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Health services research: why and how?

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Abstract It is useful to divide medical research into three areas: biomedical, clinical, and health services research. The areas partly overlap, and health services research is also related to social services research.

Research is carried out to solve problems and is an instrument for change. Health services research has developed over the last ten years in response to increasing problems in many health services. Superficially, these problems are caused by insufficient resources, but no service can hope to pay its way out of them. Some may be fairly accurately investigated, like need, demand, and utilization of care. Others are more complicated, e.g. evaluation of care, defining standards, and cost-benefit analyses. A few deal with fundamental values, like quality of life and responsibility of individuals and societies.

So far, health services research has led to greater emphasis on primary care, but it is fair to say that it has not managed to infiltrate the service and influence people's attitudes and ambitions. In the future, one must bring health services research inside the service and involve the professionals more deeply. One must support prevention studies, attack the ethical and clinical problems related to quality of life, study the potential of non-professional support in the community, and promote rational attitudes among professions, patients, people and politicians. The task is never-ending and health services research, therefore, must be part of the programme of all medical schools.

For me to discuss health services research at a symposium in London is an alarming case of an egg talking to a group of very accomplished hens. I must therefore start with an apology and an explanation.

Based on long traditions in epidemiology, health services research has expanded rapidly over the last ten to fifteen years in the UK. Norway has had relatively more money per head for the health service and has just begun to realize that money cannot buy an unlimited service. Last summer, the medical

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branch of The Norwegian Research Council for Science and the Humanities realized that we had to develop health services research, and I spent eight weeks in the UK in autumn 1975 to assemble the general information we need to start a research group. My own qualifications are severely limited, since I have not been trained in health services research. My background is clinical haematology and university administration, and I still think and feel as a clinician. My reasons for attempting to develop health services research are simple: I believe medicine has reached a point where we must accept that resources are limited, and doctors should help to work out solutions and policies.

In this presentation, I shall not review the present state of health services research, but rather attempt to clarify why we need this research and how I believe it should be organized.

DEFINITION OF HEALTH SERVICES RESEARCH

Let me first briefly define the subject. It is useful to divide medical research into three broad groups:

- (1) Biomedical, dealing with mechanisms of diseases;
- (2) Clinical, dealing with the clinical picture, diagnosis, therapy and prognosis of diseases;
- (3) Health services research, dealing with the needs for and functioning of the health services.

The groups overlap, and research on prevention belongs in all groups. The division line between basic and applied research goes through the middle of the second group. These distinctions are, I believe, sufficiently clear to be useful, and there is no need for more rigid definitions.

It may help to have a visual model of health services research. Any health service has to balance supply against needs, and in an ideal society the two might conceivably be equal. However, concepts of health are relative and influenced by traditions, culture, expectations and many other things. Therefore, there is a constantly shifting, dynamic relationship:

$$\text{Needs} \rightleftharpoons \text{Supply}$$

Health services research may be seen as a sensing system interposed between the two, to monitor needs and services so that people's health and the health service they get can be improved.

WHY HEALTH SERVICES RESEARCH?

I now turn to the first question: why health services research? In general,

research is done to solve problems, thereby increasing fundamental knowledge, improving practical work, or both. In applied research, practical improvements are the immediate goal, but good research aims in addition for general knowledge.

The proper answer to my question should therefore be a list of the problems of the health service, selected as being important, soluble, and not tackled by biomedical and clinical research. Such problems will vary from country to country, but the following list is valid for a western country with some form of national health service.

Needs

The first thing to find out is obviously the total need, the job in hand. This is a difficult task, because need is influenced by traditions, values and social conditions, by the doctors, and by the supply of services.¹ In addition, there is the iceberg of unfelt needs which may be uncovered by screening. To define needs, therefore, is not a simple epidemiological task. Some speak with despair of the bottomless pit of needs, others state more cynically that needs are simply equal to supply plus 10–20%. When services are being planned, however, one obviously must use some data to express needs, especially changes in need. In Norway, for example, the number of people who are seventy years old or more increases by about 8000 every year.

Constraints

The next problem lies in the constraints, and there are at least three. The first is obviously money, and many believe that this is the only problem. Most countries enjoyed a rapid growth of their health services after the war, but the growth is slowing down painfully in most countries. The second constraint is a lack of manpower, especially in the professional groups. There is of course a relation between money and manpower: if there is little money, there is more manpower, and vice versa. Together these constraints force us to balance one service and one life against another, to make extremely difficult choices, and to establish priorities. This requires some ideas of costs, effectiveness and benefits of alternatives, thus bringing economy into medicine. The third constraint is rarely mentioned. It has to do with human and social costs of advanced medicine, quality of life and similar ethical problems. These costs begin to emerge, for example for kidney failure² and spina bifida.³ For the old these problems will increase, paradoxically, as we improve services. The problem may be illustrated by acute leukaemia in patients over sixty years of

age. Their chances of remission are small and the chances of serious side effects are high. Furthermore, it is my feeling that the human costs are especially high in people who are poor in human and social resources. I believe that these problems will increase, and in the future the slogan may be: we can afford to do what is right, but we do not yet know what is right.

Diseases and disabilities

More and more we shall have to think in terms of groups of patients; for example:

What is the total problem of hypertension in the society? How should it be diagnosed and treated? What resources are required and what benefit can be expected?

What is a sensible programme for haemophilia?

How shall we deal with low back pain, its diagnosis and therapy?

This kind of thinking will be forced upon us not only by limited resources, but also by demands for equality, and the answers require extensive research of all three kinds mentioned above.

Service policies

Health services can be divided into three major components:

- (1) Primary care or general practice;
- (2) Hospitals, mainly for short-term investigations and treatment;
- (3) Long-term care in hospitals and in the community.

Since the war, hospitals have increased their share of the total health budgets—in the UK, for instance, from 55% in 1950 to 66% in 1972.¹ However, increasing hospital costs appear to have reached a point of diminishing returns, and the other two components demand a better deal. The increased numbers of old people add weight to these claims, and—at least in theory—many health services want to shift their emphasis from the hospitals to the communities. This has proved very difficult. The hospitals are here and must be run and kept up. They are large and powerful institutions and, furthermore, they are often the largest employers in the cities. Changes are therefore bitterly fought, and many politicians have been humiliated in their attempts to deal with the hospitals. Research, therefore, must look into all the aspects of these difficult problems.

Service problems

Most services have problems; indeed they are usually described as crises,

and the words of Enoch Powell, a former secretary for the Ministry of Health in the UK, are often cited: 'One of the most striking features of the National Health Service is the continual, deafening chorus of complaint which rises day and night from every part of it'.⁴ In part, these problems are due to a shortage of resources, and they are made worse by an uncontrolled rise of ambitions and expectations among the professionals. In part, they reflect a more demanding attitude of people in general, and there is a bill to be paid for the past 'exploitation of dedication'. In part, they are due to the increased complexity of a machine which has become too large for human comprehension. In fact, the health service is the largest employer in many countries. The answer usually provided is a rapidly growing administration intended to ensure efficient management, control and equality. Major and unintentional side effects of this are often centralization, bureaucracy, increasing difficulties in political control and public influence at the local level, and decreasing possibilities for innovation and job satisfaction. Obviously, it is extremely difficult to strike a balance between such conflicting goals and interests. This calls for independent and critical research, which may be a nuisance, yet a wise government should support it, because it may help to keep the health service healthy.

Standards and quality of care

Standards are not well defined in medicine, and the professions guard their territories against any attempts to violate clinical autonomy and professional integrity. Research has shown that standards vary enormously, far beyond any reasonable 'normal range', and this is found for most items of service: referral rates, prescriptions, tests, length of stay, etc. This raises two problems: is it possible to define reasonably valid standards, and, if so, is it possible to get them accepted? Both require research.

Prevention

Roughly, one can divide medicine into three parts: prevention, cure and care. What has prevention to offer for the non-infectious diseases? There are perhaps three large problems. The first concerns individuals: How does one make individuals pull their own weight in prevention and brush their teeth, change their life-style, and realize that prevention is not something they get but something they must do?⁵ The second concerns the society: how does one improve housing, working conditions and living conditions to make the community a safer, friendlier and healthier place? The third has to do with knowledge, especially epidemiological: what are the preventable causes of cancer, coronary disease and senility? Obviously, much research is needed here.

Public

There are a few more things to say about the public. First, we must teach the public about the potentials and limits of self-care. This requires careful consideration, both medical and educational. Secondly, people will have to rely more on non-professional support from families, friends, neighbours and workmates. This will aid preventive work and becomes essential in the care of the elderly and chronically ill in the community. How does one build and support communities which can and will do this job? Thirdly, we must educate people about attitudes to and expectations from the service. Among other things, this will require a much better and more open complaints procedure and a stronger part for the public in the actual running of the service. It will take research and experimentation to find the way.

This, then, is a list of the more important problems as I see them. The conclusion is obvious to me: none of these problems will go away; they are more likely to grow and multiply. There can be no question, therefore, but that we need health services research to master them.

HOW SHOULD HEALTH SERVICES RESEARCH BE ORGANIZED?

Before I proceed to the next question, a note of caution is in order. Health services research may help to clarify a country's 'national health diseases', but it is no panacea, and we should resist the temptation to oversell it to harassed administrators and politicians.

Goals

Health services research is an instrument for change, a means for improving the service. This is the primary goal, and the research should be planned to achieve this goal. By definition, therefore, health services research should be 'relevant', but it is easy for it to slip off into large projects of little relevance. For research to stay on target, the problem not only must be significant, but it must also have the potential for change within a reasonable time. The time element is important. One should select problems which are likely to come up for consideration, but not so fast that the research is overtaken by political decisions which are already in the making. The secondary goal, of course, is to contribute knowledge of general value.

Problem level

In the great hierarchy of a national health service it is useful to visualize a

top political and strategic level and three sub-hierarchies:

The organization and its managers;

The clinical operations;

The technical operations.

One should realize that major political changes in the service are usually not brought about by research. For example, in the UK a laywoman's book—Barbara Robb's *Sans Everything*⁶—probably had greater impact on the care of the elderly than all the research reports. Health services research, possibly with the exclusion of specially commissioned studies of economics and political analysis, is usually aiming for changes in the three sub-hierarchies.

Problem size

It is exciting to work on big problems, but often more comfortable to work on small ones, especially if one has time and money for big research on small problems. In health services research one should look for problems which are important and yet have the potential for change. One should remember that it is probably more healthy for a large organization to improve itself through a continuous series of properly directed small steps, rather than through occasional major upheavals. Karl Popper has this to say about research in general: 'Find out where difficulties arise, and take an interest in disagreements. These are the questions you should take up'.⁷

Research climate

It is obvious from what I have said that research has to steer a difficult course between submissive tail-wagging and unproductive barking and biting. This problem of research climate is usually underestimated, both by research workers and research managers. Research should certainly not direct the service, but it should also not degenerate into a managerial tool.

Inside the service

Changes are usually uncomfortable for a large organization. People feel threatened by them and resist them. Organizations, therefore, tend to become conservative and continue to fight the old battles instead of facing up to the new.⁸ A major task for health services research is therefore the study of successful and unsuccessful attempts to change, so that the necessary conditions for successful change can be defined. I believe one condition to be fairly obvious: one must work with the people who are supposed to change, not

against them. Put more bluntly: you can reform the service in ten years if you work with the professions, but it will take a hundred years if you work against them. This is a complex issue, because there are of course many vested interests, but I want to make the point that health services research should not be an exercise for epidemiologists and planners. It must be brought inside the service. The research group should work in a service setting, it should choose problems important to the people responsible for the service, and it should involve them—especially the administrators and the doctors—in the work and convince them that it is *their* work. Too often the work is carried out in isolation, reported at special meetings and published in specialist journals, which are read by other research workers but not by the people who must be convinced that the proposed changes are worth while. In many institutions and services the relationship between the clinicians and the administrators is one of 'us against them', and health services research easily ends up as 'their research'. A senior medical citizen told me that he did not know much about health services research, but he 'sure did not like it'. These observations are elementary, but it is amazing to have them confirmed over and over again.

Research has two products, one its results, the other its influence on attitudes and thoughts. In health services research the latter is probably the more important, and its importance will increase if the research is brought inside the service, as 'our' research. Much of it should be carried out by the professions, reported at ordinary meetings and published in general journals. Controlled clinical trials are a good example of a tool which may be used inside the service to promote rational attitudes.⁹

It follows that health services research should choose problems which are important in the local setting. Ideally, the decision-makers and implementers should be involved from the beginning. This will increase their interest and make it more likely that the research eventually will be implemented. The research worker, of course, will work harder if his work is likely to be used. He should remember that his target groups are not his colleagues, but those who can implement his research.

Finally, health services research has an important message to carry outside the service, to make the public and the politicians realize that the health service is fighting 'a battle of priorities',¹⁰ and that research may make this battle more rational.

Old wine in a new bottle?

When I explain the concept of health services research to my colleagues, some get upset because they feel they have done health service research for years,

under the label of epidemiology, clinical research or something else. This is a valid point. Health services research is not a new discipline, but rather a new attitude to medicine, medical care and medical research, namely, the attitude that resources are limited and that systematic research must be organized to make the best use of them.

Health services research includes many disciplines, but it is a sterile exercise to construct a general taxonomy for it. Health care consists of people and problems, not of neatly labelled boxes. Yet some sort of system is necessary for those who edit books¹¹⁻¹⁴ and administer research.¹⁵ In addition, research workers would be pleased to have a map so that they can find their own position and see those of their neighbours. I have studied several schemes with a

TABLE 1

Health services research: types of skills

Medicine (all medical professions)
 Epidemiology and statistics
 Economics
 Social sciences, especially sociology and psychology
 Political sciences
 Management, manpower and organization studies
 Operational research, information systems, computer sciences
 Education and behavioural psychology
 Technology: buildings, equipment, supplies
 Ethics and philosophy

TABLE 2

Health services research: types of problems

Needs and demands
 Surveys, screening
 Diseases, disabilities, vulnerable groups
 Surveys, screening, clinical trials
 Services
 Primary care, hospital care, outpatient care, long-term and community care
 Utilization of services
 Outcome
 Personnel, technology, costs
 Standards and quality of care
 Surveys, clinical trials
 Prevention
 Surveys, clinical trials, experiments
 Opinions, attitudes and behaviour
 Surveys, attempts to influence
 Quality of life
 Surveys, opinions
 Self-care, non-professional care and support
 Surveys and experiments

mixture of admiration and frustration, and I believe the multidisciplinary activities of health services research cannot be forced into one scheme. At least two schemes are needed, covering types of skills and types of problems (Tables 1, 2). These schemes must be broken down in further detail, and they serve only to suggest what health services research is about. The message clearly is that multidisciplinary research groups must be organized which work inside the service and collaborate with those who do the work of the services.

Teaching

Clearly, it is impossible to set any health service right once and for all. A never-ending series of adjustments will be necessary, and health services research is one of the tools for this job. It must therefore be organized on a permanent basis, and the research group must also teach, so that opinions, attitudes and ambitions can be influenced. The teaching should aim at all professions and levels. It will be more effective if it is based in a medical school.

THE FUTURE

Over the last ten to fifteen years health services research has grown rapidly in the UK and is now getting about 25% of the public money (exclusive of the University Grants Committee money) available for medical research. Major contributions have been made in many fields, for example in epidemiology, clinical trials, the use of hospitals, collaborative research in general practice, and opinions and attitudes (I give no references here, since it would be unfair to mention a few among so many).

Other countries, including Norway, are just facing up to the new situation of limited resources. The first task is to assemble the necessary data bases for assessing the present trends in needs, utilization, costs and manpower. New tasks are obvious, such as:

- Measurement of benefits from medical care (outcome studies);
- Experiments in prevention;
- Standards of quality of medical care;
- Quality of life, the human and ethical limitations of medicine;
- Expectations, ambitions and spirit of the professions;
- Relations between medical and social care;
- Long-term studies of vulnerable groups;
- Attitudes to self-care and non-professional support in the communities.

The research must be organized on a permanent basis, carried out inside the service, and combined with teaching, preferably as a normal part of the activity of a medical school.

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Discussion

Black: What do you mean when you say there is more manpower when money is scarce, Dr Hjort?

Hjort: At the moment, the UK lacks money and has an excess of general manpower. In Norway, we have more money but manpower is severely limited. The health service is affected, because in Norway it uses 20% of the new manpower available every year.

Rogers: This question haunted me throughout my time at the DHSS. In the long run manpower is the most important constraint, and that includes problems arising from distribution of manpower. How do we deal with the problems of the elderly when on our South Coast, for example, one quarter of the population is over sixty-five years of age, and one town even has a third aged over sixty-five. The elderly in those areas may have to have a type of care which is different from a theoretical ideal, and certainly different from the rest of the country. The social services in this country in the last ten years have taken into their employment a substantial proportion of the total increase in available manpower and womanpower. Yet planning for social care by various authorities, including local authorities, suggests a projection of further demand which is totally impossible in terms of the likely available manpower.

Hjort: In Norway, the cost of the social services, including all kinds of social support, is double that of the health services.

Pickering: One of the greatest disasters to hit the health service in the UK was the Salmon Report.¹⁶ This takes our best nurses out of the wards and arms them with pieces of paper which they carry around the corridors until they find a ward sister who is providing coffee, and then they go and interrupt her. The best nurses no longer nurse; they administer. The Committee recognized that their scheme might not work and they recommended that it should be tried out first in a few hospitals. Instead the recommendations were applied wholesale. I always suspected that this must have been due to pressure from the senior nurses.

Hjort: The effects you ascribe to the Salmon Report seem to be happening in all professions. I sometimes visualize the health service as a big army where there is a drift towards the rear lines. These are predictable things, so why should we sit around and let them happen?

Saracci: I see a problem in recruiting people, in particular epidemiologists, with good scientific training and ability for health services research. Many projects in health services research are potentially valuable for the local community concerned but are not of so much general scientific interest, except perhaps for the methodological aspect. At the same time decisions about the community health issues investigated through these projects are taken by administrators and lay representatives of the community (which is as it should be). If this occurs, an epidemiologist who has put aside research of more general interest, such as aetiological studies, to devote himself to research of higher local value, is likely to become frustrated and wish to go back to investigating disease aetiology.

Hjort: I agree that the present system of research easily produces frustration, because the person doing the research work is not responsible for its practical use. Often, valuable work in health services research has no immediate practical use. A good example comes from the comparisons made between health services in different countries: they solve no problems, but they raise important questions, thereby contributing to a more informed and rational climate. I think we must educate ourselves to accept that it is not beneath our status to do this kind of work, and we must organize research in such a way that the potential implementer gets involved. Remember, three things are necessary to make a man change what he is doing: he needs reliable information, he needs time to think about it, and he must not lose face in the operation.

Querido: Medicine is a dynamic system and therefore many facts which one learns in medical school may be less relevant ten years later. I agree that health services research in the curriculum will be very instructive. However to produce a doctor who is able to understand and contribute to change, it seems to me that a change of educational emphasis is needed for medical students. They should participate actively during six months or a year in research, not to make them into research workers but to make them familiar with scientific reasoning.

Professor Arie Querido in Holland was far ahead of his time in research on medical care delivery and I think that was because he was a good physiologist in the first part of his career. He was able to apply the scientific method. The scientific method is becoming increasingly important for general doctors who have to decide for patients whether they are ill or have a disease, or both, and what the causes or effects are or may be. I frequently say that it is much easier to become a heart surgeon than a general practitioner. The general practitioner has to face the problems Dr Eisenberg described earlier (pp. 3-15) whereas the heart surgeon needs more straightforward technical skills. I suppose that we need to have a fresh look at medical education, not only at the curriculum. And of course we have to know where the demands on the health service will fall.

Hjort: I agree that in the long run changes must be made through medical education. On the other hand, I am reluctant to accept that scientific training is necessary for facing up to priorities. After all, consumers have to decide priorities every day, but doctors are excluded from making similar decisions. The problem may often have a fairly simple solution if we are willing to accept the idea that priorities must be assigned.

Marinker: We keep returning to education. If we need education for change we must be concerned with education in scientific method. If research means the application of the scientific method then, in terms of cost-benefit and humanity, we need to teach about it. The difficulty is what to take out of medical education to make room for what you want to put in. There is often a great deal of enthusiasm for putting in something like a year of research for students, but something has first to come out.

Randle: I think that educational change depends on external pressure, and I am curious as to where the pressure is going to come from for this particular change. The development of undergraduate unrest in 1968 or thereabouts led in the UK to dissatisfaction with courses and curricula which could not be ignored. To my view this has been, somewhat surprisingly, of great benefit, because it made teachers focus acutely on what they were doing in their teaching. One of the problems of postgraduate education is that no comparable upheaval has occurred to focus the attention of teachers on what they are doing.

I do not think that health services research will derive much benefit from tinkering with medical education, because I cannot see that doctors will generate the necessary pressure for change. One possibility might be to train health service administrators in universities and allow the pressure to arise from them and their teachers. Pressure should really come from the public but the interposition of the political system between the public and their health service may prevent this. Administration is an area which could apply pressure. I do not like the idea of doctors as sole monitors any more than I like, say, the police as sole monitors of their own work.

Black: Most doctors probably want to be unmonitored, but perhaps monitoring by doctors would be an acceptable compromise.

Hjort: I think that pressure for change must come from doctors themselves. Control has to be either by the profession or by the bureaucracy, so if we are not willing to do the job we must accept that the bureaucracy will do it for us.

Fliedner: Our problems in Germany are similar to those you pointed out, Dr Hjort. However, your list of problems (Table 2, p. 159) does not refer to the question of who is doing what, with what type of training and for what purpose. We need to define who is going to be involved in what types and phases of health services because this strongly influences the training of physicians. Their

training is still geared largely to curative medicine. We teach medical students very little about ecology, very little about health services and nothing about prevention. There is no glamour in research on preventive medicine, yet it is probably one of the key elements of the future. We also teach students very little about rehabilitation and perhaps Dr Dornhorst's prejudice against physical therapy (p. 90) arises from the general lack of recognition that rehabilitation measures are important. It might be useful to mention an OECD study, *New Directions in Education for Changing Health Care Systems*, which deals systematically with many of the points made here on aspects of educational change.¹⁷

I want to come back to the question of whether health services research should be within the service or outside, and whether the pressures come from outside or inside. If one of the pressures that has built up over the cost explosion is medical research, those doing medical research should also be responsible for considering the possible social and ethical implications. The German government is developing a programme for 'Research and Technology in the Services of Health' which will be a combined programme of the Ministry of Youth, Family and Health, the Ministry of Science and Technology, and the Ministry of Labour. This will, perhaps, reshuffle our health sciences research efforts. It will have three major thrusts, one of which will be health services research in various areas. I was chairman of the committee advising the government on the intellectual framework for this programme and we thought we should develop a general goal for it first. We asked whether what was wanted was research directed mainly at prolonging life as such (which would perhaps cost more and more money and give less and less benefit). Then we asked what diseases and illnesses impair 'productive' life, that is, life with a fair degree of unimpaired self-fulfilment. One then gets a very different weighting of diseases, as one considers not only their frequency but also the degree of impairment of that 'productive life' they produce. The diseases that head the list in these circumstances are diseases of the respiratory tract, of the vascular system and of the digestive tract, in addition to accidents. In accident research the problem of rehabilitation is of course important. For client-oriented research one should probably consider factors other than morbidity and mortality. Impairment of self-fulfilment and quality of life aspects then become important.

If we want to improve health for the productive life rather than for physical life in terms of years we then come to three sub-priorities which need to be explored. That is, first we should improve present methods and develop new ones for the *prevention, early recognition and diagnosis of disease*, and for *treatment and rehabilitation*. This is probably the most important area for the

medical profession but I felt that if we did not plan a place for basic medical research at this stage no money would be committed for it. The second area, the improvement of present methods and the development of new ways of eliminating *environmental influences*, includes the way people behave about their health. This comes back to health maintenance and health education. The third area is devoted to *health care research*.

When productive life is taken as the principal objective, priorities can be set for investment. When we define the disease areas that impair productive life rather than those responsible for most deaths, we get a completely different weighting of research problems. There is room for much basic research, since analysis of the relevant diseases shows that one probably has to provide for three types of research. One type is of long-range importance and would usually affect prevention of disease in our grandchildren. The second type, research directed to diagnosis and treatment, will benefit our children in about ten years from now. The third type, research in rehabilitation and secondary prevention, early recognition and so on, will benefit us within the next five years. All three kinds of research are important, and all three must be supported.

If we look at the relevant disease areas to see which is most important now, in most areas we must conclude that we do not know much about the pathophysiological mechanisms involved. This is the justification for a lot of basic research, but we must realize that the return on that investment will come much later.

Hiatt: Several speakers have referred to the complexity of the problems they discussed. These problems often involve many disciplines. Over the last few decades an extraordinary partnership of biology and medicine has led to great dividends in our understanding of many diseases and our capacity to deal with them. However, many of today's health problems require contributions from a range of other disciplines (as well as the natural sciences), including ethics, economics, decision analysis, statistics and management. Few physicians have been well trained in these spheres, and that will undoubtedly and appropriately continue to be the case, at least for physicians who deal with individual patients. Therefore, a major question that confronts us now, in addition to how medical education should change, is how to interest the most able ethicists, economists, statisticians, etc., in medical and other health-related questions. Dr Hjort suggests that health services research involving experts from other areas ought to be based in medical schools. I agree, but I feel that such an arrangement is incomplete. For example, with notable exceptions, it has not been possible to attract the best biochemists into, say, departments of surgery to do biochemical research in surgery. In general, scholars in a discipline want to have a major foothold in their own disciplinary departments. Further, uni-

versities are not set up in such a way as to encourage easy crossing of what are usually rigid departmental lines. Therefore, we must create new institutional arrangements that will permit us to call on the best people from other disciplines to work with us on these problems. I am not, of course, suggesting that managers or economists or statisticians should replace physicians in the approach to crucial problems—we have all been exposed to the silly decisions that can be made in the absence of medical input.

Black: Medical education isn't just a question of producing doctors, of course, but surely we ought to recognize that in the postgraduate sphere they can diverge in many directions. As Dr Hiatt has been saying, we have the same problem with economists, statisticians and so on as we already have with clinical chemists and others who are not medically qualified. The essence of the problem is to recognize equality of status.

Campbell: The German research programme Dr Fliedner has just described (p. 164) is reminiscent of the programme outlined by the Canadian Federal Minister of Health.¹⁸

Querido: I work on a committee which is trying to define goals for health services research. In The Netherlands at present there is a tendency to confuse research with medical technology and many people are suspicious of medical technology. Therefore there is a tendency to spend the money on health care research. Many members of our committee find it difficult to identify the indicators for measuring the quality of health care. It seems to me that research on the health care system can be roughly divided into problems of efficacy and of efficiency. Efficiency has a large component of management and one can study aspects such as whether larger units would be more efficient, whether the teams are properly structured, etc. Efficacy is another matter, but the indicators are indeed very difficult to define. Efficacy depends for a large part on the right decisions being taken by individuals and adequate skills applied. So although health services research is interesting, I don't think that much will come out as far as the quality of care is concerned. It is very much determined through the skills of individuals, and decisions taken by individuals. I mention this as a warning against too high expectations from the results. I prefer to emphasize the educational aspects and to see whether the right mix of knowledge, skills and reasoning is achieved.

Hjort: I agree that it is important not to over-sell health care research. However, the philosophy of limited resources which is built into the concept of health care research is really more important than the results that come from it. This philosophy should penetrate into the service, not to save money, but to give best value for money. This will often lead to better medicine, I believe, because it will emphasize the human aspect of medicine. Therefore, this

research should be brought inside medical schools, to give it support and prestige and to facilitate teaching.

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