly, our psychiatric case-register in south-east London, together with the results of various specific studies based on samples drawn from it, has been applied to the planning of local services. No central direction has been necessary.

However, I take it that the main point of this meeting is to consider government-sponsored research. In the past, research workers have sometimes felt that their work was not used sufficiently in planning, perhaps for the very reason that it was not sponsored. There are parallels between evaluative and historical research, not least when writing up the results. John Morris in *The Age of Arthur* says that the function of the historian is first to collect and clean his facts and then to state his conclusions about them. 'If he fails to offer clear conclusions from the evidence he knows, he infects his readers with false beliefs and woolly notions; if he leaves no conclusion to correct, the importance of new evidence is easily missed.' What Morris actually does is to tell a good story. Too good for the critic in the *TLS*, who commends the elegance and liveliness of the writing, the telling epigrams, and the bewitching style. 'But is it all true?' The answer of competent scholars is likely to be a resounding "No". Sometimes one wonders whether the art of getting scientific ideas accepted in practice is not the art of telling a good story. As Lord Zuckerman pointed out, 'The application of the results of scientific inquiry must necessarily be biased by political and administrative conclusions.'

Often, the better the scientist, the more likely is he to present his results in a cautious way, to hedge his bets. But busy administrators want to take decisions, not read long research reports. Perhaps one of the most useful functions of the Chief Scientist's organization will be to interpret the results of research to those who need the information for better decision-making and to trans-

late the important problems coming up for decision into terms that research workers will recognize and be interested in. My two lists of priorities are not, in fact, all that irrelevant to each other. Not only must the evaluation of health services be based upon a knowledge of morbidity, its causes and its treatment, but a study of the way service agencies actually operate will throw up interesting research ideas. Moreover, central consideration of research might lead to earlier replication of experiments, to linked studies in different areas and to a wider dissemination of research in overlapping fields, in a way which is clearly of benefit to scientists themselves.

This paper has expressed the somewhat naïve thoughts of a research worker asked to talk on a subject about which he has rather little experience. Nevertheless, I hope that it will serve to illustrate, what I believe to be profoundly true, that operational, evaluative, and basic research cannot be sharply divided from each other and that there are scientific advantages as well as disadvantages to be obtained from operating partly within a system which recognizes the practical value of applying the results of research as well as the fundamental necessity for the research process to be independent.

REFERENCES

1. WING, J. K., BENNETT, D. H., and DENHAM, J. (1964). *The Industrial Rehabilitation of Long-stay Schizophrenic Patients*, Medical Research Council Memo no. 42 (London: HMSO).
2. MATTHEW, G. K. (1971). 'Measuring need and evaluating services', in McLachlan, G. (ed.), *Portfolio for Health, Problems and Progress in Medical Care*, Sixth Series, pp. 27-46 (Oxford University Press for the Nuffield Provincial Hospitals Trust).
3. MINN, R. (1972). 'Homeless families and some organisational determinants of deviancy', *Policy and Politics*, I, 1-22.
4. BRADSHAW, J. (1972). 'A taxonomy of social need', in McLachlan, G. (ed.), *Problems and Progress in Medical Care*, Seventh Series, pp. 69-82 (Oxford University Press for the Nuffield Provincial Hospitals Trust).

Further reading

WING, J. K., and BRANSBY, E. R. (eds) (1970). *Psychiatric Case Registers*, DHSS Statistical Report Series no. 8 (London: HMSO).
— and BROWN, G. W. (1970). *Institutionalism and Schizophrenia: A Comparative Study of Three Mental Hospitals, 1960-1968* (London: Cambridge University Press).

— COOPER, J. E., and SARTORIUS, N. (1974). *The Description and Classification of Psychiatric Symptoms: An Instruction Manual for the PSE and the Catego Program* (London: Cambridge University Press).

— and HAFNER, H. (eds) (1973). *Roots of Evaluation: The Epidemiological Basis for Planning Psychiatric Services* (Oxford University Press for the Nuffield Provincial Hospitals Trust).

— and HAILEY, A. M. (eds) (1972). *Evaluating a Community Psychiatric Service: The Camberwell Register 1964-71* (Oxford University Press for the Nuffield Provincial Hospitals Trust).

Comment

A. J. LANE

Introduction

There are differing views about discussants; some, such as the organizers of this symposium, hold them to be objects of virtue. To my mind they have one great advantage. The audience gets two for the price of one. Those who have read the paper do not have to listen again; they are entertained rather than bored. Those who have *not* read it are perhaps marginally informed.

Another view holds discussants and all their works to be anathema. Indeed, the word has always seemed to me curiously redolent of the term 'recusant', that pejorative applied to the stubborn adherence of some of our forebears to believing what they held to be true rather than what was the commonly accepted norm.

Like a recusant, a discussant can either go in for the paper-shredding approach of extreme dissection and criticism of the speaker's paper; or more commonly he can offer an alternative faith embodied in his own paper, the one he would have given if he had been invited to be a speaker. (In my observation this latter approach invariably satisfies the audience that the original choice of speaker was indeed correct!)

Exposition of the paper

Avoiding therefore all these perils I would wish to propose at the outset that we accept Professor Wing's paper for what it is: a masterly exposition of the underlying principles for a strategy of health service research. I would wish to turn immediately to some headings for our discussion.

I must, however, support and reinforce one of the main implications of Professor Wing's paper; that somehow research workers are not being interested in the 'right' research. I myself, as a health service administrator for one-tenth of England, can assure you this is so. I think of myself as a physician (an old-fashioned nineteenth-century physician) with a patient: the National Health Service. I know he is sick. I do not know what is the cause. I have no idea of the treatment. I apply only traditional remedies (such as more money) and similar polypharmacy, and I blandly

reassure my patient he will recover. As a consumer I am desperate for the answers, the tools, the remedies.

In the fourth section of his paper Professor Wing divides health services research into two main groups: (i) interaction of morbidity and environment; and (ii) service research. I want to suggest that the problems are different in the two cases.

1. In the case of morbidity and environmental research (I will call it epidemiology) we have a large number of distinguished workers. There are many published studies; much work has been expended on getting facts; but the science is in a very observational stage of development. The researchers are almost like eighteenth-century naturalists observing a patch of garden here, a parish there. They are like astronomers who have no large telescope to garner rapidly an immense array of observations. The telescope which is lacking in their case is a developed information service, without which they can only study easily obtained information.

2. In the case of services research the problem is different. The analogy here is the factory. To produce more goods at lower cost for consumers you need (i) an entrepreneur who has vision and greed for profit, (ii) scientists to provide new ideas, and (iii) engineers who can apply and make work in new machines the scientists' concepts.

To apply the analogy:

1. I, and other health service administrators, represent the entrepreneur, but we are not keen enough on profits.

2. Social scientists, epidemiologists, and economists are the scientists.

3. But where are the engineers? Who is there in our reorganized health service to apply the innovations and fundamental discoveries? This is Professor Wing's question. How to interest the research workers? How do you get Einstein really keen on *making* an atom bomb, rather than proving it to be theoretically possible?

I want to suggest that interesting the researchers is a hopeless task. Like all scientists their fundamental motivation is overwhelming curiosity. They have numerous exciting opportunities for exploring problems of a 'primary' nature which can help to satisfy the basic drive and motivation. Whereas health services research is trivial, dull, necessary, and also important.

But consider the analogy of drug research. After new chemicals have been synthesized and their biological properties determined, who is it who does the routine work of evaluation against existing remedies by the humdrum chore of randomized control trial? None other than the service worker, the humdrum specialist, and GP. By the same token, do we not *have* the necessary research workers already in our thousands of clinicians, administrators (lay, medical, and nursing), and other professions?

Willing and able, if asked and guided, to expand enormously the application of epidemiological ideas and discoveries? We shall discuss this aspect, for I am fully aware that the question Professor Wing's paper asks is not 'What are research priorities?' but 'How do we get priorities applied?' and, like him, I believe that this is the more important question.

Finally, may I offer some questions which in effect summarize my comment.

1. How can epidemiology research best be supported *now*?
2. What is the 'right' balance between epidemiology research and services research?
3. How we ensure that research is undertaken that can feasibly be applied?
4. How do we get the applied research problems *stated*?
5. How can 'service' research workers be found, made, interested, or caused to appear?

Scheme for health services research

A.	Function or task	Persons	Tools
	Aetiology of Disease and Prevalence of Disability	Epidemiologists	Detailed data collection, intensive over small areas General data collection, national and international
	↑ Correlations	Geologists	Correlation searches (linkages, computers)
	↓ Environmental factors	Geographers	
	↑ Dynamics	Engineers	
	↓ Historical studies	Sociologists	Cohort studies
	Trends	Clinicians	
		Economists	
B.	<i>Choices and priorities</i> (Maximum utility, different objectives)	Administrators Planners	Economic analysis Market reasearches Political decisions
C.	<i>Evaluation of different ways of giving care (A v. B)</i>	Community physicians Clinicians Managers (Professions)	Statistical design or models
1.	Effectiveness (different modes)		Information about resource deployment and utilization, distribution of need, etc.
2.	Efficiency (use of resources, same mode).		

III

ADAGIO

The pursuit of
research objectives

The operational research worker

A. G. McDONALD

From time to time operational research scientists are asked if they can contribute to the general problem of evaluating change in some system. Very often it is a case of predicting the likely effect of some proposed change. For example, it may be the introduction of new machinery into a production line, where the characteristics on the machine are reasonably well known, but there is no information about the effects on the production line as a whole, for example the way in which the machine will affect the profitability of the product mix. Another example might be to assess the likely effect of changing the rerouting and scheduling of a public transport system where it is necessary to estimate how different routes will affect the volume of passenger traffic.

Of course many other disciplines are able to contribute to questions of this kind; the statistician, the economist, the engineer, the research scientist, and the manager will all have important things to say. Each has his own reference frame upon which to map the problem, and it would be folly to behave as though any single one of these were an adequate representation for decision or planning.

What then are the main characteristics which distinguish the OR contribution? The answer in a phrase is the mathematical model.

This paper is about three specific problem areas. For each one a possible OR contribution is identified and discussed.

1. Pathology laboratories.
2. The shift of mental illness patients from old institutional care to new district psychiatric schemes.
3. Evaluation of clinical procedures.

PATHOLOGY LABORATORIES

In recent years there have been many changes in the use and operation of pathology laboratories. In particular, demand has grown steadily during the last fifteen years at a rate of about 10 per cent per year, and this growth seems likely to continue into the future. Increases have been particularly marked in morbid anatomy (largely because of the development of exfoliative cytology) and biochemistry.

These increases have resulted in strain on the facilities of the laboratory service, and constitute a powerful force for change. Great emphasis is being placed on mechanization and work simplification in order to handle the expanding workload without correspondingly more staff. Thus a number of automatic or mechanized aids to pathological investigations have been developed or are in the course of development. Since this equipment is expensive (for example a multichannel analyser may cost £60,000), it is important that it is well fitted to its purpose and highly utilized. In addition, the reduction in the work content of tests produced by mechanization or work simplification has highlighted the importance of efficient data processing. Purpose-designed computerized data-processing and data-storage systems are in use at some laboratories and it appears likely that these will become more common in the future.

It therefore becomes necessary to decide what degree of mechanization and computerization is appropriate to laboratories and also to decide whether the availability of such techniques should result in greater specialization and centralization of services. A number of methods are available for making decisions of this kind:

1. The collection and comparison of performance information from different laboratories. However, this method is limited to the evaluation of existing equipments or organization methods.
2. The organization of controlled pilot trials of newly introduced equipments, involving a comparison of the operational efficiency of a laboratory before and after a change.
3. The construction of mathematical (or other) models to represent alternative ways of meeting estimated future demands.

It has in practice proved difficult to conduct between laboratory comparisons, because laboratories differ from one another in many ways. Similarly, it is not easy to compare 'before' and 'after' situations at individual laboratories, since most changes involve a considerable run-in period and at the end of this time the situation at the laboratory is likely to have altered appreciably.

It is also difficult to make performance estimations for new equipments or those under development, since performance depends on the demand and operating conditions in which the equipment is installed. However, equipment specifications can be used as input to the mathematical models which will take account of these environmental conditions.

We have therefore directed effort towards the production of a mathematical model of a pathology laboratory, which is sufficiently flexible to be capable of representing the situation at most area laboratories. The aims of this work have been:

1. To assist hospital authorities in planning or developing individual laboratories.
2. To assist the DHSS when giving general advice or sponsoring research and development.

This model was formulated and programmed by Peat Marwick Mitchell and Company for a computer at the London Hospitals Computer Centre, Lambeth. It has now been 'validated' at two laboratories. By 'validation' in this context we mean the process of satisfying ourselves that the model is capable of representing each of these laboratories accurately enough to accomplish our aims. The accuracy of the correspondence between a mathematical model and reality is an important determinant of its usefulness in practice.

It is not possible here to give more than a very short description of how the model works. However, the following elements are represented:

- a. The departmental and subdepartmental structure of the laboratory.
- b. The main types of test carried out, and the work stages (activities) which constitute the method used for carrying out these tests.
- c. The availability of various resources (typically grades of manpower and pieces of equipment).

d. Queues of tests, batching of tests, set-up times for equipments, throughput rates, process times, and timing restrictions on the operation of activities.

e. The request-load, in terms of the numbers of each type of test arriving at the laboratory for each half-hour of the period being simulated.

f. Priorities for each type of work, to enable the model to schedule work through the laboratory in a realistic manner.

The model represents the operation of the laboratory over a simulation period. This period may be one week (in order to allow for the effect of day-to-day workload variations), or may be a number of typical weeks taken from one or more simulated 'years' (in order to determine the effects of workload increases, proposed changes within the laboratory, etc.).

Outputs from the model include:

a. The number of tests processed and the time taken (histograms).

b. The resources employed and the resources unutilized.

c. The costs incurred by each type of test.

d. Information on the 'state' of the laboratory at given points in time.

e. A specification of how work was scheduled through the laboratory.

Our experience to date indicates that models such as the one we have produced will constitute an important aid to future decisions on the structure of pathology systems.

The validation trials were successful in that, for the screening laboratory at one of the sites, which is entirely mechanized and computerized, and for which we had accurate machine performance information, we obtained excellent correspondence between the model and reality (for example, both in the model and in reality the same percentage of tests were processed within their 'target time').

At another site where accurate data was not available and subjective judgement of operators had to be used the model was pretty good, but had a bias towards producing a higher rate of throughput than was achieved in practice. (Thus in the model nearly 10 per cent more tests were processed within the target time than in reality, at about 70 per cent level.)

Currently proposals are being considered for the use of the model for the evaluation of the MOD1 computer system, which

is now being installed at a laboratory in the south of England; in addition it is proposed that the model be used to assist in the evaluation of a new autoanalyser. No doubt other uses will be made of the approach as we gain more experience of the model's capabilities and build up a 'bank' of information relating to the performance of the systems we have studied so far.

PROPOSAL TO EXAMINE THE CONSEQUENCES OF THE TRANSITION TO THE NEW DISTRICT PSYCHIATRIC SCHEMES

Introduction

The intention is to provide the main elements of treatment and care for the mentally ill on a district basis in which psychiatric units at district general hospitals will be the largest single element of a range of treatment and care services that will be available. The present services are mainly provided at mental illness hospitals (each of whose catchment areas usually contains two or three health districts).

The scheme of work presented here is designed to investigate the public expenditure cost consequences of the changeover from mental illness hospital based care to the new district orientated basis.

Approach

For the purpose of the study it is proposed that the changeover be treated as the introduction of 'average' district schemes across the country, an 'average' district scheme being that notionally provided for a population of 220,000 when the elements of the scheme take over the care currently provided by one 'average' division of a mental illness hospital. The elements of a district scheme are:

1. Psychiatric unit at a district general hospital.
2. Dementia units at district general hospitals and at community hospitals.
3. Hospital hostel accommodation for long-stay patients who need continuing medical and nursing attention.
4. Local authority day and residential places.

As each element is provided within a district some of the patients who would otherwise be treated in the division of the

mental illness hospital will be able to be treated in the new facilities. Consequently the patient numbers in the corresponding mental illness hospital division will decrease. Moreover the patient numbers in the mental hospitals are falling in any event, as a result of more modern methods of treatment. When the patient numbers in that division decrease to a certain threshold level the patients would be transferred to another division in the same hospital or, if that were the last division in that hospital, to a neighbouring hospital. This process continues until all the district schemes have been completed. As the mental illness hospitals become vacant their assets, including the sites, can be realized.

The costing problem facing us is to determine how the provision of the new schemes determines the need for services at the mental illness hospitals and what the costs of these two parts of the mental health care system incur as the changeover occurs. The approach adopted is to formulate a series of models representing the processes involved and to combine them into an over-all model of the transition. This model is written as a computer program. This allows the alternative ways of making the changeover and their cost consequences to be examined rapidly. The models formulated to deal with this problem and combined to form the transition model are as follows:

1. Cost model for the new district schemes.
2. Cost model for the mental illness hospital.
3. Closure model.

A fourth model separate from the transition model is that for the patients. Each model is described in the following paragraphs:

Cost model for the new district schemes

This will provide estimates of both the capital costs of each element of a district scheme as it is introduced and the revenue costs which will ensue after it is opened. The costs for the individual schemes are aggregated to give the year by year costs as the changeover progresses. The facility exists within the model for an element (for example, the local authority provision) to be introduced in equal phases.

Mental illness, hospital cost model

The revenue cost of operating a mental illness hospital is estimated by this model from the patient numbers resident at the time. The

capital costs of upgrading the mental illness hospitals to higher standards will also be calculated by this model.

Closure model

As the patient numbers at a particular hospital reduce a point will come when keeping that hospital open can be regarded as uneconomic. The point of closure is represented by a minimum patient number for a hospital and the model also calculates the assets realized from the closure of the hospital.

Patient model

This model forms a separate computer program and it is the results from this model which are used by the transition model. The latest trends in national statistics for admissions, deaths, and discharges are used to forecast the expected number of patients at mental illness hospitals in the future. Further estimates have been made to determine the patient numbers in a mental illness hospital division when new admissions are transferred to the new district scheme facilities. In this way, as the transition model plots the changeover, suitable data supplied by this model permits the patient numbers in each location in the mental health care system to be calculated. The costs and closure points are estimated by the other three models from these patient numbers.

Model studies

In order to establish each of the four models it has been necessary to carry out several studies. Each study has collected data which has been used to estimate the parameters for the models. The areas of study are as follows:

1. *Capital costs of new district schemes.* Each element of the district scheme will, to a greater or lesser degree, involve a capital cost whether by new building or adaptation. Estimates of the cost have been made.
2. *Revenue costs of new district schemes.* Similarly the size of revenue costs of each element has been estimated.
3. *Costs for the mental illness hospitals.* A study has been carried out to find how the revenue costs vary with patient numbers. In this way the model parameters have been estimated. A similar study is running in parallel for upgrading costs.

4. *Patient numbers in the mental health care system.* In order to discuss how the elements of a district scheme interact with the bed needs at the corresponding division of the mental illness hospital it is necessary to separate the types of patients which are going to be involved. It is also necessary to estimate how the numbers of a particular type of patient vary with time when admissions of that type of patient to the mental hospital cease. The types of mental illness hospital patient are described in terms of how they would be catered for in the new district scheme:

a. Those patients whose entire in-patient, day-patient, or out-patient treatment will occur at the psychiatric unit at the DGH.

b. Patients with dementia for whom the dementia units are provided.

c. Those patients who can be supported either in local authority day or residential accommodation.

d. Those patients for whom the hospital hostel is intended.

e. The old long-stay patients. These are the institutionalized patients whose presence in the mental illness hospitals is the result of earlier obsolete policies. Their ranks are not being added to and the new schemes do not need to make provision for them. Data are available on the numbers and leaving characteristics for these types of patients and estimates are being made of how patient numbers vary.

5. *Distribution of divisions.* The numbers of mental illness hospitals with one, two, three, four, or more divisions will be important when considering closures. Different policies of distributing district schemes will produce different closure sequences.

Use of the model

The model will be used to examine the consequences of different choices. The consequences of main interest are the cost flows which will arise from the alternatives, both year by year and in net present cost terms. Other consequences which will be investigated will be the numbers and location of patients and the numbers of mental illness hospitals open as the transition occurs.

The alternatives open for investigation are:

1. Different rates of implementation of complete district schemes, for example ten per year, fifteen per year.

2. Different rates of implementing each element of a district scheme, for example, fifteen years for all the local authority provision and twenty-five years for the DGH dementia and hospital hostel provision.
3. A variation on 1 the different orders of implementing the elements within a district scheme and the time intervals between them, for example, either DGH units first and the rest spread over the next twenty years or the local authority provision and dementia care first and the DGH units seven years later.
4. Different levels of patient numbers at which mental illness hospitals close and transfer their patients to other mental illness hospitals.

The time-scales are likely to be much longer than these figures suggest.

Sensitivity analysis will be carried out to establish the robustness of the results to variations in the data that we are using. This is essential before we can comment on any differences in cost consequences which may arise in 1-4 above.

In carrying out such a programme of investigation it is probable that new aspects of the problem will emerge as important. The opportunity should occur to cope with these within the current model framework.

The results of the modelling investigation of the transition to the new care will soon become available. It is not clear what contribution they can make until they do become available. However, it is clear, that the modelling work has produced significant benefits in enabling a systematic analysis of the interacting consequences of the changeover to the new policy to be made.

EVALUATION OF CLINICAL SYSTEMS

The problem being considered is the evaluation of clinical experimental units involving the consequences of change in operational activities within a particular environment. From the OR point of view the methodology which seems relevant is that of control systems. Given sufficient understanding of a system, application of cybernetic theory allows controlled movement in a specific direction. However, in the evaluation of a clinical system there will not necessarily be adequate understanding of this kind.

One can think of at least three problems to be studied in the context of such experimental units. Firstly from the consultant's

point of view he wants to know: (i) how well he is doing, and (ii) what should be his next steps.

On the other hand the DHSS (and probably also the consultant) would need to know (i) how well is one unit doing compared with another, and (ii) given that some particular technology has been established and is regarded as worthwhile, how to develop it into a national service.

In this paper the first of these questions (that relating to the consultant) is discussed and the aim is to use the methodology to be developed as a basis for analysing the DHSS's two questions.

Therefore our idea is to formalize the procedure carried out by the clinician, whereby, having assessed a patient, he prescribes a course of treatment and observes the consequent effects. The assessment stage will not be modelled and we enter the procedure at the point where the clinician prescribes the treatment. The treatment prescribed is a consequence of the clinician's skill and experience, based on the collective know-how of his discipline. After treatment has got underway, he then proceeds by perceiving the way the patient reacts and he builds up a cumulative ongoing picture of the patient, changing treatment as he deems necessary.

In doing this we assume it likely that there may be more variables in the system than he can readily assimilate. The human brain finds it virtually impossible to deal with more than three or four variables at the same time and any interrelations, apart from obvious ones, may therefore go unnoticed. So the clinician will be selecting some set of factors in order of importance on which he will base his judgement, for example, temperature, blood pressure, respiration, etc.; what interrelationships exist (unless previously known) may not necessarily be taken into account. It is suggested that by modelling this procedure mathematically a more formalized understanding of the patient can be built up which can be used to evaluate these interrelations. In following this course it may be possible to develop a single patient index which could contribute to inter-unit comparisons.

Under these circumstances we propose to develop a mathematical model which does not depend upon cause and effect relationships and which avoids the problems associated with (the usual) statistical analysis.

EVALUATION ANALYSIS OF TREATMENT FOR LEUKAEMIA

Here we have a system, one interesting characteristic of which is that the patient reacts on a short time-scale.

First then consider a vector $A=[a_i]$ being the factors which characterize the patient (system). A set of such vectors might be developed for each class of patient with approximately the same attributes, ie age range and sex, and could include:

$$\begin{aligned} a_1, \dots, a_n & \text{ physical characteristics } (n) \\ a_{n+1}, \dots, a_m & \text{ blood characteristics } (m-n) \\ a_{m+1}, \dots, a_l & \text{ other characteristics } (l-m). \end{aligned}$$

Measured at the time the patient presents himself to the clinic (or earlier if data has been available from the patient's previous treatment). Let the vector measured at time t be called $A_t=[a_{it}] \dots$. Given this information the consultant prescribes a treatment which he considers will change the system, that is

$$A_t \longrightarrow A_T^*$$

over time $T-t$. However, what in fact happens will in general be different, let the patient characteristic vector at time T be represented A_T . Then if monitoring takes place at a shorter interval of time than $T-t$, we can develop a sequence as follows:

$$[A]=A_t, A_{t+1}, A_{t+2} \dots A_T.$$

We can always arrange for the number of time intervals for $a_i, i=1 \dots l$. Then $[A]_i$ monitoring over the treatment period to be greater than the number of factors $a_i, i=1 \dots [A]_i$ will be a square matrix and a patient index $I_m=[A]_i$ can be computed immediately the measures for the l th interval have been completed.

This procedure can be carried forward and the next matrix evaluated after the $(l+1)$ th monitoring interval has been completed, for example $[A]_{2l}=[A_{t+1}, \dots A_{t+l}]$ and so on.

When I_m has been computed for an adequate number of cases it may or may not be found to contain information which corresponds to a useful statement about the patient system. Other measures can be derived from these matrices should it not do so.

During this time it may be observed that a set of the a_i factors are not significantly changed, in which case the patient characteristics vector and the matrix can be reduced accordingly.

The matrix presentation will show the clinician which of the factors are apparently changing, and his skill and interest can be used to identify those subsystems which should be modelled separately.

For example $a_r = n+1 \leq r \leq m$ a blood characteristic may be changing in some manner. The clinician could interpret this as some function of assumed independent variables $x_j, j=1, 2, \dots, n$

$$a_r = F_r(x_1, x_2, \dots, x_n)$$

and the initial functional form could be determined from available statistical and epidemiological studies. Monitoring these variables over time would enable the functional form to be adjusted and so an heuristic representation be developed.

Further monitoring will enable both improvements in the models to be developed and appropriate changes in the treatment to be objectively considered. This completed all stages of the analysis which is of course ongoing.

The type of results expected would help in formalizing the treatment outcomes and their variability, highlight areas for further research or controlled experiments to be made, and lastly give a better chance of maximizing treatment effectiveness in the long run.

CONCLUSION

Three applications of OR to health service problems have been presented. They differ in the nature of the problems which range from the precise, relatively well-understood through the imprecise but broadly understood to the precise but little understood.

The progress made in each study range from the model built and validated, through the model designed but not yet proven, to the model design being in the research stage.

Comment

E. G. KNOX

Papers in this section illustrate very effectively the complex nested structure of the subject with which we are dealing. Professor Holland identifies health service research workers' activities largely with the *post hoc* investigation of existing services, their interactions with existing populations and the consequences of decisions already made. Mr McDonald identifies the OR contribution largely with predictive work, and with decisions not yet taken. These two approaches, linked by the contributions of the planning, policy, and decision function, and the process of implementation, constitute the cybernetic process of health services development as a whole. Yet within this over-all cycle of activities there exist other cycles; Mr McDonald's third example is certainly a cybernetic model and in Professor Holland's contribution the notions of need, demand, and utilization can scarcely exist outside the conceptual context of a complex interactive cybernetic system. For these reasons I feel that we diminish our effectiveness whenever we concede divisions. For example, Professor Holland finds an area (p. 61) where an epidemiologist's role is 'minimal' and where a degree of non-involvement is accepted; and Mr McDonald (p. 48) in one of his models, totally excludes the difficult and touchy, but surely relevant, area of the 'clinicians' skill and experience, based on the collective knowhow of his discipline'.

Therefore it seems to me that we still have some bridging to do: first to encourage on the part of epidemiologists an interest in predictive techniques; secondly to encourage the administrative involvement of those with a repertoire of predictive techniques, whether epidemiologists or operational research workers. When Professor Holland speaks of the *evaluation* of services provided (pp. 60 and 61) and Mr McDonald speaks of *evaluating* change in some system (p. 40) they not only invoke a dangerous semantic problem through using the same word for two entirely different processes (related to the past and future respectively) but, if they allow their activities to become detached from the process of formulating service policy objectives, there is a danger that they will come up with answers for which they will then have to seek questions. The objectives of all our activities are the solutions of

decision dilemmas, although not just their solutions, because their formulation is part of the cybernetic process; and if this work is to be effective it must be identified from the beginning with its intended effects.

I am sure both Professor Holland and Mr McDonald agree with me, and I am not really offering a criticism here. I am labouring the point because there is some danger that the (necessarily divisive) allocations of tasks for this meeting may otherwise suggest some justification for these divisions in real life.

The following comments are made with respect to Mr McDonald's three examples.

Pathology laboratories

The potential effectiveness of this model springs from its direct derivation from an investment dilemma. It has a relatively precise problem to solve. It is an admirable approach to the problem and indeed it is difficult to envisage any other.

The model is, of course, a limited one and does not encroach upon the difficult problem of 'utility', and the context in which it is used is presumably the simple one of attempting to meet 'demand' as effectively as possible to the exclusion of attempts to determine the value of meeting that demand. This of course is no criticism of the model system provided that it does not lend itself to fudging or avoiding issues in this larger frame of reference.

District psychiatric schemes

This is a much more complex example than the first one and its basic difficulty is that it does not seem to have been related to a real policy problem. In the first place the question whether or not the 'new district psychiatric schemes' should be adopted, seems already to have been taken. Secondly, it is not clear (and probably not true) that the planning and administrative processes of individual schemes in fact lend themselves to effective usage of outputs from the model.

This criticism may not of course be entirely justified but, in a case like this, the onus for demonstrating effective outlets for the scheme, lies with its proponents. In addition it is not made explicit (although it is perhaps implicit) that the cost estimates relate to budgetary costs alone (capital and revenue); this is appropriate if the decision process to be serviced lies entirely within a given budgetary allocation, but has little relevance to higher-level decision processes concerned with the allocation of budgets, which might require an entirely different kind of costing model.

Clinical systems

I am not sure that the term 'evaluation' is entirely appropriate here. The model seems to be related neither to an existing unit, nor a substantive planning proposal. I would have classified it rather as

a schematic investigation and display of specialized clinical care activities with a view to the development of insights, both on the part of the investigator and on the part of involved clinicians. However, it is mainly with this single word 'evaluation' that I am quarrelling, and viewed as a form of analysis I regard this kind of exploration as admirable. Its justification is scientific and questions of immediate utility need not arise.

The epidemiologist

WALTER W. HOLLAND

INTRODUCTION

The epidemiologist has a vital role to play in health services research and I would like to try to define and describe this, using examples from our own work. Some of my remarks will reiterate what has been said in a far more philosophical vein by Professor Wing earlier in this meeting and thus will, I hope, reinforce the importance of co-operation between specialties and disciplines.

In discussing health services research, I have made a deliberate attempt to restrict myself to those areas of research that are concerned with the supply of services. Of course, health services research must also be involved with wider aspects of the health of populations where the epidemiologist can contribute to the description of the aetiology and causes of disease and thus to the knowledge necessary for primary prevention. But my focus here is on the less obvious but crucial interface between research and administration in health services. In this context the objectives of health services research can be divided into three groups:

1. The assessment of need, demand, and utilization.
2. The effects of alternative possible resource allocations.
3. The evaluation of services provided.

I should stress that these compartments are arbitrary and have been made merely to try to classify the work that we have undertaken in the past two years in the hope of encapsulating the contribution that epidemiology can make in this field.

ASSESSMENT OF NEED, DEMAND, AND UTILIZATION

In considering any rational system of resource allocation, we must first have information on need, demand, and utilization of health services.

Need

The concept of need for health care is difficult to define. Basically it depends on the existence of a degree of disease or high risk of disease of which the patient may or may not be aware. The need of an individual or community for health care is often defined as that care seen as desirable by the medical profession. But the individual can also recognize need which may or may not coincide with the professional definition. He may feel, for example, that he requires medical care for minor self-limiting conditions such as the common cold; the doctor may regard this as unnecessary. Conversely, for cultural or other reasons, the patient may ignore minor symptoms such as morning cough and expectoration which to the doctor may indicate more serious disease and which therefore in his eyes constitute need for health care.

In this context, the epidemiologist can measure the prevalence and incidence of various disease conditions. His social science and psychology colleagues can help by identifying the behavioural consequences of these which provide a more sophisticated assessment of need as perceived by lay people.

The measurement of need for service presents major problems epidemiologically. Simple measurement of the prevalence of a condition is not enough. It is also necessary to try to measure the impairment of function which the condition produces. Our studies in Lambeth (1) have demonstrated the importance of the distinction between impairment and disability. Physical functional ability and the impairments which cause this can be measured relatively simply (2). But the more complex psychological or social disabilities lead us into difficult and unexplored areas of measurement. In addition most of the Lambeth studies have not revealed the unmet needs which must exist (3). We have to develop more refined methods of assessing needs and examining the provision of services.

The Frimley Stroke Study (4) provides another example of the measurement of need. In this we studied patients of all ages who

were given medical care for a focal neurological defect which lasted for twenty-four hours or more. These patients were on the lists of thirty-three practices in the Frimley area, serving a population of 280,000. The patients studied were those given care by any part of the health care service, whether at home or in hospital, and whether inside or outside the area. They were seen three times in all: as soon as possible after suffering the stroke, and at three weeks and three months after the date of onset. The time spent and the type of treatment given in every place of care were recorded and these were related to the demographic characteristics of the patients, their ability to carry out the activities of daily living, move around inside and outside their homes, and carry out simple household tasks. It was then possible to describe the main needs of these patients, how these were being met, and by whom. The workload in and out of hospital could be estimated and some assessment made of the major gaps or deficiencies in the care provided.

Demand

The epidemiologist's role in the measurement of demand is simple. He must develop techniques by which requests for service can be measured. Studies in general practice (5) have found striking variations in demand for services by individuals with the same clinical diagnosis. There are, for instance, discrepancies between the prevalence of skin disease in males and females and their demand for care, and in the prevalence of hearing defects in different age-groups and the presentation of deafness to GPs. This prompted us to study factors which influence demand for medical care: these included age, sex, social class, occupation, and educational status as well as more complex sociological and psychological variables.

Utilization

Utilization figures can be obtained from various sources such as Hospital Activity Analysis, GP consultation records, and local authority files. The epidemiologist's contribution in this area lies largely in making an assessment of the accuracy and validity of the types of information normally available for determining levels of utilization.

A common example of the application of utilization data to health service planning has been in the definition of hospital catchment areas and the attempts to use *Hospital In-patient Enquiry* data to decide on the shape and distribution of districts within the health service. Originally, work by Bailey (6) and others suggested that it might be possible to arrive at some estimate of the catchment areas of hospitals in small country towns and rural areas from knowledge of where the patients using a particular hospital came from.

More recently, work carried out in Lambeth (7) has shown the uselessness of trying to assess a hospital catchment area on the basis of information on utilization by the hospital population. In a study of a random sample of the population of six northern wards in Lambeth, we found that although 75 per cent of the population of north Lambeth used 6 hospitals, the remaining 25 per cent used 93 other institutions. This epidemiological work highlighted the dangers of reaching general conclusions from data collected in one place, and of using the wrong denominator for decision-making.

We also checked the accuracy of reports of utilization by the population against the hospital records and were thus able to estimate the true utilization of hospital services by different age, sex, and social class groups, and possible errors which could account for differences as reported by the different social class groups. This is relevant in hospital planning since it gives some idea of the validity of the figures normally used.

Another example of the application of utilization data to the planning of health services comes from work in general practice. There have been many studies on the use of GP services in various parts of the country and these have all been based on consultation information recorded by GPs. Much use has been made of this information in planning GP services. And the epidemiologist's contribution has been to verify the accuracy not only of the recorded consultation data but also of the denominator data on which consultations have been based.

Studies undertaken in our general practice teaching and research unit in Lambeth (8) showed that the age/sex register, compiled from Executive Council information, was out of date within a year. This was due to differential mobility between the various age/sex groups of the practice population and to weaknesses in

methods of notifying changes in name and address to GPs and executive councils. These findings have been confirmed more recently by studies on urban practices in Liverpool (9). We have also examined the difficulties of obtaining uniform diagnostic information from consultation data recorded by different GPs and have been able to devise suitable techniques to measure and overcome these problems (10).

One further example of utilization data applied to health service planning comes from the studies in which we attempted to determine the use of hospital services by all GPs working within the catchment area of hospitals in and around Frimley (11). We obtained the co-operation of the 102 GPs working in this area and asked them to record all in- or out-patient referrals to hospital. We then validated this referral information from the hospital records. There was very wide variation in referrals by different GPs, and this has been used by others as an argument that the patterns of hospital referral by GPs cannot be predicted but depend on the individual characteristics of the GP. On validation, however, we found that the factors which really varied were the accuracy and completeness with which the information was recorded. If we adjusted for this, there was far less variation between GPs: ie the difference in accuracy of recording was greater than the difference in patterns of referral to hospital.

These studies, therefore, have demonstrated the need for accuracy and for developing better techniques for measuring utilization data. There are wide and recognized discrepancies in available statistical information. The epidemiologist must draw attention to these and find ways to provide more accurate data on which to base sound decisions, relevant to the more important problems facing those who deliver health care.

These examples highlight the problem facing the decision-maker in using research findings. Administrators have continued to use Bailey's methods of twenty years ago and *HIPE* data to define hospital catchment areas and thus the shape of districts in 1974, in spite of the repeated demonstration that these were not appropriate in densely populated urban areas. How can the planners make inferences which are useful and applicable to planning in general from research which, in order to have the necessary accuracy and detail, must relate to particular local circumstances? There is no easy solution to this problem. The situation can, how-

ever, be improved if the design of the investigation permits inferences relating to particular age, sex, social class groups, rather than to total local populations, to be made. Furthermore the research worker, in undertaking studies of health care situations, should try to use more than one or two GPs as this may help to make the findings more generally applicable. Finally it is always important to repeat studies in other circumstances or localities before conclusions on general applicability are drawn.

In addition to these elementary requirements of research design must be added the necessity for research workers to educate those who will apply their findings on the validity and generality of the design and the results. This will entail a far better knowledge of the nuances of research than is at present common amongst politicians and administrators. And it implies a greater interaction and involvement of the two groups. Too often the decision-maker bases his decisions on his imperfect understanding, or worse, his own recollection of a report on a study. It is also necessary for the decision-makers to appreciate that a properly designed epidemiological study can question the need for provision of services based on selected hospital studies, for example, intensive care, coronary care.

EFFECTS OF ALTERNATIVE POSSIBLE RESOURCE ALLOCATIONS

So far I have described the role of the epidemiologist in providing information for the decision-maker. This is reasonably straightforward. In any consideration of the effects of alternative possible ways of allocating resources, however, we enter into the sphere of politics. Here we are trying to see how different strategies can be implemented and what effects and benefits they will respectively produce. We are dealing with the attitudes and behaviour of those who deliver care, with the facilities that are available and with the needs of the population who receive the service. There are difficulties of limited budgets and large capital investment in buildings, people, and existing services: these are professionally or administratively controlled and difficult to change.

In this area the epidemiologist can provide unbiased scientific information which may help to distinguish the effectiveness of different forms of treatment or management for the same group of patients or within the same service and thus to decide how best

to allocate available resources. But others must also contribute. The clinician, for example, must be allowed to say what he feels to be best for his patients. And his opinions will probably differ frequently from those of the scientist with data. The operational researcher is also in a strong position to make a valuable contribution. Being outside the service, he can take a detached and critical look at proposals for new services and the deployment of resources.

The decision-maker (administrator, politician, or member of an authority) must then decide between competing claims. He can use the epidemiological information provided but it would be presumptuous to assume that this is more than one component of the whole process.

EVALUATION OF SERVICE PROVIDED

Evaluation means different things to different people. Knox, for example, defines it 'to compile and attach a summarised estimate of value'. Cochrane, on the other hand, would consider evaluation to be valid only if a randomized control trial had taken place. What we are undertaking in evaluation must be quite clear. To evaluate a service we have to know what it is supposed to be doing and measure whether it is in fact doing this. Evaluation can be an experiment in which the performance of two different services are compared on random samples of a population as a randomized control trial. It can also be the determination of whether a particular service is feasible and reaches all those for whom it is intended. This definition assumes that there is a statement of objectives with which a comparison can be made. In practice there is often a rather complex set of interrelated objectives. Others again see evaluation as an attempt to answer the question 'what is it worth'? In this sense, the objective of evaluation research is to provide some of the information necessary to answer that question.

We have been concerned with evaluation in various studies and I would like to give three examples. The first is the randomized control trial of multiphasic screening in two large group practices in south-east London (12). The families under the care of these practitioners have been allocated at random to a group who receive screening and a group who receive only their normal medical care. At the end of the trial we hope to have some idea of

the impact of multiphasic screening on morbidity, utilization, and cost of services and thus to be able to indicate the benefits and costs of such a service.

The second example is our study of early discharge following hernia and varicose vein operations (13). In this study patients have been allocated at random to two groups, one being discharged after forty-eight hours, the other after seven days. We are measuring not only clinical outcome but also direct and indirect costs and the attitudes of and effects on the patients, their families and those providing care. Thus the evaluation may show no difference in clinical outcome but a marked difference in patient attitudes. The difficulty will come when different decision-makers attempt to assess the worth of the two procedures.

The final example of evaluation is the study of the effects of lowering moderately raised blood pressure in general practice. Our pilot study has drawn attention to the problems and feasibility of such management (14). But the 'evaluation' of the effect of such a procedure in lowering mortality will take five years, involve several hundred practitioners and cost more than £1 million. Can we do such a study, or can we afford *not* to do it? That is a decision with which we will soon be faced.

CONCLUSION

In this paper, I have tried to define the epidemiologist's role in research concerned with the supply of health services. I would like to end by re-emphasizing the importance of co-operation and flexibility between and within the disciplines involved in such research. Only thus can we achieve what is surely the common aim: to improve the health care of patients.

Acknowledgement

This paper could not have been written without the help of all the members of my department.

REFERENCES

1. HOLLAND, W. W., and WALLER, JANE (1971). 'Population studies in the London Borough of Lambeth', *Commun. Med.* 126 (11), 153-6.
2. BENNETT, A. E., GARRAD, J., and HALIL, T. (1970). 'Chronic disease and disability in the community: a prevalence study', *Br. med. J.* 3, 762.

3. ADLER, M. W., LILFFE, J. L., HOLLAND, W. W., and KASAP, H. S. (1973). 'Assessment of medical care needs of individuals with chronic cardio-respiratory disease using subjective measures', *Internat. J. Epidemiol.* **2**, 73-79.
4. WEDDELL, JEAN M. (1973). 'Strokes—a medico-social problem', *The Skandia International Symposium on Rehabilitation after Central Nervous System Trauma (CNST)*, Stockholm, 25-27 September.
5. MORRELL, D. C. (1972). 'Symptom interpretation in general practice', *Jl R. Coll. Gen. Practit.* **22**, 297-309.
6. BAILEY, N. T. J. (1956). 'Statistics in hospital planning and design', *Appl. Statist.* **5**, 146.
7. PALMER, J. W., KASAP, H. S., BENNETT, A. E., and HOLLAND, W. W. (1969). 'The use of hospitals by a defined population', *Br. J. prev. soc. Med.* **23**, 91-100.
8. MORRELL, D. C., GAGE, H. G., and ROBINSON, N. A. (1970). 'Patterns of demand in general practice', *Jl R. Coll. Gen. Practit.* **19**, 331-42.
9. MUNRO, J. E., and RATOFF, L. (1973). 'The accuracy of general practice records', *ibid.* **23**, 821.
10. MORRELL, D. C., GAGE, H. G., and ROBINSON, N. A. (1971). 'Referral to hospital by general practitioners', *ibid.* **21**, 77-85.
11. CLARKE, M., and MULHOLLAND, A. (1973). 'The use of general practitioner beds', *ibid.* **23**, 273.
12. HOLLAND, W. W., and TREVELYAN, M. H. (1969). 'The value of surveillance and multiphasic screening', *Proceedings of the 8th International Congress of Gerontology*, vol. 1.
13. ADLER, M. W., WALLER, J. J., DAY, I., KING, C., and THORNE, S. C. (in press). 'A randomized controlled trial of early discharge, for inguinal hernia and varicose veins: some problems of methodology', *Med. Care*.
14. — and MARSON, W. S. (1973). 'Randomized controlled trial of treatment of moderate hypertension in general practice. A feasibility study', *Proc. R. soc. Med.* **66**, 1012-15.

Comment

E. K. G. JAMES

Introduction

In the interests of promoting a positive line of discussion I shall present briefly a highly over-simplified view I have gained of Professor Holland's most thoughtful and interesting paper. In doing so inevitably I shall attribute attitudes to Professor Holland which he does not really have, but I feel certain that my misinterpretations will soon be corrected.

It seems to me that Professor Holland has said that the epidemiologist must get on with his experiments to measure the need and the demand for health services and their degree of utilization but that he does not want him to tangle with the decision-makers (wherever these faceless creatures are to be found) on the subject of resource allocation. He is happy to leave the OR man to do this.

My over-simplified point is then that if he really does put this to practice (which I doubt), he is condemning: (i) the decision-maker to chasing his own tail; (ii) the epidemiologist to a life of fist-shaking frustration with the system; and (iii) the OR worker to futility.

Discovered fact and decision-making

The two main branches of investigation for the epidemiologist according to the paper are, then, the need, demand, and utilization investigations and the evaluation exercises. These are doubtless all connected in some way: the need creates demand, the effectiveness of treatment has an effect on utilization and so on. And so we have our first difficulty. For example it takes time to determine a utilization which by the time it is discovered has changed because of an improvement in treatment, a population drift, a new hospital in an adjacent area, different personalities and for a thousand other reasons not all unconnected with the other two areas of investigation, need and demand.

But the situation is worse than this. All these practical investigations to find facts which the paper says the decision-maker must get right, are taking place in an environment largely created by decisions taken long ago, while the experiments to be done are intended to produce results to affect the environment some time

in the future which is itself already being shaped by the decisions of today. What should we do? Should we stop making decisions today so that the environment remains unchanged to suit the experimental results when they arrive? Professor Holland does not actually say that we should, but nor does he tell us how to escape the dilemma.

Control system

But I am not blaming Professor Holland for all this; we are all in it! Let me expand the problem still more.

Professor Holland has pressed the need for decision-makers to make use of facts derived from experiment. I have pointed to some difficulties in this because decisions would have to be made *now* on say building hospitals for use in the *future* based on information derived from physical researches that have taken so long as to represent only the *past*!

One can generalize this.

We have in all our corporate activities and in our democratic way to make decisions to get our policies acted upon. We are then prepared to rethink our policies and make new decisions as a result of what happens. This, in jargon, is what is called a control system. A highly developed but simple example is a man in his car. To take the analogy to absurdity we can liken the way we have to run our system in these highly complicated days, whether it is a small company, the health service, or the country, to a blindfolded man driving a car with rubber controls entirely on the information provided by a passenger who stutters. This is not exactly an ideal control system.

As in driving a car, in all our corporate activities we have to survey the complex area where things happen and send information about it up the hierarchy to policy levels for decisions. The hierarchy is there to simplify and condense the information as each level thinks it should be to get it to those the next level up. Eventually after quite a time it arrives at a decision level distorted by viewpoint and opinion, stripped of earthy detail. Judgements are made and decisions taken which then start the long passage down the hierarchy to executive levels collecting opinionated detail again to fit them variously for each place where activity has to be initiated.

But, by the time this has all happened the world has moved on and the actions decided upon are likely to be quite the wrong ones.

One can see the difficulty typified on the grand scale in the control of the economy where because of inherent delays up and down the system the decisions for actions to apply the brake arrive just when the economy is grinding to a halt or those to give it a push when it is already accelerating: and this sort of thing goes on in most of our larger organizations.

What all this amounts to is that in these complicated days our system of control using the hierarchy alone is self-defeating. It actually introduces the delay, the reduction of detail, and the distortion which mitigate against control.

What should we do? Certainly we do not want lightly to throw away a system which it has taken thousands of years to evolve.

The solution

The answer is in principle simple enough. All we have to do is to speed up the passage of relevant information between the executive and policy levels and get the detail there in such a way that it can be comprehended, judgements made, decisions quickly taken and quickly transferred to executive levels for action, quick observation, and reiteration of the whole process, indeed just like driving a car! The operational researcher exists to help get these improvements made.

Conclusions

Referring back now to Professor Holland's paper and the epidemiologist, let us look at his conclusions in the light of all this.

Professor Holland wants the epidemiologist's research and investigations to produce facts for the decision-makers while I suggest that there are distinct difficulties about taking decisions *today* about the *future* on information about the *past*.

He does not want the epidemiologist to get involved in decision-making about resource allocation. I think he *must* since his is the only up-to-date detailed information for today's decision, whatever the actual state of research at the time.

To put the two points together, while experiments must go on to improve the knowledge-base, decisions will not await the outcome. It is essential then for the best decision-making that the appropriate researcher's view be taken fully into account. *He has the best knowledge available* until the experiment improves it.

Finally, not only do I want to see epidemiologists joined with high-level decision-makers in a control system so that the allocation of resources in this area can be based on what actually is going on on the ground, but I want people in a lot of other areas doing the same thing. In this way we stand some chance *ultimately* of really getting a recognizable balance of resources between our Concordes and say the treatment of people who have suffered a twenty-four-hour focal neurological defect.

But, it is not good enough merely to have them all add to the information available at the top. Already we organize ourselves to reduce information to viable proportions, and still our in-trays overflow. This is where the OR man comes in, to model situations so that only that information is gathered which can be used and to ensure that the machinery is available to permit its use to aid

the judgements of decision-makers in sufficient detail and quickly enough to be effective.

I am sure that all that does much less than justice to Professor Holland's paper but I hope it contains enough that is prickly to point to appropriate directions for discussion.

IV

ALLEGRO



The application of
research findings in
service practice

The mentally handicapped

ALBERT KUSHLICK

In 1959 the Wessex Regional Hospital Board was created to provide and administer hospital services for a population of about two million living in the county boroughs of Bournemouth, Portsmouth, and Southampton and the counties of Dorset, Hampshire, the Isle of Wight, and a third of Wiltshire. This area had previously been administered by the South-West Metropolitan RHB.

The effect of this change on the hospital services for the mentally subnormal was considerable. In addition to sharing the national problem of a shortage of places and growing waiting-lists for care, the Wessex Region was actually losing places because up to 1959 a number of mentally subnormal people from the area had been hospitalized outside the Region's new boundaries. While no pressure was put on the Board to remove its patients from the hospitals outside, as Wessex patients in these hospitals died or were discharged, their places could no longer be filled with other Wessex citizens.

Thus the Board faced overcrowding in, and growing waiting-lists for, hospital places. Its senior officers approached Professor Jack Tizard for his advice on the number and type of places to meet the needs in the Region.

After examining the available administrative data, Professor Tizard advised the Board to undertake a prevalence survey of mental subnormality in the Region as the data available from the hospitals and LHAs were insufficient for the purpose of determining needs.

A steering committee was set up consisting of representatives from the RHB, MRC, the then Ministry of Health, the Univer-

sity of Southampton, consultants in subnormality and child psychiatry, LHA, and general practice. The study was originally funded for three years by a grant from the DHSS and the Nuffield Provincial Hospitals Trust to the Wessex RHB. I was invited to direct the survey and began work in May 1963.

Miss Gillian Cox, a social scientist, joined in July 1963 and remained in the group until 1971. We had another research assistant and an administrative assistant.

The grant for this work was extended for a year up to May 1967. A reconstituted team, including another research assistant and the part-time services of a computer scientist, was funded by a five-year grant to Professor Tizard at the Institute of Education. The group continued the epidemiological study and began an evaluation of the feasibility and comparative effectiveness of new residential units, set up by the Wessex RHB as a result of the survey, for mentally handicapped children.

It has now been enlarged to continue work on mental handicap and to begin a study on care of the elderly. It is funded up to 1976 by an MRC grant to myself. The grant, 75 per cent of which is paid by the DHSS, is administered by Southampton University.

Our research strategy has developed out of the need to solve administrative problems. Detailed descriptions of the work are available elsewhere (1, 2). This account attempts to summarize the approach which has developed since the work began in 1963.

The aim of the team can be stated as follows: 'To refine, develop and apply general methods for evaluating the effectiveness of different practices of health and social service care for the mentally handicapped and for the elderly.'

We find it helpful to consider the research task in terms of a six-stage cycle of research and development. Stage 1 involves the definition of, and collection of, epidemiological data on the target population within the total population of defined size and demographic characteristics. Data include the size (that is, prevalence), behavioural characteristics, place of residence, clinical condition of the target population, together with the types of specified agency personnel who make contact with them.

During Stage 2, data are prepared on the basis of Stage 1 which suggest alternative service options likely to be more effective than existing options.

In Stage 3, alternative service options are designed, together

with agency personnel at the regional health authority, hospital management committee, and local authority levels, as well as with those in direct contact with members of the target population. Measurable criteria of comparative effectiveness and feasibility are established.

A service's effectiveness would be rated by the extent to which it encouraged (positively reinforced) appropriate responses and discouraged or refrained from encouraging (extinguished) inappropriate responses among members of the target population, their 'relevant others' and among agency personnel. Methods are designed by which:

1. Changes in dependent variables, from which effectiveness will be inferred, are to be measured.
2. The relevant independent variables are to be monitored and measured.

The setting up of the new options is observed.

During Stage 4, data are collected on comparative effectiveness of the new and existing options. The comparisons take into account cost, 'quality of care', and 'administrative problems'. An analysis is made of the practices of agency personnel and the effect of these practices on the responses of the target population. During Stage 5, the results of a trial of different options are interpreted in order to determine which components of service were most and which were least effective. In Stage 6, the results of the experiment are printed and recommendations are made for future changes predicted to result in increasing effectiveness. Recommendations should allow the process to be recycled at Stage 1 and worked through again to Stage 6.

The work on mental handicap began as a survey of the administrative prevalence of mental retardation throughout the Wessex Region. This became the basis of a continuing register of all people known as mentally handicapped to hospital and local authority services in the Region. It is now maintained in order to assess changes in the size and characteristics of the target population and in the use of residential and training services by the people so identified.

Data for the register are supplied by hospitals within and outside the Region as well as by local authority social service, health, and education authorities in the Region. These authorities, in

addition to authorizing the special collection of data for the team, also allow the team members access to facilities for the collection of additional data based on direct observation.

The Board has used the epidemiological data produced to plan and provide facilities. These facilities are, in their turn, now being evaluated by the team.

The team's approach to evaluation is first to try to find fairly crude answers to the following questions as they relate to large populations:

1. What is the size of the target population for which services are being made available, ie how many people at any time, and in a population of given size and demographic characteristics have the 'problem', eg mental handicap?

2. What is the nature of the 'problem'?

a. What are the types or ranges of disability (incapacity to do things normally expected) among the people identified? For example, inability to walk at all with help; inability to walk alone but able with help; inability to feed oneself at all; inability to talk in sentences.

b. What are the types and ranges of inappropriate behaviours (difficult, disruptive, or potentially dangerous behaviours) among the people identified? For example, overactivity; physically aggressive behaviour; behaviour destructive of furniture, fittings, clothing, etc.; attention seeking; self-injuring behaviour (3).

c. What are the associated clinical conditions found among people identified? For example, epilepsy, spasticity, congenital abnormality (mongolism, hydrocephalus, heart or other abnormalities). Estimates are made of the proportions of identified people with different degrees of handicap, inappropriate behaviour, or associated clinical conditions.

3. How are the people identified being cared for? What are the characteristics of people to whom the services are being delivered? How do these people differ from those not receiving services?

a. How many are living with their own families, and how many are in hospitals, in local authority homes, or private homes, etc.?

b. How many are receiving defined specialist services believed to be appropriate? For example, education, occupational or physiotherapy.

TABLE 1. *Wessex survey: grade, social or physical incapacity, and place of care.*
*Rates per 100,000 total population.**

Age	Grade	Place of care	Incapacity				Total
			NA	All SB	SI	CAN	
Children	SSN	NI	4(1)	4(3)	2(1)	20(17)	30(22)
		I	5	5(2)	3(2)	5(4)	18(9)
	MSN	NI	1	1(1)	1	7(6)	9(7)
		I	—	1	—	1(1)	2(2)
Adults	SSN	NI	2(1)	2(1)	1	45(18)	50(20)
		I	6(1)	14(3)	6(1)	53(19)	80(24)
	MSN	NI	1	—	—	69(10)	75(10)
		I	2(1)	4(2)	1	45(16)	53(18)

* Totals include cases where incapacity is not known. Figures in parentheses are for people receiving training.

Key

I	Institution.	All SB	Ambulant but all have severe behaviour disorders.
NI	At home.	SI	Ambulant, without severe behaviour disorders but severely incontinent.
SSN	IQ under 50.		
MSN	IQ 50+.	CAN	Continent, ambulant, and not severely behaviour disordered.
NA	Non-ambulant.		

Source: Kushlick and Cox (4, 5).

The tables illustrate the type of data generated by the survey.¹

Table 1 illustrates the findings with respect to mental handicap in the Wessex Region on 1 July 1963 (4, 5) and shows the crude rates of recognized mentally handicapped in a total standard population of 100,000 by age, place of care, grade, and type of behaviour. Table 2 shows how these incapacities among severely subnormal adults are related to clinical conditions very often associated with mental handicap (6).

Estimates of future trends cannot rely only on the cross-sectional information relating to a particular day (1 July 1963) and a continuous register of mental handicap has been set up in the Region with the object of being able to monitor changes in prevalence, service usage, and natural history (7). It is also used as a sampling frame for more detailed evaluative studies. It is now being used, with special modification, to supply data needed in connection with the sectorization of facilities recommended in the DHSS's policy document *Better Services for the Mentally Handicapped* (8).

1. For methods of data collection and more detailed results see also Kushlick, Blunden, and Cox (19) and Kushlick and Cox (20).

TABLE 2. *Severely subnormal, 15-19 years, Wessex and all Wiltshire. Incapacity by diagnosis.*

Diagnosis	NA	Incapacity (%)			Total known = 100%	Total
		All SB	SI	CAN		
NK and others	5.9	11.8	—	82.3	17	17
D	2.4	6.1	0.6	90.8	163	167
MAD	28.1	9.4	9.4	53.1	32	32
CP	37.7	6.6	9.8	45.9	61	61
MA	8.1	16.2	8.1	67.6	37	37
EP	2.7	32.9	15.1	49.3	73	74
NBD	2.3	14.6	5.2	77.9	213	220
All diagnoses	7.9	13.4	5.9	72.8	596	608

Key

D Down's syndrome.

MAD Clinical conditions (*not* Down's syndrome), very often associated with mental handicap, e.g. microcephalus.

MA Major congenital abnormalities.

CP Cerebral palsy.

EP Epilepsy.

NBD No clinical sign of brain damage.

Source: Kushlick and Cox (6).

Evidence from the Wessex research suggests that there would be major advantages if people in hospitals or residential care were grouped in relation to the area in which their families lived rather than by their incapacity level or by the clinical condition from which they are suffering. The advantages of geographical grouping, both outside and within existing hospitals, appear to be:

1. The spreading out of the most dependent and disruptive residents among those more able who could also contribute to their care.
2. Bridging the traditional gap at operational level between home and institutional care: parents from any area would know which unit serves their particular area and the living staff might get to know the families with the clients still at home in their area.
3. Bridging the gap between hospital and local authority and GP services: GPs, paediatricians, social workers, teachers, home nurses, and health visitors from an area might know the unit and the staff serving that particular area.
4. Local councillors and parents' societies might also be able to identify with one or two living units or wards, and take a special interest in achieving, maintaining, and improving standards on that unit. Thus, not only would there be more effective demands

for higher standards of care in the residential settings, but it would be easier to deliver those resources that were available to the residential settings and to co-ordinate them.

The DHSS policy document (8) recognized that, at present, patients from any particular area may be in several hospitals, and that within each hospital, patients from any area may be in several wards. The document called for the realignment of hospitals, that is, that hospitals should accept only people coming from a particular catchment area. The document also called for the sectorization of wards, that is to say, that people on any ward should come only from a particular sub-area in the catchment area.

The problems of undertaking this are formidable. However, the availability of data on a computer file which covers the relevant characteristics of patients in all hospitals throughout the Region, and does this by individual hospitals and wards, has enabled officers from the RHB and the HMC to plan and begin implementing the policy of sectorization and alignment.

The register is financed by the RHB. It is maintained by a continuing supply of information from hospital staff (nursing, administrative, and medical) and local authority staff in the social service, education, and health departments.

Some of the results of this earlier work have appeared in several papers (9, 10) and have been used by the Wessex RHB and by the DHSS in planning and developing future services for the mentally handicapped. The survey schedules and categories of incapacity used in the Wessex census (3) have been used by other research workers and by the DHSS in a recent national survey.

This type of information on the size and characteristics of the target population reveals a number of options open to the administrators and professionals in the planning and development of future services. This can be illustrated by considering some of the implications of the Command Paper 4683, *Better Services for the Mentally Handicapped*.

SOME IMPLICATIONS OF COMMAND PAPER 4683

1. The following diagrams illustrate the changes in services for the mentally handicapped which will result from the implementation of *Better Services for the Mentally Handicapped* (Command 4683).

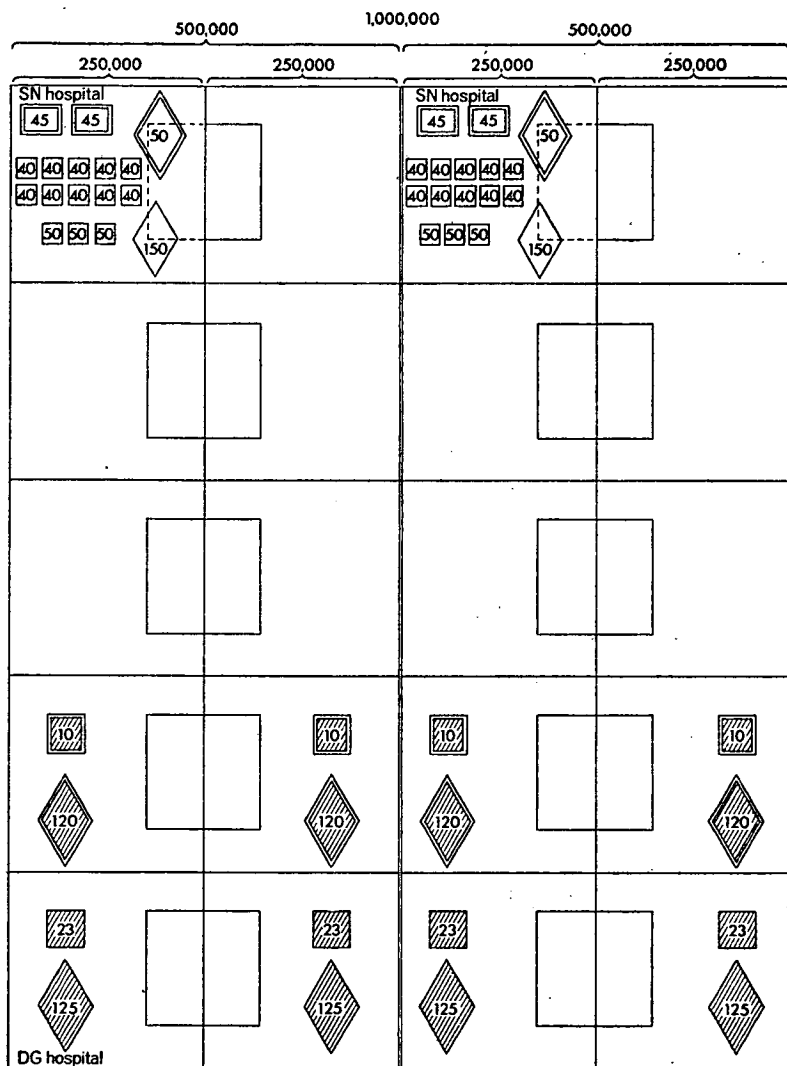


FIG. 1. Existing services for the mentally handicapped in a total population of 1,000,000.

KEY

Non-shaded facilities: Hospital facilities

Shaded facilities: Local authority services

□ Residential facility for children

◊ Training facility for children

□ Residential facility for adults

◊ Training facility for adults

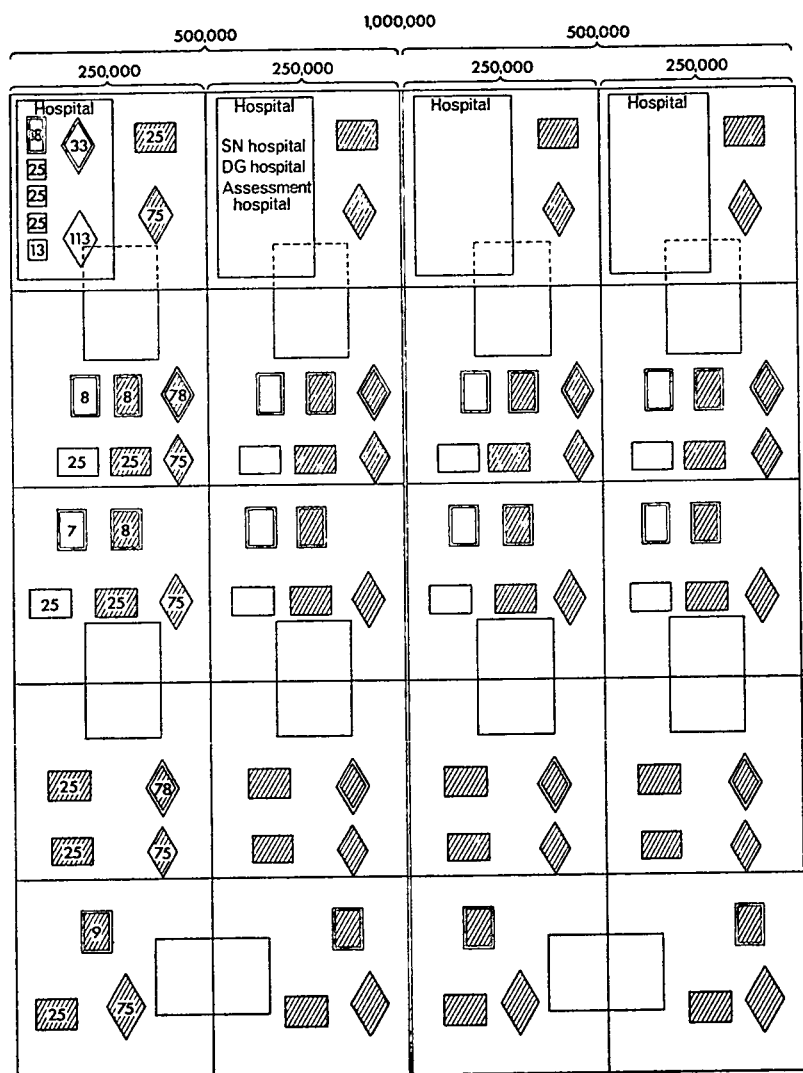


FIG. 2. Future services (Cmnd. 4683) for the mentally handicapped in a total population of 1,000,000.

GPs	40	} Personnel available to population of 100,000
LHAMOs	5	
Paediatricians or child psychiatrists	1	
Physicians	1.8	
Psychiatrists	1.5	
Educational psychologists	1	
Social workers	12 +	
Home helps	63 +	
Health visitors	12 +	
Home nurses	18 +	
Teachers	5 +	

2. Fig. 1 shows the way in which the services are now organized. Fig. 2 shows the way in which they will be organized in the future under Command 4683. The key gives the symbols used in the diagrams. In addition, it shows in the large square, the number of key professionals from different disciplines, already available outside the hospitals for the mentally handicapped, whose efforts might, if there were the will to do so, be collectively directed towards the needs of the mentally handicapped and their families.

a. In Figs. 1 and 2 the total population covered by the whole figure is one million; the population covered by one of the four columns is 250,000. Each column is divided into five rows or five areas each of total population 50,000.

b. The squares within, which extend over two areas of 50,000, represent the team of multidisciplinary professionals shown in the key.

c. The smaller squares represent residential facilities; the diamonds represent schools or training facilities. Those with double lines are for children (age under 16); those with single lines are for adults. Symbols which are 'shaded' represent facilities administered by local authorities; symbols without 'shading' represent those administered by the hospital service.

4. The numbers of places available in existing and future facilities are taken from Command 4683, table 5, p. 42. The data on existing professional staffing levels in the key are taken from various sources.

5. The main features of the present service can be seen in Fig. 1.

a. This shows a total population of one million served by two hospitals for the mentally handicapped, ie each hospital serves a total population of 500,000 people: two columns.

Each hospital has about 90 children (50 of whom attend school) in two wards, and about 550 adults (150 of whom attend training centres) in about 13 wards: 10 wards of 40 places each for SSN adults, and 3 of 50 places each for MSN adults.

b. There are hospitals which serve total populations of one million or more. These would have at least double the numbers of children and adults on double the number of wards or villas.

c. The 'shaded' symbols show the existing local authority residential and training facilities available in each area of 250,000 population.

d. The mental handicap hospital is separately sited from the existing district general hospital (DGH) where most sophisticated early diagnosis and assessment takes place.

e. (i) The professional team (in the internal square) is responsible for the care among other responsibilities, of *all* mentally handicapped people living at home or in local authority facilities. If they wish to follow up their clients in hospital facilities for the mentally handicapped, they must go to the site of the hospital. In this hospital, the clients may be on any of the 15 wards. Indeed, it is more usual that the mentally handicapped from an area of 100,000 population will *not* be in *one* hospital serving 500,000: they are more likely to be scattered around in three or four such hospitals and they will accordingly be dispersed through between 15 and 45 wards.

(ii) The same problem of geographical dispersal faces parents from the population of 500,000 who wish to visit and maintain contact with their children in hospital, and hospital staff, particularly nurses, who wish to maintain contact with the families of their clients.

(iii) Similarly, distances involved make it impossible for the hospital facilities to be used on a day basis for people from the area of 500,000. They also make it difficult or impossible for hospital residents to attend local authority schools or training centres.

f. Most of the areas on the page are blank, ie they have neither hospital nor local authority facilities.

6. Fig. 2 shows the main features of the future service developed on the lines of Command 4683.

a. Where there were two mental handicap hospitals there will be four: each serving a total population of 250,000. These hospitals will be either on, or closely associated with, the local district general hospital.

b. Where each hospital had about 15 wards of about 50 people each, there will be about 5 wards ('domestic' in character) each holding around 25 people.

c. Some of the hospital facilities will be developed in the middle of the residential areas where the families live. (The diagram shows two such children's units and two adult units in each area of 250,000.)

d. Because of the geographical siting of the mental handicap hospitals, half of the people attending the hospital school and training centre will come daily from their own homes; similarly, nearly half of the hospital residents will attend local authority school and training centre facilities outside the hospital on a day basis.

e. The hospital will be 'aligned' (ie take only clients from its 250,000 population) and wards will be 'sectorized', ie take only clients from a sub-area, say, 50,000, of the whole area (paras 266, 267).

This arrangement will enable the professionals from outside the hospital to maintain easy continuing contact with their clients who are in a ward of one hospital. Moreover, the doctors, teachers, and particularly the nurses, staffing a 'sectorized' ward of the hospital will be able to take an increasing interest in the care of the mentally handicapped living at home. The area with which they need to become familiar will be small and they should easily be able to liaise with the non-hospital professionals from the area.

f. There will be a very large expansion of local authority residential and training facilities in areas previously completely without such services.

Provided that these are also 'sectorized', the clients will be easily accessible to their families and to the professional teams undertaking their continuous assessment.

7. From existing prevalence data (see Table 1), the behavioural characteristics of the clients in sectorized facilities serving defined populations can be predicted with reasonable confidence. These predictions have now been tested fairly rigorously with respect to the 5 children's and 1 adult unit newly set up in the Wessex Region.

The new norms defined in Command 4683 and some of the suggestions for reorganization of the services were informed by the results of the work in Wessex.

Following the publication of our prevalence data on mental handicap, the research team had the opportunity to suggest to the administration a way of setting up new facilities that would allow for an experimental evaluation of different forms of residential care. When new services are set up, they are at first necessarily available only to some people and not to others. The team advised that new residential facilities for mentally handicapped children

be set up to serve only a geographically defined total population of 100,000. It was also suggested that these be 'domestic' in character.

The term 'domestic' is used here to emphasize a move away from what are commonly regarded as 'institutional' characteristics in existing hospitals, towards those in 'ordinary' households. The features of 'domestic-' or 'institutional-type' units include their size (number of residents), physical design, furnishings and fittings, as well as the way in which they are organized and in which staff and residents relate with one another. While the new units are still considerably larger than 'ordinary' family houses (20-25 residents with, at any time, about 5 members of caring-staff) they are smaller than many existing hospital wards containing about 40 children and 8 staff. The residents sleep in bedrooms for 1-5 people as opposed to dormitories for around 20. They have a separate dining-room, lounge, and playrooms, as opposed to a large single 'day-room' which doubles as a dining-room. The units prepare their own food in their kitchen rather than receiving food, prepared in a central kitchen, in trolleys.

They have ordinary bathrooms which contain a single bath, washbasin, and toilet, rather than an 'ablution-block' with up to 20 toilet bowls and basins in a row. The furnishings and fittings are those found in homes: wooden beds, cupboards, carpets; instead of iron bedsteads, lockers, and linoleum-covered floors. The staff do not wear uniforms, they sit down with the residents at meal-times and eat with them and some staff live within the units, albeit in separate flats or bedsitters. The staff of 'domestic-type' units are recruited for that unit only, ie they cannot be transferred as in existing hospitals from one ward to another when needs arise in other wards. The new units are also locally based, ie they are sited in residential areas within the locality from which they receive their residents.

This suggestion was accepted and has been implemented; five such units for children and one for adults are already operational. This was first put into effect when new services were provided to serve only one-half respectively of Southampton and Portsmouth (both cities have populations of about 200,000). As the remaining half of each city continues to be served by existing hospital facilities, it has become an automatic 'control' or second experimental area (11). The data in Table 1 suggested that new locally based,

domestic-type units of about 25 places, for all of the mentally handicapped children with the characteristics shown in the table, might meet *all* of the needs for residential care from a total population of 100,000. The hypothesis is that they would be 'feasible' if they could meet the needs at least as 'well' as, if not 'better' than, existing hospital units which are not 'domestic' or locally based, and which have many other different features.

The first locally based domestic-type unit for profoundly handicapped and behaviour-disordered adults from a total population of about 50,000 began operating eighteen months ago. This unit arises out of recommendations made in *Better Services for the Mentally Handicapped* (8). The research team is also to evaluate this unit.

The approach to evaluation consists of attempting to measure the different degrees of 'effectiveness' of different methods of care. Hopefully, it should also be possible to cost the different degrees of effectiveness.

In order to measure effectiveness it has been necessary to define the aims of care in a way that makes it possible to measure (ie to quantify) whether and to what extent they are being met.

Any measures of effectiveness must be reliable (replicable), valid (measure what they claim to measure), and be agreed and seen as relevant by the people planning, administering, or running the service at all levels.

The criteria of effectiveness used by the research team were incorporated in operational policy documents and statements of administrative aims with respect to all hospital services for the mentally handicapped in the Wessex Region.

Work continues on refining these measures of effectiveness which have been divided, within the team, into two main areas:

1. *a.* Measures of change, over time, in the behaviour (appropriate and inappropriate) of the handicapped person.

- b.* Measure of change, over time, in the 'problems' and experiences which the family of the handicapped person encounter while caring for the handicapped person, and especially in relation to contacts with the residential services for the mentally handicapped. The hypotheses are that the 'better' the service, the greater will be the 'progress' made by the handicapped people, and the lower will be the level of difficulties experienced by their families.

2. Measures of the 'quality of care' received by the handicapped person and the families. The 'quality of care' has been operationally defined to include the following:

a. The daily routine of the residential units for the handicapped. A complete cycle of staff and patient activities for the whole of the waking day (including weekdays and weekends) is closely examined and systematically described. This allows the collection of standardized measures including:

- (i) Numbers of staff assigned to a living unit as well as those on duty at any time.
- (ii) The time spent by the residents in groups of different sizes throughout the cycle of the day.
- (iii) The time spent by the residents in different activities in which they might acquire or lose important social skills (for example, in getting out of bed, toileting, dressing, eating, formal training, and recreation).
- (iv) The proportions of residents with personalized possessions and living space.
- (v) The extent to which the routines take account of individual differences among the residents at any time, or of all residents at different times of the week (weekends) or at different seasons of the year.

This also allows the systematic description of different logistical patterns involved in caring for the residents at the same time as administering and running the living units.

We would like subsequently to compare these routines with those observed in 'ordinary' families in order to describe in operational terms the characteristics of domestic units, and to get a clear idea of the similarities and differences between 'home' care and 'institutional' care and the problems faced by the non-handicapped in these settings. The term 'domestic' has often been used rather loosely. Attention focused on 'institutional' care has not often compared it with care at home. *Differences* rather than *similarities* have been sought between these two settings.

b. The impact of this routine on the handicapped people. The questions asked are:

- (i) Over specified periods and at standard times does anyone relate with the handicapped person, and if so, in what way?
- (ii) What are the characteristics of the contact (verbal, physical)?
- (iii) What quality does it have (instructing people what to do, responding to their behaviour, or other)?

(iv) To which behaviours of the handicapped person do the contacts relate? ie do they follow his or her 'appropriate behaviours' or 'inappropriate behaviours'?

c. The impact of the programmes on the families of the handicapped (12).

3. Attempts are made to try to quantify all of the resources that are included in the 'care' so that estimates can be made of:

a. The cost of different qualities of care in different settings.

b. The administrative problems of delivering different qualities of care in different settings.

The aim is to develop in this way measures of cost effectiveness. An economist-accountant has been recruited to undertake this part of the work (13).

The following is a summary of the results so far arising from the mental handicap project. The option of locally based residential care for severely mentally handicapped children and adults has been shown to be 'feasible' in terms of the criteria set.

1. Only 4 of the total of 90 institutionalized mentally handicapped children from a total population of 600,000 out of the Region's two million population have been found 'unsuitable' for such units. In only 2 of these children was the exclusion necessary because their behaviour was too disruptive to be contained in the unit. It was felt not too disruptive to be contained in traditional units. In addition, all 25 of the most profoundly handicapped and severely disruptive institutionalized men and women from a total population of 50,000 are similarly living in such a unit in Christchurch. More such children's and adult units are being planned.

2. Agency personnel confirm that these units are successfully implementing the major tasks specified. Regional hospital board officers have set up 5 experimental children's units and 1 adult unit; HMC officers have recruited and maintained (except in one such unit) staff to specified establishment levels; they have readily replaced staff after resignations. These successes of HMC personnel have occurred even though residential staff in the experimental units have had no career prospects within the NHS.

Virtually all geographically eligible residents have been admitted. One resident (a child) has been refused admission because she suffered from status epilepticus and it was suggested that no

non-nurse-qualified house parent might legally administer an injection of anti-convulsant.

In addition, only two residents (children) have been transferred from experimental options. One child bit other children. His biting did not cease when he was returned to the hospital from which he had originally been transferred. The second child was transferred to a traditional hospital because his size was considered a potential problem.

Consultants using the experimental units as their sole residential resource for the area have not had to ask any parent to wait until a vacancy arose (that is, there is no 'waiting-list').

3. Results from the first experimental and control areas show that children in the experimental unit made more 'progress' on their average scores in 9 out of 13 behavioural areas. In 3 of these (eating, dressing, and 'appropriate general behaviours') the differences reached statistical significance. The areas in which the experimental children did 'worse' on average than the control children were 'inappropriate general behaviours', 'inappropriate emotional response', 'habits', for example, thumb-sucking, etc., and sleep.

In the experimental group, *all* behaviours increased except 'inappropriate general behaviours' which stayed the same. In three out of the eleven possible 'appropriate' behavioural areas the average scores of control children actually decreased over the four-year period (mobility, speech, and 'appropriate general behaviour'). Among the experimental group of children, those who appear to have benefited most compared with the equivalent control group were those with the most severe physical handicaps: that is, children who remained non-ambulant throughout the trial.

4. The experience of parents (pre-admission, at admission, and post-admission) with respect to the range of responses they have been able to make, has been appreciably wider for the experimental units, that is, they visited before admission, saw available facilities, spoke to more agency personnel, etc., than did parents whose children were in the control units (15). We are aware of complaints by parents with respect to staff practices. These have become known quickly to a range of officers and have been dealt with.

5. The hospital authority's revenue costs for the new units are very similar to those in traditionally staffed existing children's annexes

TABLE 3. *Social incapacities in a total population of 100,000 among elderly and mentally handicapped of all ages.*

<i>Elderly (aged 65+)</i>		<i>Mentally handicapped (all ages)</i>	
Bedfast	350 (220)	21 (8)	Non-ambulant
Confined to home	1,410 (1,300)	31 (7)	Severe behaviour problems
Mobile outside with difficulty	1,020 (910)	14 (4)	Severely incontinent
None of above	9,240 (9,100)	247 (142)	None of above

Brackets show those living at home.

(13). There is no available evidence to indicate that, given similar staffing ratios, the revenue costs of the new units are different to those of comparable existing facilities.

6. It is also clear that the same agency personnel who have the responses appropriate to a therapeutic environment in *new* units have difficulty in making similar responses when they are in ill-designed, overcrowded existing units sited in locations long distances from the client's family home. The HMC officers have great difficulty in recruiting staff to establishment levels.

FUTURE DEVELOPMENTS

The latest results of the mental handicap evaluations are now being analysed, interpreted, and prepared for publication. These will be used to recycle the process, ie to reassess the characteristics of the target population, to reset service objectives and to design further options of service delivery which appear likely to achieve objectives more effectively than existing options. These too would then be evaluated.

The team is in the early stages of developing this approach with respect to services for the elderly, particularly those with severe behavioural deficits. Some aspects of the relative sizes of the two target populations (the old with behavioural deficits and the mentally handicapped) can be seen from Table 3 which compares, in crude rates per 100,000, the number of people involved (17).

It has been necessary to develop a conceptual framework which allows the team members to research the two target populations collectively. The early stages of these developments and the research objectives are described in our latest report to our Scientific Advisory Committee (18).

REFERENCES

1. KUSHLICK, A. (1971). 'Epidemiological studies on and evaluation of services for the mentally subnormal and the elderly', Report to the MRC and DHSS, mimeographed (London: MRC).
2. — COX, G. R., WILLIAMS, P., and WHATMORE, R. (1970). 'Report to Medical Research Council and Department of Health and Social Security', mimeographed (Winchester: Wessex RHB).
3. — BLUNDEN, R., and COX, G. R. (1973). 'A method of rating behaviour characteristics for use in larger-scale surveys of mental handicap', *Psychol. Med.* 3, no. 4, 466-78.
4. — (1967). 'The ascertained prevalence of mental subnormality in the Wessex Region on 1st July 1963', in *Proc. 1st Congr. Internat. Ass. Sci. Stud. Ment. Defic.* (Surrey: Michael Jackson).
5. — (1967). 'Residential care for the mentally subnormal', *J. R. Soc. Hlth*, 90, 255-61.
6. — and COX, G. R. (1973). 'The epidemiology of mental handicap', *Develop. Med. Child Neurol.* 15, 748-59.
7. — (1970). 'Planning services for the subnormal in Wessex', in Wing, J. K., and Bransby, E. R. (eds), *Psychiatric Case Registers*, DHSS Statistical Report Series no. 8 (London: HMSO).
8. DEPARTMENT OF HEALTH AND SOCIAL SECURITY (1971). *Better Services for the Mentally Handicapped*, Cmnd. 4683 (London: HMSO).
9. KUSHLICK, A. (1965). 'A plan for experimental evaluation', *Proc. R. Soc. Med.* 5, 374-80.
10. — and COX, G. R. (1969). In *Provision of Further Accommodation for the Mentally Subnormal* (Winchester: Wessex RHB).
11. — (1967). 'A method of evaluating the effectiveness of a community health service', *Soc. Econ. Admin.* 1, 29-49.
12. WHATMORE, R., DURWARD, L., and KUSHLICK, A. (1973). 'The use of the behaviour modification model in attempting to derive a measure of the quality of residential care', Appendix 10 to 'Report to Scientific Advisory Committee', Health Care Evaluation Research Team, December 1973.
13. CALLINGHAM, M. (1973). 'Some problems involved in studying the costs of alternative services for the mentally handicapped', Appendix 18, *ibid.*
14. SMITH, J., and NICHOLSON, S. (1973). 'A comparison of the changes which took place among two groups of severely subnormal children who were receiving different forms of residential care', Appendix 11, *ibid.*
15. HALL, J., HORNER, R. D., KUSHLICK, A., NICHOLSON, S., and SMITH, J. (1973). 'Differences in pre-admission or pre-transfer experiences, admission or transfer experiences, and present knowledge of residential care practices between parents whose child is currently receiving residential care in a hostel and parents whose child is currently receiving residential care in an institution', Appendix 14, *ibid.*

16. KUSHLICK, A. (1972). 'Research into care for the elderly', *The Elderly Mind*.
Suppl. to *Hosp. Internat.*, December 1972.
17. TOWNSEND, P., and WEDDERBURN, D. (1965). *The Aged in the Welfare State*
(London: Bell).
18. HEALTH CARE EVALUATION RESEARCH TEAM (1973). 'Report to Scientific
Advisory Committee', December.
19. KUSHLICK, A., BLUNDEN, R., and COX, G. R. (1973). 'A method of rating
behaviour characteristics for use in large-scale surveys of mental handicap',
Psychol. Med. 3, no. 4, 466-78.
20. — and COX, G. R. (1973). 'The epidemiology of mental handicap',
Develop. Med. Child Neurol. 15, 748-59.

Comment

GEOFFREY PHALP

Dr Kushlick's work in Wessex is now well known and it has opened up new prospects for all who are concerned with the problem of caring for the mentally handicapped. But it has perhaps had a more important general influence because it suggests an informed and sensitive approach by which more effective systems for the planning of health care resources can be developed. The paper is the record of an imaginative and humane assessment of the need and how to provide for it. It has to be seen in historical context.

In 1959 it was a bold and far-seeing act on the part of the Wessex RHB, with support from the DHSS and the Nuffield Provincial Hospitals Trust, to seek to establish criteria for the care of the mentally handicapped children within its administrative boundaries rather than to follow the accepted pattern of the time and to find solution through the planning of yet another large hospital.

It is important also to note that the strategy of this research arose from the need to solve administrative problems, and the action taken was of itself sufficiently exceptional to command attention.

In the past it has not been usual for health authorities to accept responsibility for the commissioning of long-term well-endowed investigation to help them in the formulation of their policies. If anything it would seem that boards and committees have tended to shy away from what they may have regarded as academic solutions to practical problems. In this, those twin enemies of progress, '*amour-propre*' and 'vested interest' may have played some part.

But there has always been some tendency for medical research workers, who are in any case few in number and in the past often remote from the practice of the health service, to be themselves shy of submitting to what they have tended to regard as bureaucratic oversight. They have understandably been jealous to protect their professional freedom to follow their own interests. If, by chance, the results of research have happened to coincide with administrative concern, then so much the better. But the distinction has tended to remain.

It is the special contribution of the Wessex RHB and of Dr Kushlick and his team to have demonstrated the fundamental importance of the establishment and use of a properly constituted research arm in the construction of effective planning policy. This has its difficulties and hazards. In the first place the authority must be confident that it has correctly chosen the area of investigation. It must be prepared for a long-term inquiry and it must keep an open mind. The mere setting up of a research project does not in itself ensure success.

The researcher has equally daunting problems to face. What criteria must he adopt for the setting of standards of health care; what does the population want and what does it in fact need; how may he evolve a system of quality control; and perhaps above all how does he relate to the health authority? He must decide how best to establish relationships of mutual confidence and co-operation, he must judge for himself how far he can risk his professional reputation and whether that will extend to a confession in due course that he has been mistaken in the procedure he has set in motion. Even today, investment in research is in many quarters regarded as wasteful and it is a brave man who admits that his inquiries have proved unproductive.

This is far removed from the more traditional practice by which the independent medical researcher has examined aspects of the NHS system in which he has professional interest. It is distressing that so much inquiry stops short of implementation in practice, it being assumed, one must suppose, that it is the province of administrators to carry on and to put into practical effect the conclusions and recommendations that emerge from the professional inquiry. And yet the very reverse is true.

A most important aspect of Dr Kushlick's research programme has been the extent to which he has built in a follow-up of the original investigation to ensure a continuance of momentum as well as observation and adjustment in response to circumstance. The setting up of systems for keeping abreast with a changing situation is as essential for the health authority as it is for the ongoing practice of the project itself. It must be a rare circumstance when exploration of a problem of community medicine can be treated as a finite investigation complete in itself at a particular point in time. More likely is the need for continuance of study and evaluation. It is not, however, sufficient that there should simply be a system for continuing supervision of and association with the operation of the project. Much more than that is required.

There must be a high degree of understanding between the members of the research team and the officials of the authority. This includes a careful development of relationships with all those in the service who must play their part in the project. In the Wessex inquiry the co-operation of the staffs of individual hospitals was a necessary preliminary without which success would

have been impossible. Moreover it is essential that the researchers should be aware of the preoccupations and restraints within which administration must function. This is admirably demonstrated by Dr Kushlick in the emphasis which he gives in his work to problems of cost, and the likely effect of his recommendations upon the provision of buildings and of requirement for suitably qualified staff.

By contrast the administration must allow flexibility and opportunity to their research arm and be willing to collaborate even if in the end the inquiry should prove unsuccessful. Some interesting techniques emerge from this. If the provision of money for the exploration comes, as in this case, from a variety of sources, the DHSS, the MRC, and the university, then the researcher is in some measure safeguarded. His findings, when finally produced, may be assumed to have satisfied all the sponsors and as such to have achieved a broad measure of acceptance; whatever criticism may otherwise be raised. The health authority is similarly protected in that so broadly based an acceptance of what has been achieved is unlikely to be unworthy of continuing support. There are therefore valuable compensations in a multiple approach of this kind despite the administrative complications which it inevitably brings with it.

It is noteworthy that the Wessex research team has included a variety of non-medical specialists each of whom has made his own contribution to the project as a whole. As part of this, the team has had its own professional administrator. This also suggests the need to ensure that the specialist training of both administrators and community physicians should include a measure of appreciation of each other's responsibilities.

The King's Fund, with the Centre for Extension Training in Community Medicine in the London School of Hygiene, is currently exploring ways of ensuring that this joint experience in training is provided. As yet this has been experimental but it seems vital for the future development of the intelligent use of skills in epidemiology that acceptance and comprehension of mutual responsibilities between the administrator and the research worker should be encouraged and introduced.

This need for understanding extends beyond normally accepted practice in specifically designated fields of operation. It should ideally comprehend a relationship in which each party, irrespective of the immediate problem in hand, accepts a general responsibility for informing the other of trends in what is essentially a changing and dynamic situation. The administrator must keep his research arm informed of trends in policy and the research worker with his intimate knowledge of the field in which he operates should equally provide a flow of advice and information about changes, as far as he can see them, within the community which the authority is required to serve.

This is a theme which the King's Fund is seeking to develop. It seems to have an important bearing upon the future role of community medicine in the NHS and it is essential if the new regional authorities and indeed the organization of the Chief Scientist are to be kept suitably informed by those whose task it is to undertake service to the population.

If some measure of joint training and preparation for the assumption of these heavy responsibilities is necessary, so also is an examination of the need for career prospects in health care research of this kind. Investigations of this type are necessarily long-term. A minimum of seven years would seem to be essential for the full development of initial exploration and evaluation. The multidisciplinary nature of the teams needed to do the work effectively suggests that there should be appropriate professional opportunities for skilled specialists, health economists, statisticians, administrators, and others, to attract them to this important field of health service research development. There must be recognized opportunity for movement generally: for example between whole-time research, administration whether medical or otherwise, and the university. Each would benefit from staff with previous experience in other related spheres.

No-one reading Dr Kushlick's paper could fail to be impressed by the humanity of approach which it demonstrates. This is in no way expressed as an excess of sentimentality but rather is it a careful application of scientific assessment to the simple and basic question 'What do these children and their parents need for their mutual well-being?'

To define 'need' is inevitably difficult and sometimes empiricism must suffice for the purpose. To the layman however the choice in this case seems infinitely preferable to any concern for the pre-occupations of medicine or the convenience of administration. Others may judge to what extent such an approach has in the event being justified in scientific terms. But in the absence of clear understanding of what application of resources may best alleviate a widespread and infinitely distressing human dilemma, surely we would always hope for the intelligent application of human sympathy that this paper so amply demonstrates.

In the context of this meeting it seems important not only that the views and policies of the Chief Scientist's organization should become recognized throughout the NHS but also that findings of investigation at the periphery and needs for inquiry as they become manifest at the point where the health care of the population is practised, should equally be made known at the centre. The devising of systems to ensure continuing and relevant flow of information in both directions may be difficult, but is essential for success in this new and exciting dimension of the NHS.

Variation 6

The community hospital programme

A. E. BENNETT

The Community Hospital Research Programme was initiated in 1969 by the Oxford Regional Hospital Board. The objective was to develop and evaluate a prototype community hospital. This raised certain fundamental issues that I should like to explore. Before doing this, however, it is necessary to describe how the situation developed.

PREVAILING HOSPITAL POLICY

When the *Hospital Plan for England and Wales* (1) was published, the Ministry's policy was stated as follows:

Small hospitals. The district general hospitals will provide (apart from psychiatry and regional specialties) the great majority of the beds which are needed, and as they are developed a large number of the existing small hospitals will cease to be needed. This is implicit in the new pattern and indeed is part and parcel of the improvement of the service for hospital patients.

This was followed some years later by the Bonham Carter report on *The Functions of the District General Hospital* (2) which was antagonistic to the small hospitals, stating:

We do not think there is any good case for retaining small hospitals in places from which it is easy to reach the district general hospital; such communities will be served better by providing comprehensive hospital facilities (including facilities for general practitioners to take part in the hospital treatment of their own patients) at the district hospital centre. Nor should all small hospitals in places remote or inaccessible from the district hospital centre be retained.

Concurrently the DHSS was urging regional hospital boards to plan in the long term for the complete integration of the psychiatric services for the mentally ill with the district general hospital. Thus with integration of psychiatric and geriatric services, district general hospitals serving populations of at least 200,000 would be in excess of 1,000 beds.

Policy for integration and centralization was not unopposed. The Porritt Report on medical services in Great Britain (3) referred to small hospitals and summed up their opinion as follows:

We feel that the community is in real danger of losing something of great importance if too much emphasis is placed on large district hospitals and the smaller hospitals are closed down because of administrative convenience or temporary shortage of staff.

Furthermore, certain confusions were made apparent with publication of a report on the development of community care (4) when it was emphasized that hospital development must be complementary to the development of care in the community. Independently it was pointed out that national policy would be acceptable if the following conditions could be met:

1. That sites of DGHs were large enough and had sufficient vacant land for the development of fully comprehensive services for their catchment area.
2. That transport services and communications enabled the population within the catchment area to have quick and easy access to the DGH.
3. That all the GPs based on their health centres or group surgeries were near enough to the DGH to enable them to participate in the medical staffing of the hospital or to take clinical charge of in-patients.
4. That the DGHs were able to recruit their entire staff from the population within easy reach of the hospital.
5. That it would be agreeable to the community that all hospital units other than the DGHs should be closed.
6. That it would be the most economic pattern of patient care.

There was no district general hospital in the Oxford Region that could satisfy the first four of these conditions: the last two were untested.

ROLE OF THE HOSPITAL

Sanazaro (5) drew a distinction between the hospital as a component of health services, and the hospital as an organizer of health services. He commented that within an impressive mass of literature about the hospital there is little that clarifies the hospital's over-all role: surprisingly few firm answers are available to the major economic questions. He saw the primary strategic issue of the present as being how to accelerate the evolution of health service systems within which hospitals and institutional care generally can be treated as subsystems.

However, before any advance is possible it is necessary to clarify issues in planning. The extracts quoted reveal uncertainty as to the basis for determining policy. The district general hospital is an organizational and administrative concept in the main. The argument put forward in the Bonham Carter Report to justify large district general hospitals was:

It follows that in each acute specialty in which in-patient work is undertaken at the DGH, the medical staff ought to be headed by a team of at least two consultants with (ideally) all their in-patients concentrated at that hospital (2).

To avoid some of the consequences of this, geographical considerations are introduced to justify services and access to them in remote areas. By contrast certain services are provided for on a pathological basis: in reality this is a balance between disease incidence, case-load, and unit costs. Lastly, and least explored to the present, are the political considerations in planning. These acknowledge the need of communities to identify themselves with their health care services and from this identification stems their support, both tangible and intangible. In the past these considerations have tended to be disregarded.

The community hospital concept emphasizes that we have reached a stage in evolution where hospitals and institutions are seen to be subsystems in one health care system and that political considerations, ie community identity and influence, are basic to our planning. The research and development programme is therefore focused upon creating a new element within the system, with all of the organizational problems implied, evaluating performance, and ultimately determining the impact on the remainder of

the system. This last must by its nature be a long-term process and any answer may prove elusive due to concurrent changes.

THE COMMUNITY HOSPITAL

The content and function of the community hospital was determined initially by starting from the theoretical assumption that all hospital services are centralized on the DGH site and identifying the services which could and should be decentralized taking into account: the needs of patients; the capital cost; the revenue cost; the staffing situation; the integration of the various branches of the health service; the service which can be given by GPs; the service which can be given by the community health team; the requirements of the hospital specialist teams in maintaining the most effective service.

It must be recognized that much of this process was subjective, there being few data available to make objective assessments, but a consensus was achieved without too much difficulty. The ideal model of a community hospital was seen to comprise a health centre with accommodation for GPs, their staff, local health authority services, consultant clinics, and certain diagnostic services; day-treatment facilities, and in-patient accommodation. Thus a full range of integrated facilities would be provided at community level to serve the needs of a defined population.

Patients suitable for admission to the community hospital were broadly described as patients who, while requiring hospital care as they cannot be managed at home, do not require the facilities of a DGH nor the services of the specialist team. Such patients fall into the following groups:

1. Acute medical cases admitted for social reasons and where relief for domiciliary nursing care is required.
2. Pre-discharge post-operative surgical cases from most surgical departments.
3. Selected post-assessment geriatric patients.
4. Selected post-assessment psychiatric patients.
5. Selected physically and mentally handicapped patients requiring hospital care.
6. 'Holiday' admissions.
7. Selected terminal care patients.

Conversely cases who would not be suitable for care are:

1. Patients requiring the facilities of an acute treatment department.
2. Children.
3. Severely disturbed patients.
4. Patients with an infectious disease.

Patients who can be cared for in a community day ward fall in the following groups:

1. Patients transferred from specialist in-patient or day-care.
2. Direct day admissions by GPs of patients for treatment.
3. Direct day admissions of patients for relief of family.
4. Patients attending for nursing treatments which would otherwise be undertaken at home.

In addition the facilities of the day ward would provide the focus for all rehabilitation in the community hospital so that in-patients would attend for treatment before discharge and afterwards as necessary (6).

Thus the community hospital is designed to serve the non-specialist treatment needs of local communities. The concept is one of increased capability of an enlarged primary health care team, made possible by the provision of additional facilities at community level. The objective is to provide the appropriate care with cost saving, increased patient satisfaction, and utilization of manpower resources which might otherwise not be available to health services because of time and cost of travel. In this context, appropriate care is that which has the same or better clinical outcome than the available alternative.

DESIGN OF AN EXPERIMENTAL UNIT

An experimental community hospital was planned and built during 1970-3. The design features were intended to achieve an economy of 20 per cent on the standard cost allowances for district hospital provisions. This resulted in the elimination of all costly internal fittings, piped gases, etc., which the type of patient to be nursed should not require. In addition, attention was directed to achieving a non-institutional or domestic type environment by careful attention to scale, colours, and furnishing. The ward units were constructed in the 'Oxford Method' (7), a dimensionally co-ordinated all dry building technique.

Three major organizational problems were identified: medical records and communications, nursing management and patient admission policies.

Medical records

The tripartite administration of health services and the functional separation that resulted inevitably involved the development of separate record systems. If all of these were perpetuated in the community hospital setting then the outcome would be chaotic and expensive. In addition to the GP's EC record, there would be a hospital group record for in-patient and out-patient care, local authority nursing and clinic records, special obstetric and day ward records, dental, X-ray, treatment room, physiotherapy, and other special treatment records. Apart from the complexity introduced by so many separate systems, the problems of communication of relevant facts and findings between records and of their storage would be considerable.

It was, therefore, necessary to design a new system of records to meet the requirements of the new setting. The obvious objective was a single integrated patient record serving all needs at community level. It was appreciated, however, that this was not attainable immediately and would take time due to the different needs of the different professions. Multiple access to the record folder raises problems of availability. The more complex the case the greater is this difficulty; although the greater is the reason for avoiding fragmentation. A more limited objective was to design a main record system for the in-patient, day-patient, out-patient, and health centre needs of the patient, allowing subsystems to be developed as necessary by individual members of the different professions, with the provisos that storage for such subsystems must be limited to office furniture and that records having lasting clinical significance must ultimately be included in the patient's file.

The A4 size unit record system introduced allows both GP and specialist to maintain clinical notes in sequence. Thus the full record is always available to the specialist at a consultation and his findings and conclusions are immediately available to the GP without the need of writing a letter or report. The record is accessible to nurses, health visitors, and members of the paramedical professions with safeguards to protect confidentiality (8).

Nursing management

For many years nurses and midwives have expressed concern that care of patients is divided between hospital nurses, those employed by local health authorities and, more recently, those employed by GPs. This has again reflected the tripartite administration of the NHS. However, present reorganization of health services places the emphasis on integration and this has provided support for thinking in terms of a unified nursing service at community level. The objective was to develop patterns of working and supervision whereby it could be seen that the established primary care team of GP, community nurse, and health visitor was extending its work into the community hospital setting, thereby contributing both in-patient and day-patient care to augment their existing services.

Unification of nursing management for all services at community level was introduced. Possible advantages have been identified from allowing and encouraging nurses to work in each of the settings on rotation. These advantages include a more comprehensive service to patients with easier transition between home and hospital and again on discharge, as well as increased flexibility in the deployment of a larger number of staff to cover short-term crises due to sickness absence, etc. The potential for nurse training in the community is beginning to be explored.

Policies of patient management

Translating the concept of the community hospital into practice required that its place within the system of care be defined, along with lines of management responsibility and codes of practice relating to matters of patient care. For the unit to function satisfactorily in a co-ordinated manner required control procedures which were acceptable to medical staff.

Prolonged informal and formal discussion were successful in recommending a management structure, the setting up of a multidisciplinary advisory committee, admission and discharge procedures, and a patient review or medical audit system (9). Membership of the advisory committee ensures that the interests of the hospital are represented throughout the other elements of the system, and conversely the requirements and constraints placed upon the community hospital are made known. Advice

can then be offered formally to management or to the appropriate professional group.

EVALUATION

Evaluation of the community hospital prototype should, if the objectives have been defined correctly, encompass the medical outcome of patient care, patient and staff reaction, something we may call family and community response, and last, but not least the relative costs. It is not possible to deal with each of these at length, rather I should like to indicate the basic approach and comment briefly on the interpretation of the evidence that will ultimately be obtained.

Outcome of care

A principal question in studying the role of the community hospital is the effectiveness of the clinical care provided. In the simplest terms is the outcome of care the same or different from that of the existing alternative? If hospital admission is required for a condition for which the need for specialist care is not immediately apparent then, even so, is it better to be cared for by a specialist in the district hospital or might one fare the same in the community hospital, with its limited range of facilities? At this present time there is no satisfactory answer to these questions. Although recent years have seen an accumulation of reports and data on the use of GP hospital beds or cottage hospitals, all of the data are on a simple descriptive level and none bear directly on the issue of effectiveness of care. Indeed most advocate a continuing role for such units on the implicit assumption that the care provided compared satisfactorily.

The evidence for challenging the assumption of equal effectiveness is quite strong although there is not much of it. Only two relevant studies have compared patient experience in alternative forms of care. Kidd (10) suggested that in routine geriatric and mental hospital practice, patients were often admitted to the wrong unit. Subsequently a reluctance to transfer elderly sick patients resulted in their remaining in an inappropriate place. As the effect of such misplacement had not been investigated, he studied the course and outcome of 100 patients, aged over 60, admitted to both the geriatric unit and the mental hospital serving the city of Belfast. Each patient was assessed for disability

resulting from physical illness and psychiatric illness. Comparisons were made between those correctly placed and those misplaced; that is, those whose principal illness was the one which would have been more appropriately treated in the other hospital. He followed all the patients for a year and his results showed that the misplaced patients in both hospitals had a highly significant excess mortality. Furthermore among the survivors, the misplaced patients were less often discharged than correctly placed patients. He could not account for the observed differences by sex, age, or the seriousness of the illnesses and he concluded that misplacement itself seemed to be directly responsible for the poor outcome of the patients. The mortality of the misplaced patients was increased nearly threefold.

More recently Mather *et al.* (11) compared home and hospital treatment for acute myocardial infarction. Observing that there was little information on the fate of patients treated at home, they conducted a randomized controlled trial. Out of a total of 1,203 episodes of myocardial infarction in men under 70 in 4 centres in the south-west of England, 343 were allocated at random between home care by the family doctor and hospital treatment initially in an intensive care unit. Mortality for those treated at home was 9.8 per cent compared with 14.2 per cent for hospital treatment. The difference is not statistically significant. The group of patients sent electively to hospital contained a higher proportion of initially hypotensive patients whose prognosis was bad wherever treated: those who were not hypotensive fared rather worse in hospital.

These two studies reveal evidence of a difference in the outcome of care in a situation where it had not been obvious and therefore not expected; and conversely in a situation where a difference might have been expected but was not found. They both indicate the importance of patient selection. As Kidd comments before it is possible to improve selection and prevent misplacement, it is necessary to know that it occurs, that it is frequent (over a quarter of patients were misplaced) and that it has such drastic correlates for the patient involved. His study shows clearly how the outcome of care may vary in apparently satisfactory circumstances. The study of Mather *et al.* (11) raises the issue of whether disadvantages may stem from inappropriate hospital admission. This could explain the lack of difference in mortality of the randomly

allocated groups and this suggestion is reinforced by the findings that non-hypotensive patients in hospital fared worse than those treated at home. The question remains whether arrhythmias occurred more frequently in hospital than home; whether the unfamiliar environment of the specialist district hospital created something which had an adverse effect on the outcome of care.

Taken together these studies indicate that medical and nursing expertise and the environment of treatment may both materially influence the outcome. Cochrane (12) in a brief discussion of community hospitals commented that only those patients should be selected for admission for whom hard evidence existed that there was little risk of medical detriment in treating them there as opposed to treating them in a district hospital. To this it is only necessary to add that from the evidence quoted it can be suggested that there might be direct benefit in terms of outcome of care from treatment in the community hospital rather than the district hospital.

INDIVIDUAL STUDIES

The pilot trial community hospital ward (13) provided a great deal of descriptive data on the possible role and functioning of a community hospital. Direct admissions accounted for approximately two-thirds of all admissions, the remaining third being transfers from the district hospital. For patients admitted directly, it was the GP's opinion that between a third and a half would have otherwise had to remain at home: the majority of the remainder would have had to be admitted to the district hospital, and for most of these immediate admission was required. For patients transferred, mostly from surgical departments, nearly all would have otherwise remained longer in the district hospital. These data, therefore, identify patients in three groups of somewhat similar size. A group of patients who were treated in the community hospital ward instead of the district hospital: this group is composed of two sub-groups, early post-operative transfers and direct medical admissions. The third group is made up of patients treated in the community hospital ward in preference to continuing their treatment at home.

Thus it can be argued that the definition of an operational policy for community hospitals requires experimental evidence derived from random allocation studies in which comparable groups are

treated in alternative ways. This evidence must deal with the outcome of care in clinical terms, the efficiency of the process of care, patient, and staff reaction. Three studies are planned or in progress for the three main groups of patients, viz. early post-operative transfers; direct medical admissions and the third group which we call the rehabilitation group.

The object of the study of early post-operative transfers is to compare the care given and the clinical outcome (criteria of outcome include the incidence of complications, the duration of illness and convalescence) in a group of patients undergoing surgical procedures and treated solely in the district hospital, with a group of patients transferred to the community hospital in the early post-operative period. In addition patient satisfaction is measured and the costs of the alternative forms of care determined. The design of the study requires that patients undergoing selected elective and emergency surgical procedures are considered for transfer to the community hospital at a predetermined point in the post-operative period. Patients then meeting certain agreed clinical criteria and for whom no contra-indication to transfer exists, are then transferred or remain in the district hospital according to a random schedule of allocation.

In the second study, medical patients requiring immediate hospital admission are categorized as requiring admission to the district hospital or suitable for admission to the community hospital. Loudon (14) has shown that diagnosis and age are the two principal criteria for this decision. Patients who are suitable for community hospital care and for whom there is no overriding consideration that they should be cared for locally, are then randomly allocated to one or other hospital. The process and outcome of treatment is determined. As increased age significantly determines the decision of suitability for hospital treatment, emphasis in this study is given to measuring the degree of continuing support given to the patient by family, relatives, and other members of the community.

The third study group, who we have called the rehabilitation group, present a difficulty in identification of the correct alternative form of care for comparison. The evidence shows that this group is largely composed of planned admissions for the purpose of intensive rehabilitation. The alternative to their admission is to remain at home and in the absence of anything other than home

nursing, receive no remedial treatment. In-patient versus home treatment would be a rather crude comparison of effectiveness, which if shown favourable to one or other would not allow clear identification of the active therapeutic component. One would be left to unravel a tangled web of effects which would at best only serve to identify elements for further study. Moreover, it can be argued that many of these patients were admitted because adequate day treatment facilities did not exist. With the provision of a day ward, many might not be admitted yet still be able to receive the possible benefits of the therapeutic régime as day-patients, attending if necessary the maximum of five days per week. To identify separately a group of in-patients from a group of day-patients, both undergoing similar treatment programmes with the object of rehabilitation, is artificial. This is particularly so since the day ward is seen as the therapeutic focus for the community hospital, and with this perspective the in-patient beds may be regarded as a supporting facility.

The problem emerges, therefore, as the need for evaluating the day ward component of the community hospital in terms of outcome of treatment and efficiency in use. Although home physiotherapy and occupational therapy services are being developed in some areas, even where available these are considerably restricted. The meaningful comparison is, therefore, between day ward treatment and no treatment. If day ward treatment is shown to be of benefit then further studies may be necessary to compare ward versus home treatment. Whilst a three group comparison may appear to be attractive, the difficulties of organizing a study of more complicated design in a small community mitigate against its success.

The evidence is that there are considerable numbers of impaired and disabled patients in the community who might benefit from intensive or ongoing rehabilitative treatment. The Lambeth Disability Survey showed that some 12 per cent aged 55-74 and 38 per cent aged 75 and over reported disability and were unable to lead an independent existence (15). Similar findings emerged from the *Survey of Handicapped and Impaired in Great Britain* (16). Common causes of disability were stroke disease and arthritis, conditions for which rehabilitation might be most frequently sought. However, in the virtual absence at present of community-based rehabilitation services, the majority of these patients are not

receiving any active treatment. Patients usually remain under informal surveillance by members of the health team, with treatment initiated at time of acute breakdown or crisis. Such treatment may then, of necessity, require admission as an in-patient to the district hospital. It is possible to argue that such an admission for an elderly patient would be extended and an intensive period of rehabilitation would be required with possible resettlement as an outcome.

The question posed, therefore, is whether day ward facilities with remedial treatment services allow a greater number of impaired and disabled patients to be maintained at home in their community. In outline an evaluation requires that suitable patients are allocated at random to treatment or no treatment and the experience of the group determined, using as measures the number of deaths, short- and long-stay hospital admissions, other institutional admissions, the level of dependence and the use of supporting services.

INTERPRETING THE EVIDENCE

So far the discussion has dealt almost exclusively with evaluating the clinical outcome of care in the community hospital. However, there are other considerations of equal or even greater importance when considering community health services. These include the feelings of the patient, his family, and the community, the response of professional staff, and financial costs. Again the order in which they are placed should not suggest a ranking; rather should each be treated as a separate dimension in a multidimensional, multidisciplinary evaluation. As it is not possible to discuss each or any of them usefully within a few lines, these concluding remarks are directed to a brief outline of the problems of interpretation of research findings and their application to decision-making.

Evidence on the effectiveness of care provided by a random allocation study requires cautious interpretation. Should the studies show evidence favouring the district hospital then many would accept that this could be more widely referable; should the results favour the community hospital, would it be possible to replicate the conditions of the study so that the same standards of care could be achieved? The situation under study is not typical by virtue of being in a favoured rural area with highly developed primary and secondary care services. The unit on which the

studies are based is an experimental one with all that this implies in terms of investment of interest and the involvement of staff. The conduct of the unit will be subject to intense formal and informal scrutiny and all of these factors will favour the community hospital in any comparative study. Some part of the answers to this problem may lie in the results obtained. If sizeable differences are shown, if differences appear in the more objective measures including mortality, if there is a coherence to the clinical findings then increased confidence can be placed in them. Such is unlikely, however, and any differences may well be no more than marginal.

The question still remains whether outcome of care in clinical terms outweighs all other considerations. Are patient satisfaction and the feelings of the family to be disregarded if they should show preference in an opposite direction to clinical outcome? The problem is made easier if one difference is large but it becomes more difficult if both are small. And what of cost, should one alternative be preferred even though more expensive? If the community hospital leads to a worse outcome in clinical or other terms, but is cheaper, is the cost saving justified bearing in mind that it may represent potential benefit elsewhere?

No research programme will ever yield a single, clearcut, unambiguous answer to such a complex problem as the evaluation of a policy of health care delivery. To search for such an answer is unrewarding. Rather the task is to create a coherent methodology for evaluation, more extensive than the conventional approach which relies primarily on professional criteria, and to marshal the data to assist the decision-making process. The research process can be more refined if the data required by the decision-maker can be identified and correctly weighted from the outset. This must remain in part an ideal. Furthermore, consequences secondary to the formal aims of the change are sometimes more serious than those intended and cannot justifiably be ignored: in this the research team have a special responsibility.

CONCLUSION

Sanazaro (5) in paraphrasing Whitehead's notion that intellectual progress occurs in three stages, commented:

For the past twenty years, research in health services has excited us with its promises. This epitomizes the 'stage of romance'. However, the task of moving on to the 'stage of precision' remains before us. We may be

able to take this step through a new form of R & D. Designed to produce working prototypes of health services, components and systems, it can supply the rationality for planning and decision making. Whitehead's third stage, generalisation is intrinsic to the design of health services R & D.

Fundamental to our achievement of stage 3 is a better understanding of the time-scale and processes of development of social policy in health care, together with a knowledge of the evidence required.

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REFERENCES

1. MINISTRY OF HEALTH (1962). *Hospital Plan for England and Wales*, Cmnd. 1604 (London: HMSO).
2. CENTRAL HEALTH SERVICES COUNCIL (1969). *The Functions of the District General Hospital* (Bonham Carter Report) (London: HMSO).
3. MEDICAL SERVICES REVIEW COMMITTEE (1962). *A Review of the Medical Services in Great Britain* (Porritt Report) (London: HMSO).
4. MINISTRY OF HEALTH (1963). *Health and Welfare. The Development of Community Care*, Cmnd. 1973 (London: HMSO).
5. SANAZARO, P. J. (1971). 'Historical discontinuity, hospitals and health services', in McLachlan, G., and McKeown, T. (eds), *Medical History and Medical Care* (Oxford University Press for the Nuffield Provincial Hospitals Trust).
6. BENNETT, A. E., and KIRK, C. (1973). *Day Care in the Community Hospital* (Oxford Regional Hospital Board).
7. ARSCHAVIR, A. L., and SLIWA, J. A. (1971). *Oxford Method* (Oxford Regional Hospital Board).
8. LEE-JONES, M. (1974). 'Communications', in Bennett, A. E. (ed.), *Community Hospitals: Progress in Development and Evaluation* (Oxford Regional Hospital Board).
9. OXFORD REGIONAL HOSPITAL BOARD (1973). *The Pattern of Medical Working in the Community Hospital*.
10. KIDD, C. B. (1962). 'Misplacement of the elderly in hospital', *Br. med. J.* 2, 1491.

11. MATHER, H. G., PEARSON, N. G., READ, K. L. Q., SHAW, D. B., STEED, G. R., THORNE, M. G., JONES, S., GUERRIER, C. J., ERAUT, C. D., MCHUGH, P. M., CHOWDHURY, N. R., JAFERY, M. H., and WALLACE, T. J. (1971). 'Acute myocardial infarction: home and hospital treatment', *ibid.* 3, 334.
12. COCHRANE, A. L. (1972). *Effectiveness and Efficiency*. Rock Carling Monograph (London: Nuffield Provincial Hospitals Trust).
13. ODDIE, J. A., HASLER, J. C., VINE, S. M., and BENNETT, A. E. (1971). 'The community hospital—a pilot trial', *Lancet*, ii, 308.
14. LOUDON, I. S. L. (1973). 'General practitioner hospitals and the relationship of general practice to hospital medicine' (Oxford: DM Thesis).
15. BENNETT, A. E., GARRAD, J., and HALIL, T. (1970). 'Chronic disease and disability in the community: a prevalence study', *Br. med. J.* 3, 762.
16. HARRIS, A. I. (1971). *Handicapped and Impaired in Great Britain* (London: HMSO).

Comment

ORIOLE GOLDSMITH

In his paper, Dr Bennett has raised a number of important points about model systems and evaluative research from the standpoint of an epidemiologist on which I am not really competent to comment. Nor would I want to blur their impact by attempting to do so, since Dr Bennett has made these points clearly and others can take them up better than I in the general discussion.

I therefore propose to discuss some of the problems in successfully responding to, and applying the results of the kind of evaluative research in which both Dr Bennett and Dr Kushlick are involved, from my particular standpoint as an administrator at the operational level of the NHS.

The first problem I want to highlight is the problem of setting research objectives, since if the original objectives are not clear and if they have not been explicitly agreed between the research workers and those commissioning the research, there may be very different expectations of the results of the research. At the time the Oxford project was set up there was no national policy on the community hospital. Therefore the research team had first to arrive at their own definition of a community hospital and to decide by what criteria its development should be evaluated. Subsequently, a national policy on the development of community hospitals was formulated which, although it clearly borrowed from the earlier thinking in Oxford, did not arise directly from it, nor is the Oxford programme designed to evaluate the implementation of the present national policy. Any coincidence between the two is largely fortuitous. One of the potential dangers in such a situation is that the research evaluation is geared to needs and objectives as defined by the research worker and not necessarily as seen by those responsible for formulating policy.

This danger is likely to occur frequently, since more often than not it is the research worker who undertakes the rigorous analysis of a problem which is needed before objectives can be clearly defined and targets for evaluation set. On the face of it this reflects badly on administrators, and a number of speakers commented on this point. Dr Bennett himself commented that the research process could be more refined if the data required by the decision-maker could be identified from the start. Others pointed out that if only

the decision-makers could formulate their needs sufficiently clearly and sufficiently far in advance, the research capability probably already exists to meet these needs. The problem lies in the inability of administrators to state their requirements clearly.

The explanation, of course, lies in the intrinsic difficulty of defining objectives, and there is no escaping this. However thorough their training, and however clearly the problem is recognized by administrators, it is still not easy to anticipate the issues which will be critical in five to ten years' time, never mind assessing accurately the time-scale within which decisions will need to be taken. Organizational theorists have introduced the concept of the 'process consultant', the man skilled in organizational analysis, to whom you turn when you know that you have a problem, but do not know its cause, and who uses his analytical skills to help define more precisely the nature of the problem and therefore how it might be tackled.

Borrowing from this concept, the administrator clearly needs help in anticipating those decisions which can only be properly informed if the need for research is recognized in sufficient time. The 'consultant' in this case will be the epidemiologist or other research scientist, who must be prepared to accept this consultancy role.

Another problem, which has not yet arisen in the Oxford or Wessex projects, but is a fruitful source of misunderstanding unless objectives are clearly stated and agreed, occurs when local studies are set up in order to throw light on national policy issues. Professor Holland suggests that one of the distinctions between the epidemiologist and the operational research scientist is that the epidemiologist is more concerned with solving problems on the national and international scale rather than finding solutions to particular problems in their operational setting. Yet so much of the epidemiologist's work, because of the data he requires, involves looking at small populations in depth in a particular location. Where the objective is to define needs in order to determine better service solutions for meeting them, the expectation can too easily be created that those who have subjected themselves to the research are thereby 'entitled' to receive the benefit of the improved service, which normally means the resources to put it into operation. Frequently this was never the intention and may well be difficult to justify in terms of over-all national priorities. In my view it is vitally important to avoid such misunderstandings if an effective relationship is to be established between health service research units and the NHS, and the only way they can be avoided lies in the clear definition and agreement of objectives and the regular review of these as the research proceeds.

Similar misunderstandings tend to arise where it is not clear whether a service development has been introduced because it is generally accepted to be the right way to develop, where the com-

mitment is therefore open-ended, or whether it has been introduced experimentally in order to evaluate its effectiveness, in which case its continuation remains to be decided in the light of the evaluation. Professor Knox points out that the situation is compounded by the fact that, too often, developments are started because they are believed generally to be a good thing, and recognition of the need to evaluate the extent to which they have lived up to these beliefs is introduced at a later stage.

A further problem arises in determining whether the results of any service evaluation of this kind are of general application. In this case the too high expectation tends to rest with those responsible for formulating national policy, who may not recognize that results cannot necessarily be translated from one setting to another without the sort of careful experimental work to which reference has already been made in this symposium. Research workers have themselves been slow to make and perhaps even to recognize this point, perhaps because its research implications are not attractive to them.

So far the work in Oxford and Wessex has avoided the worst of these pitfalls. Apart from the qualities of the project directors and their teams, this is probably accounted for in large measure by the relationship between the projects and the regional authorities sponsoring them. In each case the issues were ones which the regional authorities were committed to tackling; the research directors have worked closely with the planners throughout the course of the research, and have agreed and reviewed objectives as they have gone along and, in the case of Wessex, plans based on the initial research findings have been implemented, and are now themselves being evaluated.

Recognition of the importance of this sort of working relationship is reflected in the present evolution of research liaison groups within the DHSS (see Dr Beddard's paper, p. 11). In my view, however, it is not adequate only to foster this relationship between central government and the research community. The same relationship must also exist at the operational level of the service, not only because much of the initiative and many of the ideas for research and development originate from within the NHS but, most important of all, because a successful R & D programme is largely dependent on the responsiveness of the NHS and the understanding of the people working at the operational level of the service for the implementation of its results. There therefore needs to be a continuing three-way dialogue between the DHSS, the NHS, and the research community, and this needs to be carried on at regional or area level. Whether the most appropriate focus for such an activity in the reorganized service will prove to be the university-based health service research centres, regional research and intelligence units, or even similar units in the larger area authorities, remains to be seen. What is important is that the need to

foster this relationship is recognized. As the Wessex and Oxford experience suggests, the likelihood of research results being produced in a form and at a time when they can actually influence policy and inform plans is enormously enhanced where this close working relationship exists.

It must however, be recognized that there are dangers in this relationship between the administrator and the research worker, particularly for the latter. Perhaps the biggest risk the research worker runs is of too great a commitment to a particular policy or line of development suggested by his research. Not infrequently the research programme may itself have been triggered by the belief that there were good grounds for challenging the conventional wisdom or present policy, and this belief may well provide the motive force behind a research team and have much to do with its ability to push difficult work through to a conclusion. This is good. But where the relationship may go sour is at the point where the decisions the research is designed to inform have to be taken. Decision-making is not a precise art. In the public sector neither the timing of decisions nor all the factors which have to be taken into account (political, social, economic) are within the control of the administrator. Nor can decision-making ever be a wholly rational process, certainly not within a democratic system. The research worker is therefore at risk of constant frustration because decisions are taken without waiting for the results of research specifically set up to throw light on the question at issue, or worse, that the decision appears to ignore or actually deny objective facts corroborated by careful research. There is no easy way out of this dilemma, but it must be understood and tolerated by research workers interested in undertaking 'service' research and influencing the world in which they live. The converse problem for the administrator is to know when research results are 'proven'. Not only is there the problem of whether results obtained in one situation can be applied in another, but also how does the administrator recognize when attacks on the methodology or interpretation of research findings is no more than scientific in-fighting and when real doubts are being cast on the accuracy of results?

Perhaps the research worker is most at risk, however, to the vagaries of political change. A sudden change in policy may be tantamount to a unilateral change in the objectives of a research programme. A research worker may then have to decide between acknowledging his commitment to a particular line of development, at the risk of having the integrity and impartiality of his research called in question, or of retiring to a safer but less effective academic stance.

This dilemma cannot be avoided in mounting successful interdisciplinary health service research. What we must therefore strive to find or develop are the research workers prepared to work in this way and to take these risks, and the patterns of working which minimize them.

V

ARABESQUE



Epilogue

J. J. A. REID

The symposium began by looking at change and, first of all, it considered change in research. It heard about the blossoming of the health service research programme sponsored by the DHSS under the able direction of Dr R. H. L. Cohen who was in due course translated to become the first incumbent of the office of Chief Scientist, the post which Sir Douglas Black now occupies. Many of the early developments in that research were essentially opportunistic, but as Dr Cohen has pointed out, a strategy steadily emerged and, in a helpful early intervention, he described that strategy. This involved both the selection of priorities for research and, equally important, the support of individuals and the building up of units to undertake that work, and some of those who have spoken have demonstrated the good selection which has taken place. One particularly welcome point which came from the floor from the director of such a unit was the fact that the DHSS is entitled to credit for the freedom which it has given to individuals and units which it sponsors, and those working in the DHSS are most anxious that this should continue.

The second change is the reorganization of the NHS, which is going to allow, for the first time, a synoptic view of health services at each administrative level. In other words, it will in future be possible to look at needs, whatever they may be; to look at resources; and from there to try to move on to arrive at rational priorities and take logical decisions. A lot of discussion in the symposium has centred round the extent to which it will in fact be possible to arrive at such priorities and decisions.

The two changes, involving respectively DHSS-financed research and the administrative reorganization of the NHS, are closely interrelated and should provide increasing opportunities for doing things for the right reasons. Both changes have stressed the importance of interdisciplinary working, and that is a theme

which has come up repeatedly throughout the symposium. On the other hand, the organization both of research and of the NHS suffer from having extremely complex structures, and it will be important not to become too obsessed by these. There is need obviously for a framework, but this should be regarded more as a set of guidelines than as something laid down in tablets of stone. In fact, looking at them both is reminiscent of the tale of the person who, on being shown a magnificent Persian carpet, remarked: 'Well, I certainly like the pattern, but the question is—will it fly?'

One factor involved in the NHS change is unfortunate, and that is that it is taking place at a very difficult time economically. On the other hand, a small grain of comfort can be derived from that fact in so far as it may encourage health service authorities and their officers to look critically at what they have and at what use they are making of their present resources. The chances of being able to blossom forth into major new ventures look rather bleak for some time to come; so there may be at least some virtue in necessity.

A substantial part of the early proceedings of the symposium were devoted to a discussion of certain of the disciplines and techniques of research, in particular the epidemiological approach and operational research, ably propounded by Professor Holland and Mr McDonald respectively. There was a splendid discussion both on the platform and amongst the participants as a result of which it became possible to define common ground between these two techniques of health service research. Consideration was next given to aspects of information and intelligence systems, and again this subject was well aired. Here there are national political constraints, to which Mr Rudoe referred. These will no doubt be resolved in due course but one must never risk getting into a position where a decision is taken for the wrong reasons, and this is one of the reasons why it has been tackled cautiously.

It was generally agreed that there is no lack of sources of information available to those engaged in health service planning and administration. There is scope for refinement of some of these but the great need which was identified was for better interpretation of the mass of figures which already exists. This process will have to be concentrated predominantly at national, and increasingly at regional levels, irrespective of where the information is used. The number of people capable of interpreting much of the material

concerned is limited, and for that reason there will have to be similar geographical limitations on where they are situated, although the figures which they interpret will be put to use at area and district levels. On the medical side, as the competence of community physicians develops, it is to be hoped there will be more and more to show for the figures which we so assiduously gather.

Dr Lane put the case for a 'big telescope' but the meeting felt that, in the present context, what was needed was a pair of bifocal spectacles with which to study material which was already at hand. That, in fact, was the main conclusion about information systems, although there are some areas where more figures are required nationally. Mr Rudoe mentioned a very important one, namely that of manpower, including not merely the statistics of manpower but figures relating to its use. Speaking more generally, most national figures have a major use in pointing towards the need for local, more detailed studies, and such studies are probably the best means of increasing knowledge, using national figures as starting points, or indicators.

Mr Brandes has spoken about policy formulation and, in that connection, I must confess to being on the naïve side. When I was a student and also when I moved into the administrative side of medicine I suffered from the delusion that, at the next level above my own, everything was decided for pure and logical reasons. Unfortunately I fear I have been steadily disillusioned throughout my career. Policies are arrived at as the result of a mixture of rational reasons, expediency, and personality, be it the personality of a member of a health authority or of a professional or other officer. In the NHS this has been complicated by the fact that the main democratic input has hitherto been at parliamentary level, with the exception of the comparatively small, but not un-influential, local authority health services. Dr Acheson identified an interesting point when he asked how the change in the health service and the growth of consumerism, with the development of community health councils, will affect matters. There was divided opinion about whether research workers, and particularly epidemiologists, should be involved in the determination of policy and in the taking of decisions.

Professor Holland provided a useful subdivision when he suggested that the evaluation of a single service was an appropriate

task for epidemiologists, but when it came to deciding between the claims of two competing services, epidemiologists could measure the effectiveness of each but were no more fit to judge between them than any other members of the team. It might, of course, equally well be contended that they were no less fit either. On balance, there is much to be said for the planning, implementation, and running of services to be the responsibility of one team, and for evaluation to be separate; although there are areas of rather ill-defined territory on looking at questions which come to mind from Dr Kushlick's paper on the continuing evaluation of what happens. It should also be borne in mind that monitoring is going to be a major feature of the reorganized NHS. It may thus prove difficult to maintain separation between planning and running on the one hand and evaluation on the other.

As regards the new NHS planning structure which will soon be coming into operation, Mr Orme made a good point when he said that what is going to happen on 1 April is, in many ways, a rationalization of what has been happening for some considerable time. The success or failure of the planning cycle will depend on how sensitive it is to the periphery, and on its not becoming overloaded with detail. These dangers are well realized within the DHSS, but nevertheless it is going to be difficult to ensure that the results of research adequately affect policymaking. Sir John Brotherston referred to this point when he said that he thought there was need for much more study of the structural inter-relationships between the two processes, a point of view with which there was general agreement.

Under this topic of planning reference might be made to the question of public and professional attitudes. More understanding of the aims, problems, and structure of the NHS on the part of the public is essential in order to develop appropriate health services, and the coming of community health councils is one of the most interesting developments in reorganization. Studying their evolution and methods of working will be a fascinating exercise. There will also be scope for studying how the members of the new health authorities set about their tasks. It is improbable that many of them will know all about their new duties and one of the first tasks will be for the professionals to help members of these authorities to understand what health services, taken in the broadest sense, are about. In such a process, however, it would be

important to try to recognize the difference between education and indoctrination. What the public expect of health services and what the professional thinks they expect of him are sometimes two very different things. We have been guilty, as professionals, of failing to take the public adequately into our confidence and we are too ready to blame them for ignorance when we have made no attempt to enlighten them.

There is also scope for study of professional attitudes, and there is some ground for optimism about changing these. The new health service is going to come to a focus in the district and, within such a district, one can usually find some like-minded colleagues on the medical side and amongst other professionals in the health service and can thus initiate something at local level which, if it is shown to work, will soon spread. This was one of the great joys of life in being a county medical officer of health, as one could initiate a venture in one particular place and, if it proved successful, one would in due course find health service colleagues queuing up to participate in other parts of the county.

As far as research in the various tiers of the new health service is concerned, it is to be hoped that there will be an input at every level from the district to the area, the region, and the centre; and the periphery must not consider research to be something remote and not for them. There will continue to be what has hitherto been called the locally organized clinical research scheme and Dr Joan Faulkner has been working on a review of this with a committee under the chairmanship of Sir Douglas Black. The scheme is simply a means whereby central funds are provided to encourage research at local level, and with no strings attached. Whilst it is less likely to be used for epidemiological and health service research than for particular pieces of clinical research, it is available for both.

Secondly, it is to be hoped that regional and area authorities will, as a matter of principle, identify funds in their budgets for research. There are also endowment funds, some of which it is to be hoped will be put to the same use.

Thirdly the various peripheral authorities may be able to obtain research funds from the DHSS for appropriate projects. As part of the over-all scheme of peripheral research, as Professor Pemberton pointed out, it will also be necessary to work out mutually advantageous relationships between research carried out in areas and

regions on the one hand and academic units of social and community medicine on the other.

In all this the DHSS will have a variety of roles, probably the most important of which will be as a catalyst. It must seek to encourage local initiatives for, if the new health service does not encourage these it will fail, and one of my worries about the new health service, and I speak with all the prejudice of my own professional background, is that it is a totally centrally financed organization, whereas in the public health field from which I came there was a substantial input of local finance that clearly gave a degree of flexibility in policy which it would be a pity to see lost in the new health service. On the research front it is to be hoped that peripheral studies will be encouraged at every opportunity.

The central Department will need to know what is going on in health service research so that no matter who may initiate it, unnecessary duplication is avoided. In the case of certain of the issues discussed in the symposium it would be possible to say 'This is a matter which should be researched locally' or 'This should be researched nationally' but, as always, there are grey areas in between, and this is another subject to which the DHSS is giving attention. Dr Meade mentioned the potential role of the DHSS in co-ordinating certain aspects of health services research, much in the same way as clinical multicentre trials have been co-ordinated by the MRC. Consideration should also be given to the relationship between units supported by central research funds and the NHS at area or regional level; here, links would be particularly valuable on the staffing side.

Throughout all this there must be a continuing close relationship between the DHSS and those carrying out research in the field, so that they can keep in touch with each other's thinking. This interrelationship between the central Department and the periphery, with interchange going on all the time, both of thoughts and of people, is going to be of great importance for the future.

The final general theme to which reference should be made concerns certain of those who work within or parallel with the health service. Members of the symposium have discussed the consequences of trying to pursue careers wholly or partially in research for those in a wide variety of different professions. I should like to look at research workers, at academics, and at com-

munity physicians, and I hope the medical chauvinism may be excused, as community medicine is a fascinating emerging speciality, and one which is very closely connected with the re-organization of the NHS, which provides great opportunities for doctors interested in the organization of health care to make an important contribution. In fact, that particular branch of the medical profession probably has the greatest chance it has ever had. To begin with, the service will have to use those coming from a background either of the former local authority public health service or of medical administration with one of the former regional hospital boards, and I think all of us (as I, too, am in a branch of community medicine) are acutely aware of our lack of over-all experience. There is also the problem that, on present evidence, there is certainly not a super-abundance of candidates of suitable calibre for the available posts. Inevitably, with community physicians, as with others entering the new health service, professionally there will be variable standards. My hope is that at district, at area, and at region, we will have some which will develop rapidly and well so that if elsewhere the flame may flicker a little, ultimately it can be rekindled from these sources.

Those coming into community medicine will have, in many cases, considerable epidemiological experience, and for the future one is even more hopeful in so far as epidemiology is the core subject of community medicine, and recruits will be much better trained than the people of my generation or even the generation after it. Some, I hope, will also have honorary posts in academic departments of social or community medicine.

Turning to such departments, it is unnecessary to go into the history of what happened a quarter of a century ago when social medicine and applied public health went, in many ways, along separate paths. There were reasons for this and they were entirely understandable at the time; but I agree with the Todd Report which considered that what had happened had proved, on the whole, to be detrimental to both sides. I remember from my own experience, when I was originally in the field of public health that there were topics I wanted to look at and with which I wanted help; and I could not find an academic department which could supply this. I had the tables turned when I worked in an academic department and wanted to carry out research, as I could not find an authority willing to have someone from outside come

in and, by implication, look critically at what they were doing. Fortunately, all this has changed in recent years.

Reference was made to discussions which have taken place between various of my colleagues and the heads of departments of social and community medicine in the UK. I should say that the central Department entered into these discussions, firstly, because there are certain national implications, but secondly because the new field authorities at regional and area level were not at that stage ready to play a part in the discussions, though one hopes that they will soon be included in them. So far, these discussions have been most encouraging because the academic departments feel that they want to be involved in service roles. They will have the prime task, which must continue, of training undergraduate and postgraduate students, but they are also becoming more involved on the service side, and particularly with its information and intelligence aspects. At Southampton and Aberdeen, to give only two examples, there is already substantial involvement of this kind. A lot remains to be worked out here, but I think that ultimately what we are trying to do will be beneficial to both and will be particularly helpful to health service research. I hope that past problems about remuneration, merit awards, and similar matters will soon be resolved and will lead to much greater flexibility between the service and the academic sides of community medicine.

Careers in community medicine and in health service research overlap both in the skills required and in the work which they do. It is to be hoped that an increasing number of those who choose community medicine as their career will spend part of it in research, either full-time or part-time and, if full-time, with the ability to switch freely between the academic component of research and the service side.

I was startled, as I think most people were, by the suggestion that health service research was dull. The nuts and bolts of any bit of research can be dull at times, but as was pointed out, if there is a clear objective in sight the pursuit of it is invariably exciting. If the study is carried out in conjunction with clinical colleagues, as it commonly will be, the interplay between the researcher and the clinician is quite fascinating and the researcher can derive great satisfaction when he perceives that the clinician is coming to realize the relevance of the findings of research to the care of individual patients or groups of patients.

I hope that, as community medicine in the field develops, it will be closely linked with the academic side, and that there will be frequent coming and going between these two complementary aspects; and also that the NHS and the DHSS will not regard themselves as being two separate entities as here again there is wide scope for interchange at appropriate stages in a career in community medicine. My final thought is that one of the most important developments for the near future is a closer and closer relationship between these various components of community medicine on the teaching and academic side, the research side, and the service side, because this will help to rid us of the last vestiges of the 'Us' and 'Them' attitude to which reference has been made in the symposium and from which we have suffered too long.

I have tried to describe some of the questions which have come up in the last two days. The discussions have been useful, and we have agreed on many matters, but we have also identified a whole series of areas of doubt or of structural or functional weakness in relation to health service research. Having identified them, there remains the much more difficult task of trying to do something about them; and these could be subjects for a series of further symposia.

We have been fortunate in having our international visitors with us. As we develop our research, and particularly as we evolve our new health service, people coming from other places to look critically at us are going to be very important. It has also been interesting to note how relevant the lessons which we have derived from other countries can be, even when these countries have been very disparate in nature from each other and also from the situation which applies here.

I hope we can have more symposia like this, as the new health service struggles past its teething stage into what will, I hope, prove to be a healthy childhood.

VI

GRAND DIVERTISSEMENT



The synoptic variations

GORDON McLACHLAN

Prelude

The pages which follow are a précis of the principal issues discussed and (to avoid undue repetition) with minor rearrangements, record in sequence the broad lines of discussion in each of the three main sessions. It is the final section of the grouping formed by the *Foreword* by Sir Douglas Black, the Chief Scientist, the *Papers* presented by the main authors and the opening discussions in each of the sessions, and the brilliant summing-up at the end of the final session, by Dr J. J. A. Reid. The whole is set in balletic terminology because in thinking about the meeting and the current place of health services research in relation to the problems of health services, the picture as presented by the collection summoned up certain characteristics and movements of the ballet.

Thus, it would be realistic to recognize that the effect of the variety of activities which are characterized generally in health services research is not likely to be more than marginal in any brief period of time, although the total effect of on-going research in improving the quality of life and service may be more significant than is first evident. Again, even in a time of straitened circumstances, it is unthinkable that there should be no research activity related to medical care based on the judicious application and mixing of OR and epidemiological techniques, just as a world without the art of dance is unthinkable. Since the vocation of those in health services practice must be based on a general optimism about the future, the search for improvement in technique, style, and effect is inevitable. With such a hypothesis, there is a constant challenge to fit the techniques into a whole and to develop the aesthetics of structure and process and make them not only effective but also to bring out that extra dimension to service which contributes to a better therapeutic atmosphere and which

is also satisfying to the public who fervently desire complete rapport with those engaged in the healing art.

This does not mean that at the moment it can be claimed we have arrived at an Augustan age in health services research. The applications of scientific discipline need tightening, and the art of putting together the complexities of modern medicine it must be admitted, is only at an early stage of development; but just as the Royal Ballet or any other great contemporary ensemble did not reach its present high stage of development overnight, the company of researchers is an instrument of potential power which has to be forged and tempered over many years and whose credibility and effect depend on acceptable concepts and strong commitments.

As a reading of the succeeding pages will show, the discussions of the meeting ranged far and wide over most of those issues which at this moment of time concern researchers as well as administrators, and the meeting marked a further step in the development of better communication between these professional groups. At the same time, the main issues in health services research stand out starkly. There is a great deal to be said for developing a comprehensive concept of the major determinants of health and how health can be improved as a result of controlling and sometimes perhaps manipulating them; for the development of basic structural elements such as an effective information system; for an improvement in the functioning between the centre and periphery; for interlocking intelligence systems operating effectively at all main levels; and for sufficient leeway in finance for experimental systems to be built and observed. Since many of these issues are universal problems, and exist irrespective of the form of service which exists in particular countries, the lessons will be equally applicable abroad.

The visible results of research may at times seem marginal against the scale of on-going service effort in the NHS; but the long-term improvement of the service depends largely on the degree to which it is infused with the spirit of research, as well as on the specific innovations which stem directly from particular research findings. In this way, health services research can give that extra dimension and new hope to the NHS which is so necessary to its life and growth in these troubled and threatening times.

Identification of research priorities

The first paper in this session was largely concerned with the mechanism for arriving at the identification of priorities, and only broadly with identification of certain areas of interest. At the present stage of experience, both of the working of the new organization and in relation to the reformed NHS, it must be recognized that it is almost impossible to gauge the effectiveness of the new organization for research recently created.

The second paper was concerned specifically with the matter of identification and although it recounted the personal views of a distinguished researcher in a highly specialized field about matters that appealed to him as needing attention, it also notably included some observations about strategy which are of universal application.

The discussion of both papers covered a wide sweep of the major issues which arise out of the structure and function of the organization brought into being 'post-Rothschild', for 'research and development' concerned with improving the wide sweep of loosely connected services designed to meet the health needs of the people and embraced in the NHS.

THE BURGEONING OF RESEARCH POLICY

It was difficult at the present time other than to sketch the major elements of the several policies which have governed the development of health services research in the DHSS. Above all it must be recognized that it is a relatively new activity of the DHSS and one which has been marked by rapid growth in a limited period (1).

It was perhaps a little harsh to suggest there had been little in the way of rational strategy behind the research of the DHSS as its programme had been built up. It may not have been rational hitherto in its direct gearing to service problems, but there had been a strategy, albeit subject to a piecemeal build-up. The fragmentation of responsibility for research within the DHSS hitherto which was a matter for frequent comment had derived from the way it was organized and administered which had inevitably reflected the various service interests, which being subjected to day-to-day operational demands, could not severally wait on the general acceptance of a comprehensive policy. This was one

reason why computer research had grown up separately from research more directly concerned with the health care of patients. In contrast to the capital development which was a feature of the computer program, very little capital resources were involved in the other specially identified parts of the research programme. In order to get the real perspective of the balance of human resources utilized in the research programme it is essential to distinguish revenue expenditure from capital.

It is certainly true that some part of the programme had been in response to the pressure of events, and also to take advantage of the opportunity of following up suggestions that came from accredited research workers; but over-all, such actions had been taken within the general outline of a procedural plan.

It is after all part of a long and honourable tradition that the research worker has a part in the development of a general strategy for research as well as the body providing funds. It was felt that the quality of the actual work done would determine the quality of the relationship to be forged between those responsible for services and the researchers themselves. A high quality of research would be likely to lead to confidence in the results of research and to their use to help the planning and operation of health services.

The priorities fixed upon depended on a mixture of philosophy about medical care generally and a consideration of the effectiveness of current services in relation to need. The first priority therefore had been an accent on preventive medicine, particularly the early detection of diseases. The next priority was to study utilization in relation to need and demand. This was part of a general study of the balance of hospital (ie residential) as against community (ie non-residential) care, to explore whether the balance should be changed. The fact that the DHSS was engaged to build as an experiment two 'best buy' hospitals gave this aspect a special dimension.

'Quality of care' was another obvious interest arising from the work of Professor J. N. Morris instituted under the Medical Research Council, into the different outcomes of care in teaching and district hospitals. The work of Professor Whitehead in quality control of laboratory work was another aspect of the study of 'process' in the quality of care.

Nor could public attitudes be forgotten. Special attention was given to neglected areas of service which were becoming matters

of public concern and debate. 'Client' interests in the sector under the 'Rothschild' definition, were concerned with 'maintenance' medicine, such as mental health, physical handicap, and services for the elderly. Others were neglected topics of quite another kind: rehabilitation, dental health, nutrition of vulnerable groups. In both these areas priority was given to projects in which the social service aspects would be studied as well as the medical aspects.

The position of professional groups fundamental to the provision of services had been the subject of attention. Fifty per cent of practising doctors currently go into general practice. Accordingly, since it is estimated there is a shortage of doctors, the content of GP work, how it is organized and how GPs should be educated in order to perform what it is thought their functions should be were subjects taken for study. Similarly, research on nursing and the nursing profession was encouraged. Other professional and technical groups given special attention were those concerned with medical technology, including equipment research and laboratory automation, record and information systems, and also management.

There is a different category of approval which while not actually research in itself has very much to be a part of strategic thinking about research. This is the logistical exercise of attempting to build up and define more clearly the technical skills needed for research and development and how they can best be utilized. This led directly to the policy to encourage the formation of units in epidemiology, and the encouragement of research in the social sciences, including economics and operational research.

It could not be denied that possibly not enough attention had hitherto been paid to developing a career structure for research staff. Of course in a period of such rapid growth as had taken place, it was not easy to discern the right form that such a structure should take. Indeed it is only now that the needs arising from the development in research and its place in the operational context were being exposed.

It was, however, recognized that there would have to be some consideration at departmental level of a career structure especially now that the selection of research priorities was to be closely geared into the service system. Research policy was likely to be shaped to become an integral part of the departmental planning

process being developed, and interacting with it. The intention is that much of the research should derive its base from departmental needs for information in health care, and that the results should ultimately be applied. This does not mean to imply that research activity should merely be considered as the handmaid of policy-making for there is clearly a place for research apart from that.

At the same time, it is recognized there is need for increasing dialogue between researchers and the DHSS. One or two seminars (2, 3) have already been held in which one research unit or a linked set of units have been brought face to face with those in the DHSS interested in that particular theme as an issue of policy. Interesting exchanges have been begun in this way as a result of both sides seeing each other's point of view and learning from each other.

THE DEPARTMENTAL STRATEGY ON INFORMATION COLLECTION

The general strategy

This led directly to some discussion on the development of information and statistical services in relation to the over-all health services strategy of the DHSS.

The form of the information system and the quality of statistics produced will largely determine the capacity for decision-making on the one hand for defining the kinds of health service problem requiring investigation, and on the other for providing some of the information required by investigators.

A good start had been made with a number of outstanding lines of information all of which will be developed. This in the long run will help to define the problems for research and also for informing the research community with respect to what might be done.

Thus, a virtually 100 per cent Hospital Activity Analysis has been developed which gives the same sort of information as the former *Hospital In-Patient Enquiry*, but for individual hospitals so that consultants can compare their own performance with others in the same hospital as well as regionally and nationally in terms of length of stay, time for referral, etc.

There is a detailed *Morbidity Survey in General Practice* the results of which are now published. It is also proposed to abstract information about sickness and utilization of the services from the General Household Survey carried out by the Social Survey

Division of the Office of Population Census Surveys which covers other areas like employment, income, housing, etc. Health information will thus be linked to other important factors. It will not however be in the same degree of detail as a specific sickness survey. There are not yet plans to follow up the survey as with the American equivalent, by medical examination of selected samples from the population covered.

Eventually it is felt there will be the means for a better conceptualization of over-all objectives; but this is a complex task and the difficulties involved in determining priorities should not be underestimated, for varied accents mean different stresses. Thus if the major objective is to diminish death rates, then there will have to be more concentration on research on cardiovascular disease and cancer. If the main thrust is to try and diminish admissions, gastro-intestinal disorders should be concentrated on: if the objective is left vague, for example, to diminish suffering, rheumatics might well seem to be the main target. Political sophistication had not, however, become so acute that general objectives of this character were being actively explored.

The system producing statistics is in process of being linked to the planning processes. It is hoped that the working of the planning process and the observations that will come forward from the several divisions of the DHSS will pinpoint the areas where the quality of statistics is deficient.

There is a good deal of work being done on manpower statistics. While this does not constitute research itself, a comprehensive picture of health service manpower is being built up of the most important human elements of the service: doctors, nurses, and all kinds of ancillary staff. There is not enough known, and therefore no full understanding of the recruitment and wastage patterns in staff, or the complete picture of career or even age structures. While this activity may seem no part of health services research, it is illustrative of the need to develop better information than exists at present about issues fundamental to health services. If the provision of health service manpower is not planned, the health service will be in a very difficult position. Too little has been done to link the information, statistical and otherwise, about health service activities with health service manpower in order to get a clearer picture of how manpower is being used and whether it is being used effectively.

Finally, the publication *Hospital Abstracts* published by the Ministry represents one of the outstanding reviews of the current world-wide literature on health services. It is capable of being extended to form an outstanding basis of knowledge about health services as a whole.

Government policy

The thinking of central Government about collection and use of facts is crucial. The Conservative administration set up the Younger Committee to look into the question of privacy in the private sector. There was some criticism of its limitations and a suggestion that an investigation should be held in the public sector. An internal committee was accordingly set up to look at that also. The assumption was that a report would be published eventually to set out the thinking of both these committees. Indeed it was thought at one time a White Paper might be published on the subject by the end of 1973, and a number of public references had been made about it.

An intention of the DHSS was to put some mention of record linkage into that particular document to bring the subject out into the open because it is one which should be discussed. All the worries about privacy which undoubtedly arise when there is talk about building up a comprehensive information system would thus be aired and the extent of public support gauged. The extent of the opposition at present is impossible to judge but a number of hospitals have already cavilled at giving the DHSS identifiable data. (In the hospital memorandum which was circulated giving a general blessing to the system of Hospital Activity Analysis, provision was made for the inclusion of identification data against the possibility that there might conceivably be a more comprehensive linkage record system in the future.)

A major policy question relevant to a detailed information system is the question of master registers. This was raised in a report of a working party on collaboration. The idea was to bring together all the contacts or an individual with the various public services including the hospital and community services. The setting up of any such system will of course depend on whether the problem of possible breaches of privacy can be solved.

There is also the question of the cost of information systems. They undoubtedly will be expensive and the benefits will have to be assessed in relation to the cost.

Philosophical questions also obtrude into policy about information to be collected. Thus, some doubts are expressed whether epidemiological research on certain diseases should be undertaken because there are no viable treatments for them. The contrary argument is that unless research on such diseases is begun now, there may not be relevant information by the time a satisfactory treatment is discovered. A chain of policy questions materializes.

In general is it feasible for there to be no action until the time the administrators ask for answers to specific questions?

This poses a really difficult question concerning priorities in research. Does research have to wait on certainties of application? This question raises the principles on which research funds should be allocated. The general management theory is that the resources should be allocated in such a way as to maximize output. To maximize research in output terms it means that the problem chosen is seen as one in which a possible answer and its application is seen: rather similar to the 'Dainton' type of 'tactical' research. But the health service output cannot be measured in any accurate way. There is no immediate clue available to the best way of spending money on it.

The one certain thing is that the pattern of spending cannot be changed very quickly.

Finally, in relation to current thinking about the use of information, there are likely to be some advantages from the point of view of the research worker from the present set-up. The Chief Scientist's Research Committee which advises the Planning Committee of the DHSS is multidisciplinary, consisting of economists statisticians, social scientists and social workers, doctors and nurses. The Planning Committee itself includes professional members and also those representing customer interests and those with responsibility for the Personal Social Services. It is also recognized there must be links with education and housing in planning commitments and these will be forged in time.

'INTELLIGENCE' AND USE OF INFORMATION

This brought out the slightly different emphasis involved in the mechanism for the interpretation of the mass of information, which is currently and widely available. It is extraordinarily difficult, because of varying patterns of diagnosis and equally different

social norms about what constitutes sickness, to know what a great deal of the statistical information currently being collected means to the administrator concerned with decisions.

If the statistics of the NHS from all sources are looked at closely it is evident that over the years since its inception there has been an increase of some 40–50 per cent in hospital admissions, and a vast increase of manpower. That does not mean necessarily, of course, that the population is more sick; or that it is absorbing vastly more resources the return on which is unknown. It is likely that there has been a more sophisticated response to need and this has involved more resources. Yet it is not known where the balance between ultra-sophisticated demand and real need lies. This is a permanent difficulty underlying the use of all health service statistics and a far greater interpretation capacity has to be developed.

In any event interpretation and dissemination is not really a multidisciplinary activity. The statisticians play only a relatively small part. They may collect the information, but the meaning of it, indeed the decision about what information is needed, is something that must be decided long before by people of varying wants: administrators, doctors, and statisticians. Many people concerned have to be brought together to produce the facts but interpretation is highly specialized; and dissemination of the facts is yet another matter.

The question of central 'intelligence' including the use of statistical material (abstracts, etc.) on the research policy side is thus crucial. A special effort is needed to conceptualize issues bearing on policy and decision-making. The selection of issues conceived as being important have a bearing on what information should be gathered and is necessary preliminary to choice of research as well as the assessment and dissemination of results, which in turn need separate and special 'intelligence' arrangements. This is currently a universally difficult question which emerges universally whenever international seminars on planning and research are held.

FUNCTION/STRUCTURE

The question was posed by a number of researchers whether there was not too much concentration initially upon attempts to perfect the structure of the research organization and not enough on its functioning.

A new organization has been set up in the DHSS and the seminar itself was part of an attempt to systematize thinking *inter alia* about its structure (4). It should also be concerned with questions about its functional effectiveness at all levels of the Service. A parallel was drawn with the concern in recent years with the management of the NHS. The discredited 'Grey Book' (5) on the reorganization of the health service was largely about setting up a tidy structure. It is evident now (and to many when it was published) that it is almost irrelevant to the real problems of the NHS which continue to be on the functional plane. It is suspected that there is a parallel with respect to the research organization. The structure is being developed but there is not yet a very clear idea as to how it will work and develop when put under stress as an organization. It is evident already that there are some stresses and strains as the theory is applied in practice. The difficulty of course is in applying a general theory to a widely varied field. There are many units involved and no one unit's work is likely to correspond with that of any other unit. It is questionable too if the wide spread of interest can be made to tally with the liaison structure of the DHSS. Not all research falls into easy classification: some projects fall between two liaison divisions, and sometimes on revision during its course, actually bridges them. Thus some desirable projects need part support from the computer division, and part from primary medical care. In practice there is often some difficulty in matching the way the units are classified to the DHSS's internal structure. This could lead to a number of liaison difficulties in getting the research funded in the beginning, then in negotiations to secure an appropriate objective to meet customers' needs, and subsequently to adjust finances as the project proceeds and special needs are spotlighted. The relationship between the DHSS and NHS regional and area authorities too, needs special study in the research connection. Since 'Rothschild' it seems that the intention is that the bulk of the work will be done for the Department *qua* customer; but it is not possible to work for the DHSS without involving the operating units of the NHS. A serious question is how much of its time should a DHSS-funded unit spend servicing the Central Department and how much in servicing the NHS authorities. There may be conflicts of interest between the different levels of authority in the DHSS and the NHS. These produce strains for which there are

as yet no easy answers, and this is why the functioning of the whole complex arrangements for research needs to be kept under review.

Again, the relationship between the research worker and those involved in the decision processes needs co-ordination. It is difficult to do realistic research in R & D type work and difficult to formulate answers unless research workers are involved in the decision-making processes. In the past there has traditionally been separation.

It has to be recognized that sometimes the nature of research means that results and even the research activities themselves tend to make life a little more difficult for the administrators in many ways. The results invariably do not point to easy decisions though hopefully on the whole they ought to make them better. This is a fundamental feature of some research which often introduces strains and problems.

Another illustration of an area of stress can be in the terms in which research objectives are laid down. There is yet little by way of a proper code of practice to ensure that the internal mechanisms of the structure are functioning effectively. There is a case for observing the way things work and to deduce the best way they ought to work. In many instances it is difficult to find out what research objectives are. Very often these are extremely loosely formulated. It is of course a developing sphere of activity. Taking computers as an example, some of the early experiments did not have any objectives at all. That was all right perhaps in the early stages, but is it right now to have such loose terms of classification as 'improvement objectives' or 'system objectives' to test what the system is supposed to do? Quite frequently still, there is no investigation of objectives. Yet it should be one of the characteristics of health service R & D work, that it is not just a 'bird-watching' exercise. People have occasionally to be committed to different patterns of work. Since it is in the applied sector it is tempting merely to have 'improvement' objectives and to omit the need for investigation of fundamental objectives of the system. The objective to 'improve' constitutes a development rather than a scientific investigation. In the view of some researchers the continual indications of stress underline the need for a more effective code of practice.

THE RESPECTIVE ROLES OF CENTRE AND PERIPHERY

The relationship of research to action poses questions of a major issue and there seems at the present to be some serious faults in the functional mechanism. It would be a pity if there was any regression in the concept that research will thrive more if there is evidence of the application of results. Yet history does not give an encouraging view of application in the health field and the reason is that the linkage is often broken at the point at which relative values are settled and priorities are decided: and research workers rarely determine these. Take a hypothetical example in which some research worker is on his own motivation persuading people to give him money to investigate something. He comes up with an interesting result which looks as though morbidity could be reduced in some way. It can be defined what he means by morbidity and he can tell how he thinks it could be prevented. At that point the chain is broken because the research worker does not decide whether anything at all should be done about that, or at least he should not. The question is, does that information get into central 'intelligence' mechanism (whether a specific unit exists or not) and if it does how does it get used? If it is not used, is there any feedback to the researcher to indicate why? Supposing however it is regarded there as a problem which deserves priority and measures are taken to solve it; then this should be subjected to evaluation in turn.

Both these aims embody reasonable kinds of research, which are probably indivisible. That is why the functions of the complete research organization are difficult to separate into 'field' workers and a 'control' group, although not impossible.

The kind of structure necessary at the centre is of course a very complex issue. The function should, however, probably come first, and the structure can be built up over time with trial and error.

This can be illustrated by a consideration of the key role of the 'Community Physician' in taking his part in applying the results of research and formulating future requirements for research. In particular the relation of the centre to the periphery must come under scrutiny. Many problems can be perceived centrally, but action concerning patients takes place at the service operating level, which is very much in the realm of the district community

physician. As someone who has to understand the range of problems and has a key role, he will not tend to look to the centre for help in terms of epidemiology or in operational research. There is consequently likely to be an increasing role for academic departments of all kinds in improving the day-to-day operation of the Health Service as required at area level. These are of course not only departments of social medicine but those of business studies, business management, psychology, etc.

The function of the central research organization in developing arrangements at the periphery requires special attention as well as the general relation of periphery to centre. It would be optimistic to expect much in future from academic departments from a process of spontaneous combustion for producing good ideas for research in this field relative to NHS requirements. While much has sprung from such sources in the past, there is now a case for a more systematic local organization possibly with developing links to the Chief Scientist's organization. Whether such an organization should develop at regional, area or even district level was not too clear at present. There was some speculation about the form that such a system might take. There might be regional or area working parties on research in the health services, which would consist of academics and representatives of the health services, medical administrators, and so on. The function of such working parties would be to identify priorities in their area or region, to explore suggestions for research, to decide what ought to be done first and who ought to do it, how such should be financed, and in general to pursue suitable action.

As to the question of the DHSS/NHS relationship there has to be continued appreciation at all levels of what is of local and what is of national interest. It can well happen that the Department of Community Medicine as an academic department in an area proposes work which is related more to local than national application, although sometimes the work can be local in character but of national application. It may possibly be best for the academic departments to act as a link between the centre and the regions or areas with which they are associated and develop better ground rules to differentiate between what should actually be financed from the centre and what should be financed by local funds. The gap between research and decision-making it is hoped, will close with the development of research liaison groups which is an

attempt to bring the scientific community in contact with the decision-making processes. The development of such links will be encouraged in the future.

It was acknowledged that hitherto there has been rather inadequate contact between those concerned with policy formulation in the health departments and those carrying out research in the field, one not knowing what the other is doing and steps will have to be taken to close the gap.

HEALTH SERVICE RESEARCH: TOO GENERAL A TERM?

The question was raised about the adequacy of 'health services research' as a generic term to cover the whole field. It was felt in some quarters that health services research in certain respects can be extremely dull and depressing and this potential is often one of the main deterrents to recruitment to the field. On the other hand with the right directions it can be very stimulating and rewarding in clinical areas such as clinical trials, different ways of providing care, different ways of rehabilitating patients who have had strokes, particular ways of preventing bed sores, length of stay studies, studies of screening, etc. The research thus becomes interesting when the clinicians, who are after all the providers of the clinical services, and the administrators come to be involved as well.

There is a case for the DHSS to explore more fully its role in health services research of this sort in the clinical area which needs particularly large resources. There is perhaps a need for a very strong co-ordinating role here perhaps analogous to the sort of role that the MRC has played in the multicentre trials.

Individual units have been faced with the need, in trying to do work of this sort, to make the best use of what is on the site, to start appropriate feasibility trials in the knowledge that the numbers will probably be too small. Yet sometimes a trial is worth doing even if the numbers involved are not going to be adequate to answer the question definitely.

Any co-ordinating role from the DHSS does however raise the problem that research workers are still very resistant to any kind of suggestion that they are being dragooned by a central agency. This is a very important role that the DHSS has got to assume and the approach to which has to be carefully explored in association with research workers.

GOAL-SETTING: THE ANTIDOTE TO DULLNESS
OF RESEARCH

The assumption of dullness in research was challenged. It was felt that much of what even successful research workers do is dull, but they put up with that because they know why they are collecting the mass of information. Producing a complex national data linkage system may appear to be dull, but to keep the data up to very high quality may be a challenging engineering problem. Using it with effect involves an extra dimension to keeping it up to date.

This brings out even more the need for a central intelligence function in the DHSS. There is such a need for a group of people who are not just engaged in processing but also interpreting the data. Nor is it just a matter of collection and dissemination of information; it is actually using it purposefully to move towards changing events. In the case of psychiatry, if trends in the data can be discerned such as increasing numbers of admissions or the use of a decreasing number of hospital beds the operating problems can be farmed out to smaller units using say registers, through which more complicated information can be collected than can practicably be collected on a national scale. If those local units using registers operationally have research units attached to them, a core of research workers can gradually be built up round the country working in specific areas which have appropriate instruments. In one case facts are being collected, in the other instruments are being forged for the use of information. This is the kind of combination required for the purposes of illuminating important problems which are coming up for decision at the central point. Unfortunately the problem of how to achieve the ideal has not yet been resolved.

The description of health services research as 'dull' is therefore wide of the mark as a generalization. It can be exciting indeed. Invariably objectives are what make research opinion exciting. Doubtless some research workers even working for the MRC do the dullest of jobs but the light is in their eyes, their objective is exciting. If it is dull it is probably the objectives which are wrong. The present socially impregnated atmosphere even in science is conducive for all concerned to want to know the objectives of research. This makes 'service' type research much more acceptable than it has ever been in the past.

A major problem in the complex overlapping health services is analysing and presenting data in a form that people other than researchers can use it. The technique of data collection unfortunately exceeds the ability to analyse and produce it for effective use.

DIFFICULTIES OF CONCEPTUALIZATION: NEED/RESOURCES

One of the difficulties is the poor quality of conceptualization which is reflected in the inability to set the simple kinds of goal. The concept of 'need' which tends to be used glibly has an inherent weakness as an analytic tool in deciding what to do. In using this concept, there is a danger of running into a circular argument. Thus the administrator says,

Our desire is to meet your need. We do not know what your need is, but we will find it out by research. Having done the research we now know how much disability there is, how much morbidity there is and how much poverty there is at any time among you. We now also have the ability to relieve some of these things, though we are uncertain as to what is the best way of doing it all the time. We do not, however, know what the priorities are because these are value judgements. This is very difficult and this is our dilemma. If we do some things we cannot of course do others.

This is in effect the beginning of the cycle of questions again; albeit a little more refined.

The alternative is to start from the other end by setting a target. Thus,

Our resources are the following. We have so much money, so much manpower, so many facilities. We know as a result of our research that X per cent of people have condition A , Y per cent have disability B and Z per cent have something C . Our resources, if we deliver them in the following way should at the end of a period T_1 to T_2 reduce the proportion of people from whatever it is to something less. This is the target. We shall have a deliberate policy to achieve this target. We are saying we intend to change the condition of the population, possibly seek to change the behaviour of the population. If we do not do that, then we will have a look at why we have not done it.

The task of evaluation of such actions is relatively straightforward. The question then becomes: 'Are we on target in the provision of what we said we would provide? Have we changed the things we said we would? And have we done it by providing

the things we have done?' It is, however, evident that the targets presume action covering potential economic and social issues which are not theoretical but at the heart of the politicians' and administrators' problems, and that there are undoubtedly skills in target setting which have to be developed. Given the right targets, research can be directed very much more effectively. Data collection is made relevant to judge whether the services are on specific targets.

These are important issues which have to be kept in mind although it is also worth remembering that a commitment by Health Departments to research is a very recent thing and much has been accomplished in a short space of time.

The question of information is paramount. There are various data systems but there are distinctions in the way the terms are used. There has to be a clarification of thought and these distinctions brought out. There is considerable danger, and the danger increases the more research is generated, of not sufficiently digesting what exists. Time and effort is needed to produce intelligence reports using all the available information and work done in other places.

On the development of information, it is probable the confidentiality issue is more important than the financial issue, and a great deal of public support will be necessary.

ANALOGY OF USA

It is also important to remember that information in itself is not always enough and the recent American experience is probably relevant. During the past five years a great deal of money has been spent in the USA on the development of data collection and information systems as a basis for epidemiological research in health services research. Those working in that field or beginning to work in that field found much of the data was in fact very useful as a beginning to research, but now in the USA the greatest amount of money concerned with providing data relating to epidemiological aspects of health services research is actually being put into experiments and developments. That has been found to be necessary because there are so many variables, social variables, besides the intervention variables that affect morbidity, that analytic research of itself is not enough to produce answers. The analytic research based on the collective data has to be followed

up with experiments and more and more research money is going towards experiments subject to epidemiological observations. The investment in the data system is accordingly only the first of a major investment programme.

CAREER STRUCTURE

As to the specific question: how can service research workers be found and retained in the NHS and the services associated with it; the best way to secure and keep research workers is probably by giving them both a service and a research role. This is important, otherwise they become a group of people set aside observing service work and not actually involved in service. Thus, if there is to be a career structure for research workers developed in the NHS it should bridge both research and service roles. The Service provides stimulating problems, with objectives that are exciting, and there are considerable challenges in these problems.

Nor should the possible benefits from educational involvement be ignored in relation to a possible career structure and the limited resources that are available.

It seems therefore the best plan would be by way of an adaptation of existing career structures. On the question of dialogue between the research worker and the Health Departments, the more important implication of the post-Rothschild arrangements is for government departments rather than for research workers. It is arguable that the changes to be brought about as a result of the 'Rothschild' policy are more radical for government processes than they are for research. It is relatively easy to generate more and better research. It is very much more difficult to engineer the conditions to enable this to penetrate to the decision-making processes affecting social policy in which government must be concerned. The concern with structure as a framework for policy is a derivation of an increasing awareness of this difficulty and an attempt to overcome it. A good deal of the debate on structure is tedious, but it is inevitable. It is doubtful, however, if the pointers will evolve on how a research worker really engages in decision-making, without careful consideration of structural relationships.

In general, in this sector there are recognizably six compatible career structure streams: those concerned wholly with research in the NHS, those in community medicine practice in the NHS, those in information systems and their interpretation for policy

(who may not necessarily be in the community medicine group); those in the MRC ambit, and finally those carrying out research in this field but whose primary function is teaching and whose base is in the universities.

There is genuine doubt about the wisdom of a separate new career structure. Many people in the past benefited greatly through having highly unorthodox careers with sometimes extraordinary switches in specialties. This is becoming more and more difficult because it is no longer possible to retain the variety of the generalist at a high level while keeping abreast of developments in the specialties.

Thus a career structure for those engaging themselves in health services research is becoming more and more urgent but an attempt should be made to prepare a framework for the existing mechanisms rather than try to devise something new and wholly specialized.

THE POSITION OF THE MRC

More specifically there is an obvious and pressing need to provide a career structure and security of tenure for at least a proportion of the scientific workers now approaching middle seniority in health services research units financed by the DHSS. On one or two occasions, when the interests have been shaped, the MRC have helped out and acted as employers in this situation. Indeed the MRC system is sometimes suggested as a general solution to the problem. Though it has worked well hitherto, this arrangement has depended on a majority of appointments being of limited tenure, permanent posts being given only to workers expected to continue to be original and creative in the research sense throughout their careers. This in turn has depended on the existence of reservoirs thirsty for manpower in the expanding university and NHS systems. It is already apparent that such reservoirs no longer exist, and that security of tenure is now of much greater importance than formerly to even quite junior workers. An organization devoted entirely to research is unlikely to be viable in the future, since only a minority of individuals remain permanently productive of good research, and the talents of the remainder require to be redeployed in other directions, such as teaching and administration. It would therefore seem more sensible to associate a career structure for health services research with that provided for other aspects of NHS organization and to take care

to preserve mobility between them. There may, however, be some lessons from the policy of the MRC in relation to overseas commitments.

The Council, in collaboration with the Ministry of Overseas Development, has for some years maintained in overseas centres research units and smaller groups of scientific workers engaged in field studies of problems in tropical medicine. Changing circumstances in particular the development of high calibre medical faculties in the universities of the developing countries, the difficulty of attracting workers of high calibre to pursue life-time careers of research in tropical centres and the recent formation of local medical research councils have caused the Tropical Medicine Research Board to review their policy in regard to research in these countries.

In the light of these considerations the Council has decided that there should be increasing concentration of support on teams based in the United Kingdom who wish to work overseas in centres where there can be collaboration with local workers, and with national research councils where these exist. As this pattern of tropical medicine research develops it can be expected that support of expatriate workers in overseas institutions will diminish.

The Council fully realize that for such research to be of mutual benefit there must be willingness to undertake work at the request of local governments and team leaders must be prepared to study problems of local concern and importance. The Council and the Ministry of Overseas Development are also willing to give support for local workers to carry out their own programmes. In this context it may be noted that Council funds would be used mainly for studies of international relevance, including, of course, those of benefit to the United Kingdom, whereas MOD funds would be used where there would be a definite contribution to the medical welfare of a developing country.

The pursuit of research objectives

The papers in this session revealed certain misunderstandings between the operational researchers and the epidemiologists. The discussion provided an opportunity to indicate where the differences lie. It also allowed an opportunity of exploring a number of concepts which bedevil a comprehensive view of research based on a mix of operational research and epidemiological techniques. A strong case was made for an over-all concept of health services research to encompass the determinants of health in individuals.

MODELLING THE KEY

All sciences are essentially preoccupied with modelling. This is their function, their very nature. Modelling is indeed a basic scientific method. It is right in the centre of the scientific philosophy, and one of the basic techniques of the scientific method. The first axiom is that all rational decisions depend upon prediction. It may, however, be that this is a circular argument since all rational predictions depend upon models. If those two propositions are accepted it means that all rational decisions depend upon models. The questions, however, determine the method. What are the premises? What are the assumptions that go into extending the data? A model can be set up and the data explained. Sometimes a different conceptual model can be developed which can explain the data somewhat differently.

Operational research began during the war when the exigencies of the crisis required a quick answer. It is true the present situation in the NHS is not quite analogous but there is one possible lesson. It is known in retrospect that the major decisions concerning bombing were not taken on wholly scientific but on political grounds. The rest was a mere tidying up, but no less important because of that.

There is always a strong case for a compromise in the collection of data in a specialized way towards the formulation of a model, perhaps to explain the mechanisms that are involved. The best model of a system is, of course, the system itself in which the actual human element is present. If time and money permit, obviously the sensible way scientifically speaking to test the situa-

tion is to change the system. The whole point of modelling is that possibly real changes cannot be afforded because the collection of all the relevant data covering the whole system costs too much, or there is not the time nor the opportunity to change the system itself. This means the best over-all data has to be used. It is negligence on the part of any OR practitioner or project leader if he does not say to his client, whether it is a clinician, administrator, or politician, 'If you really say you have to have this by such and such a time, I am constrained to work in the following way, and this is a sort of "short cut and guesses" way. If you can give me another six months I can do so much better.'

Modelling in depth is concerned with the competition between procedures and puts them into some sort of proportion.

Modelling is a key thing in science, but usually when models are used in a scientific context they are used by the scientist for his own purposes. The final relationship established which will probably be outside of the method is not usually part of the model.

QUALITY OF DATA AND THE UNITY OF THE PROBLEM

Not surprisingly, given the composition of the audience, a great deal of the debate was concerned with the role of the epidemiologist as a contributor to operational research and whether his traditional belief in the requirement that data should be of the highest quality before it can be used with confidence is constructive.

This was the basis of the criticism of policy which consisted of breaking down the attack on research problems into component parts, particularly if this entails handing different bits to different people in different disciplines. In practice this is not the way research is effectively done in other fields. Take the case of an administrator facing the problem whether an acute mental should be separated from the district general hospital. The question will not be solved at will by the collection of data thought to have a bearing on the decision, then handing the information over to others for decisions to be taken. It is inescapable that anyone engaged in research issues relating to such questions has to look at the problem as a whole.

It is one of the advantages of the point of reference of the epidemiologist, that he undertakes to cross the relevant specialist and professional boundaries as he has done traditionally in his

study of disease. What can currently be criticized with epidemiology in its modern clinical role is that it only has the sketchiest kind of peripheral models. It is still not able to introduce or produce a complex coherent set of models of the human experience of sickness. For that reason, much of the research it does is *ad hoc*, disconnected, and often rather capricious. All decisions inevitably and therefore all prognoses and a great deal of diagnoses can only be satisfactorily based on modelling.

The expectations of the DHSS from epidemiology and the current predicament of the epidemiologist can be illustrated by analogy with the method of the work of the clinician. When a clinician tries to diagnose, prognose, and recommend treatment, he uses two kinds of information of different character. The more trivial is the data he obtains from technicians concerned with measurement. The important other kind, however, is the whole set of models of disease he has acquired as a result of his experience and studies, and the experience and studies of the medical profession over a long period before. It is the commanding knowledge that the clinician has of a complex set of models of human disease and human disease experience which gives him his professional expertise. In his operational role, the epidemiologist is faced with a similar complexity of process. To interpret that data against a comprehensive model system needs special skills. What tends to happen in the NHS is that the policymakers are essentially trying to use epidemiologists, and they are consenting to be so used, as providers of information only, and not as consultants in the truest sense. Yet their skills should enable them to help provide the models upon which rational decisions in the NHS should be based. Yet a real function of research is to produce and keep improving the modelling of the phenomena under observation.

NEED FOR COMPREHENSIVE PROGRAMME IN EPIDEMIOLOGY

What is required is a more generalized programme of development of epidemiological work, not yoked to *ad hoc* requirements and in the very limited context of providing information leading to a single decision. A programme of epidemiology that produces and keeps up to date a coherent model of the human sickness problem in its several parts, building up to the whole as for example the epidemiologist can do in the use of modelling theory in epidemics to test various connections between case and case, as

well as being concerned with the more traditional clinical epidemiological approach is more appropriate for today.

While it is certain that the epidemiological worker must play a role in decision-making, he can assist the decision-maker by helping to interpret the available information. He is probably one of the best people to help in the assessment of what information that has been collected in one or other situation is valid and how generally applicable.

Where the decision has to be made, however, between different services, where the priorities are, for example, between the development of renal dialysis or the development of psycho-geriatric services, his training does not necessarily fit him to give him the major role to decide on the effectiveness of these two services. He is no better able to judge the value of these two in competition with each other than any member of the decision-making team.

Where there is need for judgement of effectiveness of an individual service, the epidemiologist can play a crucial role in designing a means for assessing the effectiveness. It is where a judgement is called for between services that it is doubtful if the scientist can play any role other than that of any other individual in the team.

In general, however, scientists should be involved in decision-making together with administrators and the importance of good integration in decision-making cannot be over-emphasized. This might in the future modify the over-concentration on care which has been a feature hitherto and with benefit to the concepts of prevention and screening.

HEALTH INFORMATION SYSTEMS AND FEEDBACK

The importance of accurate information can be taught, but the people who give the information must have a feedback. They will probably be eager and interested to give factual information because they can see that they do get something back.

Health information systems may be classified in various ways and do not, of course, concern the patient only. There should be not only health information systems but also systems giving information about staff and other resources.

With regard to the information needed about patients, in an integrated health service the rational unit on which information

about the health and sickness of individuals should be built, must be the individual.

There is no distinction in principle between registers, national systems, or whatever, for statistical purposes and national care systems. Thus there still exists a linked information system of sorts virtually based on the 1911 'Lloyd George' envelope which contains the patient's record and follows him round the country.

Massive collection of large quantities of data has no place, nor will it prove of much benefit. What is needed at national level is to emphasize quality not quantity.

On the matter of resource planning the problem is how factual matters can be related to judgements about essentially valid questions in order to indicate priorities for policies.

MODELLING OPENS UP NEW PERSPECTIVES BUT THE DATA HAS TO BE GOOD

Modelling opens up a number of new perspectives. A cybernetic approach is a fruitful one. It underlines the importance of a multi-disciplinary approach and very close relationship and co-operation between clinicians, epidemiologists, sociologists, economists, and the people engaged in computer research. It is important that this co-operation be a close one and that these people work together on equal terms.

How accurately the data is kept and how well the individual can be followed within the system matters, because many of the problems of interpretation relate to the individual. Thus in the case of trends in admission one cannot tell whether the increase is due to the same person coming back time and time again or one person or a combination.

It is optimistic to hope that the massive collection of routine details will finally answer questions and replace epidemiological and *ad hoc* surveys. Indeed, all one can expect from this is the facilitation of experimental epidemiology, questions of finance which would not otherwise be posed, first approximations with regard to trends, a convenient sampling frame for experimental studies, and the facilitation of follow-up. These are the ways in which the routine system can help *ad hoc* surveys to provide the final answers. All data systems are expensive. Yet the fundamental question with regard to the future of this type of activity is not the financial one. It is cheaper to have relatively small amounts of

data properly organized than to have large numbers of systems which collect the same data, often with overlapping objectives and sometimes asking the same questions. But finance is not really the problem. The problem is the political and ethical one. The general question requires public discussion, following publication of the White Paper expected. There must be intelligent discussion not only of the hazards but of the advantages and safeguards. There will be no progress until there is legislation which satisfies the public that the proper safeguards are being taken with their private information. While it is generally accepted that quality rather than quantity is needed the question is whether this can be reconciled with the need not only to guard privacy but also with national requirements. Regional needs too will hardly be satisfied on a sample basis taken from another area, or even perhaps from national samples.

Any worthwhile information system must be sufficiently flexible to provide for sufficient detail in studies of limited aspects of medicine in local circumstances as well as related to a framework which is national. For the latter, much less data needs to be collected but has to involve a much larger sample of people and over a much longer period of time.

Any effective information system must be capable of enabling judgements to be made over quite a long period covering both clinical and service interests. The administration and health monitoring interests of the DHSS too must be taken into account as a bridge between the central information available in, say, the public expenditure survey system on the financial side or the rate grant support system, or the manpower budget. At the other end there is planning which has to cover all the new health authorities and the matching local authorities, not only in the social services but in other spheres.

If such a system is to enable scientific judgements to be made right across the board to allow the NHS to key into a national system of planning or the national planning to be able to reflect both the central and field planning of various sectors, the health information base has to be compatible with other systems, has to be consistent, has to be a repeatable, has to be a continuous process, and its detail perhaps has to be capable of being published. All parts of the system need to have an awareness of the other parts of the system and the information already available. There are

dangers therefore of being tempted into over-elaboration which adds the hazard of clogging the system with a mass of information.

DECISION-MAKING AND USE OF RESEARCH BY ADMINISTRATORS

With regard to the decision-making process related to planning, it might be as well to recognize that current research is unlikely in the initial stages to do little more than distinguish and illustrate periodically and systematically elements of gross imbalance in the system between care for one kind of client group and another, gross imbalance between certain very fundamental effects of health, gross imbalance between capital and revenue, etc.

These are the sorts of major 'points' for decision. The decisions that will emerge from research may be very little more in this context than readjustments of assumptions between these inter-dependent parts of the synoptic view which has to be taken by policymakers of the whole. Invariably this involves little drama, perhaps merely a decision that in this or that respect a little more emphasis is placed or a little more attention paid or a recognition that the cumulative claims being made on available resources add up to considerably more than can be met, so that a scaling-down process is inevitable.

This means for this purpose that the sort of data needed may be relatively simple. The accent therefore in this is perhaps on *health policy* research rather than *health service* research.

THE CONCEPT OF 'NEED'

On purely philosophical grounds, it may be recognized it is extremely difficult to measure 'need'. The distinction is that between positive statements of fact, and statements of value. Statements about 'need' are essentially statements about values. 'Need' cannot be measured in the ordinary sense of the word. There are probably in the main two kinds of statement of fact which epidemiologists can usefully make. One is a descriptive statement about the conditions of particular people. How many people suffer from a particular condition, can be counted. The other kind of statement which can be made is some kind of probable, elastic statement, some prognostication based on an evaluation of effectiveness of care.

As to 'need' it can be said factually that an individual has a certain condition. If he has got this condition and is treated in a particular way, there is such and such a chance he will be in another condition after a length of time. Traditionally, of course, this kind of judgement is clinically based and clinicians make it within their own specific sphere of interest in relation to particular patients. It is only sense they should do so in this way. When it comes to making judgements, however, across the whole sphere of care no particular doctor has the capacity to make such a judgement from a technical point of view because usually he lacks the information.

Research into the provision of services tends to be more concerned in the narrow context of cure and care rather than the preventive services which are probably far more effective in the improvement of health than the improvement of health services. It is possible to conceive the development of a measurement of effectiveness of specific action, but there is no good method known at present that can help in deciding priorities between services, rather than within services.

The theory that it is impossible to measure need and that values are not measurable was seen in one quarter as the gospel of despair. It was stressed an attempt has to be made to try to develop methods of assessment which can help to describe needs which can help the planner in improving and having a better future. Measures are beginning to be available which can assist in the assessment of values that different people place on services. It is thus becoming possible to determine much more than formerly what are the 'unmet needs'.

Against this it must be accepted that the kind of decision so envisaged involves judgements of a substantial social and political kind in relation to which the doctor cannot claim any particular status except that which arises from his superior clinical skills.

REQUIREMENT FOR A CREDIBLE BASE FOR HEALTH SERVICES RESEARCH

There is no universally held strong belief in any theory covering the relationship of health and the factors which affect the health of individuals and populations and accordingly a strong base from which to operate. Health services strategists seem to be in the

position of constructing a building without a foundation. If health services research is compared with any established field of research the difference becomes evident. There is a need for a common base on which a comprehensive theory can be built. In health services research it almost appears as if there is a series of people randomly doing pieces of work determined partly by problems that have come in the way of the administrator or individual research workers. There is something lacking in terms of a coherent concept in this field. It is quite important that this should be recognized and the deficiency made good.

Three fundamental questions need to be answered in conceptualizing the main issues. First, what has led to improvement of health in the past? Second, what is the extent and character of the contemporary health problems in a developed country? Third, having regard to the character of these problems, what are the influences that are most effective in controlling them?

Yet it can be postulated that a child in a developed country fortunate enough to come into the world without congenital handicap requires first to be fed, secondly to be protected from a wide range of physical hazards, and thirdly not to depart too rapidly from good behaviour by over-eating and so forth. That does not give a very conspicuous part to the dilemma of what services the individual sick patient must have.

In a developed country, it is probably true to say that the important thing is what an individual himself does. Second, is the nature of the environment in which he finds himself. Thus, by the same token, food subsidies are under discussion again. It may well be that if the diet is a major factor in the government of health, food subsidies ought to be considered to encourage good eating habits. These are, of course, major subjects meriting a whole seminar for their exploration, opening up perhaps to several years of investigation.

The epidemiologist needs to look back as well as forward. But if conclusions of that kind are more or less correct, that is to say, if the predominants in health today are other than in the field of personal care, surely it is essential to the discussion of health services research that some account must be taken of this. The thesis has also a strong bearing on medical education, on the direction of medical research, and above all on the direction of health service development. Because there are so many departments of

State involved, because of the new organization of the NHS and the arrangements for the control of the environment, medical control and influence is not as pre-eminent as it has been in the past. These have implications for medical education.

It is almost incontestible that priorities with regard to the promotion of health are not at present very well-founded in reason, and indeed, that the consequences of this might well be to question different emphases on health services. Medical education is undoubtedly one of the ways in which this might be put right, but it has to be recognized that changes are unlikely to take place quickly. Thus the principal constraint against quick changes in medical education is the conservatism of medical teachers with the natural inertia of institutions such as the University Grants Committee and the General Medical Council and these have little to do with the NHS. The other major constraints are those coming from society itself, what society expects the role of the doctor should be, what the teachers think a doctor should know, and finally what the students themselves think a doctor should be. Education for change has to rely on the acceptance of concepts and it is not too early to put current concepts under scrutiny.

It is therefore important to try to recognize that until those concerned with health services research have established a reputation for scholarship in this field and established a set of priorities to discover the extent of the influences on which health depends, they are inadequately equipped to come to terms with the strategy of health services research.

Obviously, seen in these terms, health services research in a large and most effective part is a long-term matter. For the administrator it would be attractive if he could go to a contractor who would undertake to solve the day-to-day problems. Many of the matters receiving attention now are quite ephemeral. Certain activities to which they relate may be costing some money now, but in a few years they will not matter all that much. The role of the health departments in relation to personal habits, diet, and to physical environment seems central. It ought to be recognized that health services research will not be sufficient if it comes simply from a random collection of individuals or indeed, arises from problems that arise from day to day in the departments.

It is also important to recognize that some of the research may result in advice which may not be particularly welcome to any

government or government agency concerned with the management of health services.

The application of research findings in service practice

These papers demonstrated the peculiarities which are involved in research in action. The Wessex project had derived from and depended on multi-sponsorship and multiple financing but both have depended on local initiative. The session offered an opportunity of discussing the difficulties of having many masters and of the administrative problems concerned with the application of research to policy at both peripheral and central levels. The importance of non-medical influences was stressed and the recruitment of key non-medical members of research groups raised once more the issue of career structure.

THE SPECIAL CHARACTER OF THESE STUDIES

Both these important programmes of work had their origin in requests from regional hospital boards and therefore the NHS participation was absolutely assured from the beginning. It was the initiative of both boards which was responsible in large part for the success of this work. Broad understanding too has been built up in both cases between the research workers and the administrators, and complete harmony was achieved in the event. That made the usual problems of research easier to handle and rewarding in as much as it offered better chances of implementation.

Both these programmes too were supported from several sources. The Wessex support came originally both from DHSS and the Nuffield Provincial Hospitals Trust. It was almost the first new venture for the DHSS under the new phase of health services research. It now has also the support of the MRC, which came to the rescue because of the inability of the DHSS to provide security of tenure to the Director. The university is also involved and this provides an important educational factor to the project.

There are some difficulties in this multidisciplinary support. Sometimes it leads to great difficulties, but it also has advantages which in this case have clearly outweighed the disadvantages. The papers and discussion showed that the social aspects of application were considered equally with the medical aspects. Indeed it was found that the social information was probably more important than the clinical information obtained.

In both these units there is a medical director and a multidisciplinary team. It is evident there are certain difficulties in keeping together multidisciplinary teams. These arise not from any particular lack of communication between the team (they seem to work fairly happily together) but it has been the experience that at the completion of their terms of service many research workers find it difficult to get jobs elsewhere since they have moved out of the general stream of their own discipline. In both these projects this difficulty has been surmounted, because there has been successful recruitment of the major disciplines from departments and so a retention of links with the particular university. It is hoped that as people return to their own disciplines they will retain their interests in health service research and feel the need to co-operate with similar work. It was conceded it is always difficult to carry on projects which have had a large personal commitment on the part of the Director when he leaves.

VALUES FOR UNDERGRADUATE TEACHING

Units of this sort, in addition to all their other advantages, have great potentiality for undergraduate teaching. One of the most popular projects in the epidemiology course in Southampton is the one which brings a small group of students into the health service evaluation unit. The students see the practical utilization of epidemiology techniques. They are introduced at an early stage to a critical view of important aspects of the health service, and it is possible to learn many other things involving medical care as well. There is a strong indication that a unit which is carrying out active research into health services should be a fundamental part of the medical school. The approach, of course, is of very great interest to the students. This could be the basis of the medical school taking an interest in the careers of members of staff. After all with such a background some of the researchers would *prima facie* be suitable for being incorporated in the university staffing structure.

DIFFICULTIES OF MULTI-SPONSORED RESEARCH

It would be wrong, however, not to underestimate the difficulty of multi-sponsored research. Indeed in the Wessex project the size of which grew considerably during its course, many sponsors became attached, and the experience illustrates the problem of research administration. There were three employers covering the staff of the team, special attachments to a university department twelve miles away, the use of Regional Board computing facilities and other services, and two sponsoring bodies (the DHSS and MRC). Above all the Regional Board was very much concerned with the results and course of the research. This involved a very complicated exercise, requiring a lot of attention by many people and a great deal of goodwill. Even if there is only one source of funds, such a composition presents many management problems. It is also a very expensive exercise in skills and time.

Thus, one of the important things that the DHSS, the MRC, and other bodies involved in research will have to look at in future projects is how to simplify and strengthen the form of support.

RECRUITMENT

Some doubts were expressed about the possibility of generalizing about how to solve the problem of helping staff members to move on when the team eventually breaks up or changes its kind of work. Different professions present completely different problems.

Thus, statisticians recruited to an epidemiological team usually have no problems at all when the work terminates. In this country, and probably elsewhere, there is a severe shortage of statisticians and there is a considerable demand for their services in universities, medical schools, and industry. There is accordingly little problem about recruiting statisticians.

Sociologists present a different problem. At the moment there is everywhere a glut of sociologists in relation to the world demand for them professionally. There is a fairly limited market in research in sociology. If a sociologist is recruited to a sociomedical unit it may be found that he is one with a less than good honours degree. He may well be somebody extremely useful, who may do a good job; he may register for a higher degree and get a PhD,

but he will have been done a grave disservice in the long run if he had been encouraged to expect a career in sociomedical research in an academic setting. Such sociologists are unlikely to be able to return easily to their parent disciplines because for some reason it seems sociomedical research and the association with medicine is no recommendation in academic sociological circles for jobs for which there is strenuous competition. It is, therefore, not possible to generalize about solutions such as one proposed that instead of recruiting sociologists to the sociomedical research team, services should be obtained from the academic department of sociology. In general, academic departments of sociology have a crushingly heavy teaching load and even if they were interested in the research they rarely can afford to lend their staff to the medical school.

Economists are in rather a different position from sociologists in the sense that there is generally a scarcity of them but it is not easy to recruit economists to work in the health field. The reason is that this is a new field with uncertain directions and there is no recognized body of workers in this field in universities and little by way of recognized literature as there is in the more established larger areas of economics. In the early stages of health economics as a specialty it was possible to carry out research from the security of academic appointments in the general field of economics, but as the subject has developed it becomes more difficult for people in that position to be able to keep up with the literature and make strong original contributions.

The result of this is that although there are some excellent economists at present working in various health service research units they do tend to be rather specialized, and to some extent out on a limb. Part of the problem is that it is perhaps rather more difficult in a multidisciplinary unit to get publications of a kind which are likely to be acknowledged fully in the parent discipline. On the practical side there is also some difficulty in getting acceptable references in a multidisciplinary situation to help advancement. There is some analogy with education, but education economics has been established within the structure and the long tradition of university departments and institutes of education. Few British universities have any serious commitment to health economics within the university economics structure, and in the one major exception the particular university has no medical school.

One way out of this dilemma, would be to establish separate chairs of health economics, which would provide a focus and centre for academic work in the field. Such a proposition, however, is hardly likely to be cost-effective in the sense that it could be supported as likely to be productive.

ADMINISTRATIVE ARRANGEMENTS

What was really needed was a continuous momentum in evaluation. The cycle was evaluation, planning, experiment, re-evaluation, replanning.

In large administrative organizations this is a continuing process. The set-up should be able to continue to function irrespective of personalities and a structure and mechanism should be built which will survive movement of personnel. Taking the Wessex unit, where it differs from an ordinary R & D department within administration is that it is able to take on the study of what is in effect a limited commitment of the total organization. Thus, in a region not too large to see the perspective of the wide range of specialties which compose a health service, the team was set to work on something specific, first the care of the mentally handicapped and now the care of the elderly with the prospect of an experimental stage to test out the propositions on a limited scale. While it is a limited exercise with limited problems and in limited areas, skills are all the time being developed for use in other areas of interest.

Indeed continuous evaluation is necessary in the health care sector and a capability should be developed to survey services continuously and evaluate them, in a cybernetic system, in fact. Success will, however, depend on the right sort of information being made available and the continuous focusing on ensuring this. In a recent essay (6) Professor Michael Alderson lists more than a hundred returns which are made in connection with health services. The proportion of these actually concerned with pure epidemiology, mortality and morbidity returns, etc., is small. The great majority of the forms deal with administrative matters, some of which are not exciting to epidemiologists and probably not particularly useful for a continuous evaluation. The academic epidemiologist can help in advising about the sort of information on the health services which might be collected. A radical new

look is necessary at the total information being generated in the NHS.

Nor can this be confined to purely clinical information. Those doing research in prevention and the practice of prevention are inevitably forced to do research on behaviour. The social scientists are becoming an important part of the research team and are becoming practitioners to the extent that they are working with patients to direct changes in behaviour. As moves build up towards a preventive practice there is more and more dependence upon social scientists.

EVALUATION AS A CONTINUOUS PROCESS

The Wessex study has had a great impact on structure and practice and its influence has been by no means confined to the UK. There are many who feel that the importance of the research has been on the evaluation of demonstration, for instance, the importance of treating the very severely handicapped person with concern for his potential. The research has also developed new and promising methods of treatment, and therapy, and applying in this area methods that had been developed elsewhere.

There are, however, separate questions relating to evaluation which arise from the study. The Director of research and development of this kind must be involved and committed, passionately concerned, in the best sense of the term. This undoubtedly makes for difficulties in detachment. This has a bearing on the repetition of the research, since the demonstration can rarely be replicable. The 'caring' staff are invariably very numerous; they form an important base for the research; and consequently the way in which they are selected, trained, and inspired in this job are important factors in the event. Indeed the fact that a good many of the things that the Wessex researchers have been applying are good in themselves makes the evaluation of other marginal factors of somewhat doubtful significance. Indeed, that there should be smaller units, especially for the severely handicapped children, that there should be both more quiet and more stimulus are matters that are incontestible. It can be said that these things appear to be good whether they are shown to be, in terms of evaluation, effective or not. Indeed, this has raised questions about whether the present techniques and even the concept of evaluation studies,

are appropriate in some areas. They indicate some of the difficulties which arise when there is a lack of rigour in some of the concepts of value.

TIME FRAME AND APPLICATION

The matter of replication undoubtedly needs special consideration about the place of research in terms of formation of policy. Often it is a question of time frames. Thus, a draft policy for community hospitals is currently being prepared within the DHSS. Its discussion is obviously not likely to wait for the outcome of the research which is being undertaken at Oxford. This means that in many instances researchers are doomed to the state of being unable to see their contributions in R & D being replicated or widely applied.

It is of course desirable to be able to demonstrate in order to observe from a non-committed standpoint the development and operation of some process or mechanism. The evaluative process in this situation is frequently subjective but it is the application of a thesis and its study which is important. The application from the results of such study becomes largely a matter of judgement in policymaking and management. In neither situation does the researcher have much control.

POLICYMAKING: THE FACT OF THE MATTER

The Wessex and Oxford cases are probably two success stories with happy endings, but they are probably exceptional because success was practically rooted in their origins. In both cases, the Boards clearly wished to do something to test hypotheses for improving services. They were successful in attracting expert help to help them and the consequent experiments were done that much better.

Policymaking at the centre to cover the complex activities and directions of health care is a different matter, for direct commitments to specific activities are rare. A particular policy is formulated, say, to commit the NHS to a minimum standard in some area of service. This may have been inspired by some kind of political pressure but in the event the indications are that it may or may not be possible to meet. This kind of policy formation process really needs a rather different sort of research backing than is illustrated by the Wessex or Oxford cases. Often the demonstra-

tion is not going to be so obviously measurable at the end in terms of relative success. There may be in the result better knowledge which may be of help, but the fact of administration is that it is almost impossible to generalize from isolated research examples.

If the local administrator is given absolutely clear-cut research results of the Wessex kind he can respond directly and say, 'It is evident we need x places, three for this category, seven for those, and so on', and the margin of error will be relatively small. Then the development can be put directly into effect. Such a procedure may, however, be difficult from the central position concerned with the provision of places all over the country and this must be understood. The more direct contact there is with the research workers, through the research liaison groups and otherwise, the more the problems involved in policymaking and research can be understood by both sides.

There is indeed a need in the interests of research, to look at the dangers inherent in the 'success' stories, which sometimes illustrate the conflict between commitment and detachment. If general national policy was to change, say by an alteration in the direction in which resources were being provided in either of these two regions, the directors and those involved in those projects might find themselves in real conflict between their commitment to the cause behind which they have put their intellectual effort, and the integrity of their work.

It must be recognized above all and it is probably a fair indictment of administrators that inherently the administrative machine is conservative. Consequently the relationship between the research activity and the administrator has to be good and this factor has to be borne in mind. Again, if work is to be effective both the research worker and the administrator have inevitably to take risks, certainly when the work is of a pioneering character. There should be a consciousness on the part of the researcher of the difficulties the administrator has, and recognition that if the climate of opinion and consequently policy changes, then difficulties can exist even when things are seemingly going well from the research point of view.

It has probably to be admitted too that one of the major lessons of research is not so much of how much research can contribute but really of how marginal its contribution is to policy affecting the Service as a whole except perhaps over a long period. The

major contribution can be along the lines of the injection of ideas and the forcing of the administrator to be precise in what in fact he is trying to achieve by way of goals. In this way the major lesson can be seen as one of general education leading to a refining of policy formation.

A real problem to be faced is how change can be brought about in a process of evaluation. Most people would agree this has been a problem for the National Health Service over the last twenty-five years. It is part of the universal problem of how organizations can be brought to face change. Research must not be too esoteric. A cautious approach to information systems is indispensable to proper management, and adaptation to change and the advances which are inevitably going to occur in knowledge is the complement to this. Without some sort of system of research activity involving administration and a two-way feedback from the centre to the periphery, it will be difficult to speed up change by evolution, which is the process most appropriate for medical care.

REFERENCES

1. McLACHLAN, G. (ed.) (1971). *Portfolio for Health, Problems and Progress in Medical Care*, Sixth Series (Oxford University Press for the Nuffield Provincial Hospitals Trust).
2. — (ed.) (1973). *Approaches to Action*, Occasional Hundreds 5 (Oxford University Press for the Nuffield Provincial Hospitals Trust).
3. CAWLEY, R., and McLACHLAN, G. (eds) (1973). *Policy for Action* (Oxford University Press for the Nuffield Provincial Hospitals Trust).
4. McLACHLAN, G. (ed.) (1973). *Portfolio for Health 2, Problems and Progress in Medical Care*, Eighth Series (Oxford University Press for the Nuffield Provincial Hospitals Trust) (for earlier ventures in the development of the discussion about research management and priorities).
5. DEPARTMENT OF HEALTH AND SOCIAL SECURITY (1972). *Management Arrangements for the Reorganised Health Service* (London: HMSO).
6. McLACHLAN, G. (ed.) (1973). *The Future—and Present Indicatives, Problems and Progress in Medical Care*, Ninth Series (Oxford University Press for the Nuffield Provincial Hospitals Trust).

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